CONSTRUCTION
europe

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THE DEFINITIVE GUIDE TO THE EUROPEAN CONSTRUCTION SECTOR
2018

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Reasons to be cheerful

The construction industry is changing fast. Sandy Guthrie discusses whether there are grounds for optimism despite the many uncertainties still to be faced

There are still more questions than answers when it comes to assessing the progress of the European construction industry, but for anyone who is so inclined, there is much to be optimistic about.

It would be unfair to suggest that all is well, everywhere, but with the political and social uncertainties that still hang over the continent, and the fast pace of technological change, it would be a brave commentator who felt they could stick their neck out and state categorically what is around the corner.

Of course, it is perfectly possible to make a forecast based on forward orders and projects underway, but the rugs could be pulled out from under many of these projects for a host of reasons.

There are, however, many grounds for optimism. As easy as it is to point at the potholes in the road ahead and the blind corners with who-knows-what hidden round them, there are major projects providing some extremely bright spots.

The Grand Paris Express rail project in France is an obvious example of a European highlight. It is probably the largest project in Europe at the moment, with its plans for four additional lines, 200km of new railway lines and 68 new interconnected stations.

Then there are the plans for the UK's HS2 high-speed rail line, which is claiming to support 15,000 jobs by 2020, and as many as 30,000 at the peak construction period. A bucket of cold water could be thrown over that optimism, however, by wondering whether Britain post-Brexit (the decision to leave the European Union) will be able to find the requisite workers to achieve this.

The fairest answer to this is probably that nobody knows. Brexit is riddled with uncertainty, and nothing yet has happened to prove the point one way or another. Indeed, at the time of writing there has been no hard and fast decision on anything to do with Brexit, so it is all guesswork at this point.

This lack of clarity over Brexit is the hardest part of the problem at the moment. There are commentators who feel that the UK is heading towards next year's deadline like a bird preparing to take off and soar into blue skies, and others who might compare it to a lemming, but nobody can say for sure which scenario will be closer to the truth.

And Brexit is only one of the uncertainties in Europe – a big one, for certain, but there are other examples of political unrest around the continent.

TECHNOLOGICAL INNOVATION

While all this is going on, the speed of change in the industry as a result of technological innovation is almost unprecedented.

This is the time of the Fourth Industrial Revolution – or Construction 4.0. The fact that this period in history merits a name is an example of how important it is to the future of the industry.

Much of what is likely to happen in the next few years will fall under the blanket category of "digitalisation". This can mean so many different things, but is a part of almost every industry conversation today.

And it is important that the industry is able to control the progress – however wild and fast that ride may be – and not be thrown from the bucking bronco.

The ability to steer the future of the construction industry will allow it to arrive successfully in a new place, with sensible and useful innovations that enhance the work, making the jobsite more efficient – and safer – and not an unnecessarily complex place. It should be remembered that just because something can be done, doesn't always make it a good idea.

The potential for change affects every corner of the industry. A machine increasingly has software that controls its operations. A speaker at the CECE (Committee for European Construction Equipment) Congress likened the changes to what has already happened in the aviation industry, where the cockpit of an airliner is no longer simply a joystick and some dials. Control is largely dependent on software, although this is not, of course, infallible.

Speaking at the Congress in Rome, Luca Chittaro, professor of Human Computer Interaction at the University of Udine, said

Pilosio's MP HD towers were used on the widening of the Tana viaduct in Switzerland

that the transformation was not a small one, and clearly required retraining before it could be used. The main aims, he said, were to make a machine simple to use, intuitive, productive, reliable and safe.

To illustrate this last point, he showed film of a plane attempting a landing in bad weather. When one wheel came into contact with the runway, the onboard computer thought that it had landed and was on the ground safely. It therefore shut down the system accordingly. The pilot was able to regain control and land safely, but it demonstrates the caution that is needed.

Construction 4.0 needs data, and this Danish hospital project used camera cranes from Pix4D

For machines in the construction industry, the future is certainly digital, with software to make operation precise to a point that only the most skilled operator of the past could achieve. In most cases, this will not replace an operator, but will make their life easier, and probably safer.

This new technology also allows monitoring of a machine's performance, making sure that it is being used in the most efficient way, and alerting the people who need to know when servicing is needed and when there is a problem.

Simplistically, this means the project and machine owners can operate as efficiently as they can, and therefore to save money.

Apps and other software are being introduced all the time which can contribute to this drive for efficiency. Used in the right way, the possibilities are limitless and very exciting.

'SPECIAL ERA'

The new president of Volvo Construction Equipment, Melker Jernberg, described these times as a special era for the industry.

"It's about how we can use the technology, have a better life and be more productive," he said, adding, "If only 50% of what could happen will happen, then it will have been big changes."

Soilmec's Hydromill SC-135 Tiger was launched last year for foundation work

For the machines to operate successfully, the demand for construction has to be there.

Looking at figures from FIEC (the European Construction Industry Federation) for the last few years, after a slight dip in 2013, construction output figures for EU countries in 2017 were climbing steadily, with rises recorded for Germany at 2.6%, the UK at 3.8%, >

France at 4% and Spain at 4.4%. Italy showed a slight fall of 0.9%, and these five countries remained comfortably ahead of the other European countries in the league table.

It would take a seismic shift of extraordinary proportions for this top five to be overhauled by any of the countries following – the Netherlands, Sweden, Poland, Belgium, Austria, Finland and Denmark.

If Norway, with a rise of 6.7%, Switzerland, up 0.9%, and Turkey, up 8.9%, are added to the EU figures, total construction output in 2017 totalled €1.62 trillion.

In the FIEC research, some countries were able to make forecasts for this year, too.

For example, Slovenia was up 17.5% in 2017. The forecast is for another 17% in 2018 – but it has to be stressed that this is off a low base. It is encouraging, nonetheless.

While Bulgaria saw 1.5% growth in 2017, a rise of 16.5% is predicted for 2018, with European funding for the new period helping boost the market there.

The Big Five countries are all expecting growth in 2018, with Germany likely to post 5.0% growth, the UK a relatively modest 0.4%, France 2.6%, Italy turning its small 2017 decline into a 2.4% rise, and Spain showing an increase of 4.7%.

Having suffered a great deal in the aftermath of the financial crash, Spain and Italy are still operating from a low base, but it is good to see positive figures.

EQUIPMENT SALES

Turning to equipment sales, growth of 3% is being forecast for the Western European construction equipment market for 2018, following the 26% surge which was seen in 2017, according to specialist forecaster Off-Highway Research.

It said this would take demand to over 165,000 units – the highest level seen in the decade since the global economic crisis.

Following that, a moderate 1% decline is being forecast for 2019, but Off-Highway Research said this should be seen as the market stabilising at a historically high level.

European machine demand is said to be as strong as it could be without overheating

In 2017, it said, the market enjoyed the rare phenomenon of all 15 of the individual countries considered in the report showing growth. The report said that this unusual occurrence indicated broad buoyancy in the European market. At the current level of 160,000 to 165,000 unit sales, Off-Highway Research said it would argue that European demand was as strong as it could be without overheating.

Although demand was seen to have risen across the board in 2017, Off-Highway Research said it was the major markets of France, Germany, Italy and the UK which were the key overall influencers, as they currently accounted for 74% of European equipment sales.

Demand for construction equipment has plateaued at a high level in most of the Northern and mid-European markets, it added. While the coming years were expected to see a gradual decline in annual sales, the forecaster said that no sharp downturn was forecast at this stage.

On the other hand, it pointed out that Brexit could have a serious destabilising effect. However, with the future terms of the relationship between the EU and UK yet to be decided, Off-Highway Research said it was impossible to quantify the potential impact.

Meanwhile, continued growth in Southern Europe – most significantly Italy – should partially offset the declining sales further north. This should see overall European equipment demand maintained at strong volumes for one or two years at least, the report said.

BRIGHT AND POSITIVE

The overall picture for construction output and machine sales in Europe has to be seen as a bright and positive one for the most part. An optimist might simply be happy with the figures as they are, with more good news a distinct possibility over the next few years.

A more pessimistic commentator might point to the many uncertainties that are lurking like dark clouds on the horizon, threatening deep shadows and possibly storms. A large proportion of these unknowns are political in their makeup, and are by their very nature manmade and unpredictable. The hands on the purse strings may provide the necessary finances, or the lack of confidence that dogged the markets for several years after the global financial crash might return. Those hands might nervously tighten around the neck of the purse, slowing or even halting projects, and inhibiting growth.

The hazards that the industry could face include all manner of political disharmony from countries inside and outside Europe.

There is a perceived threat from China as state-controlled companies are worrying many in the EU with their ability to undercut home-grown tenders. That is another area in which time will tell. It is hard to see whether this will actually prove to be a major problem or not, but a lack of a level playing field as China does not allow reciprocal operations within its borders is seen as a concern.

And it is not only within the construction industry that changes are likely to be seen. There are political swings in many European countries that will have a major effect on the daily lives of citizens, as well as threatening construction projects. The changes might open up new opportunities too, so it would be foolish to dress up all change as going in the wrong direction.

The construction industry is facing an exciting period – of that there is little doubt. As part of the Fourth Industrial Revolution, construction is, to a certain extent, playing catch up, but sometimes that is no bad thing. It is possible to jump several steps on the climb to the new, digital world of the future, saving time and money, and learning from other industries' experiences.

We are heading towards the year 2020. It is just a number, but it will inevitably represent a landmark as the end of a decade, and is already lined up as landing area for a number of schemes and projects.

As a number, it has a pleasing symmetry, but it is hard to say whether, by then, there will be 20:20 vision, or that everything will remain as unclear as it is now. ce

Vögele machines on the B271 in Germany, where construction output rose in 2017

Financial review of 2017

European construction showed clear signs of better health in 2017, against a backdrop of improving macroeconomic conditions, writes Thomas Allen

For European construction, 2017 was a year in which the industry began to find its feet again, supported by strengthening European and global economies.

The European Commission said overall Eurozone business and consumer confidence were at new multi-year highs towards the end of the year.

Although the uncertainties of Brexit were still very much lingering as 2017 came to a close, the negotiations were well underway at least. And while the spectre of populism still loomed, Emmanuel Macron's convincing wins in the French presidential and legislative elections helped to keep it at bay.

Against this backdrop, the total *CE* Index figure increased by 17.86% over the year, and the greatest contributors to that increase were equipment manufacturers, whose overall index figure jumped by 31.52%.

Most significantly, Wacker Neuson doubled its share price over the course of 2017. The German-based light and compact equipment manufacturer's share price rose by 107.84%.

Record revenue figures were announced by the company half way through the year, and then in the third quarter of 2017 it reported a doubling of profits before interest and tax to €40 million, compared to €20.4 million in the same period a year earlier.

CEO Martin Lehner said, "There is no doubt that we were buoyed by strong markets in North America and Europe. However, it was the successful implementation of our growth strategy that really enabled us to outgrow the market."

The group's largest market, Europe, reported a 17% rise in revenue in the third quarter, with Germany, Austria, Switzerland, the Benelux countries, France and Poland all performing well.

For Caterpillar, the world's leading equipment manufacturer, the year got off to a shaky start as its headquarters were raided by US authorities, causing the company's share price to fall by 4% at the time. In addition, four of the company's vice presidents elected to retire in 2017.

This did not hold Cat back, though. The company's share price increased significantly, rising steadily by 67.64% over the year.

Its fourth quarter and full-year results for 2017, revealed a promising sales and revenue rise.

The positive momentum gathered in 2017 is expected to carry Cat into a strong 2018, backed by strong order rates, lean dealer inventories and an increasing backlog.

Manitou's share price also rose significantly, by 64.64% over the year. In the third quarter, the French-based manufacturer's revenues of €354 million represented a 10% increase.

The company also reported that its order intake grew 51.5% for the quarter, to €312 million, while its end-of-quarter order book had increased 115.6% to €526 million, from €244 million.

The only two equipment manufacturers to suffer a decline in share price were Korean manufacturer Hyundai Heavy Industries, with a drop of 16.44%, and US-based Astec Industries, with a fall of 7.76%.

Hyundai Heavy Industries relisted on the Korean stock exchange in May, along with three spin-off companies, one of which was Hyundai Construction Equipment, which subsequently became Hyundai Construction Equipment Europe (HCEE).

Hyundai Heavy Industries' share

EQUIPMENT MANUFACTURERS

Company	Currency	Price at start	Price at end	Change	Change (%)
CEE Index		**311.82**	**410.10**	**98.29**	**31.52**
Astec Industries	**US$**	66.85	61.66	-5.19	-7.76
Atlas Copco (A)	**SEK**	279.30	322.40	43.10	15.43
Bell Equipment	**ZAR**	12.05	13.00	0.95	7.88
Caterpillar	**US$**	93.82	157.28	63.46	67.64
CNH Industrial	**€**	8.28	11.51	3.23	39.01
Deere	**US$**	103.09	158.73	55.64	53.97
Doosan Infracore	**WON**	8720	9400	680	7.80
Haulotte Group	**€**	13.54	16.98	3.44	25.41
Hitachi CM	**YEN**	2597	4250	1653	63.65
Hyundai Heavy Industries	**WON**	149000	124500	-24500	-16.44
Kobe Steel	**YEN**	1180	1076	-104	-8.81
Komatsu	**YEN**	2696	4279	1584	58.75
Kubota	**YEN**	1701	2256	555	32.63
Manitou	**€**	18.95	31.20	12.25	64.64
Manitowoc*	**US$**	6.09	39.26	3.73	61.17
Metso	**€**	27.04	29.07	2.03	7.51
Palfinger	**€**	27.44	35.85	8.41	30.65
Sandvik	**SEK**	113.50	149.35	35.85	31.59
Tadano	**YEN**	1487	1921	434	29.19
Terex	**US$**	32.15	48.43	16.28	50.64
Volvo (B)	**SEK**	107.10	158.90	51.80	48.37
Wacker Neuson	**€**	15.30	31.80	16.50	107.84

Week 1-52, 2017

* 1-for-4 reverse stock split in week 48

CONTRACTORS

Company	Currency	Price at start	Price at end	Change	Change (%)
CEC Index		**223.75**	**258.32**	**34.58**	**15.45**
Acciona	**€**	69.17	69.56	0.39	0.56
ACS	**€**	30.31	33.04	2.73	9.01
Astaldi	**€**	5.60	2.42	-3.18	-56.75
Balfour Beatty	**UK£**	2.67	2.95	0.28	10.46
Bam Group	**€**	3.41	3.97	0.57	16.65
Bauer	**€**	10.81	31.65	20.84	192.78
Bilfinger	**€**	37.40	40.26	2.86	7.65
Bouygues	**€**	31.64	43.75	12.11	38.27
Carillion	**UK£**	2.34	0.17	-2.17	-92.64
Eiffage	**€**	65.39	92.96	27.57	42.16
FCC	**€**	7.68	8.91	1.23	16.02
Ferrovial	**€**	17.48	19.37	1.89	10.81
Hochtief	**€**	146.00	145.80	-0.20	-0.14
Keller Group	**UK£**	823.07	964.00	140.93	17.12
Kier	**UK£**	1363.00	1093.00	-270.00	-19.81
Lemminkäinen	**€**	20.48	19.21	-1.27	-6.20
Morgan Sindall	**UK£**	734.06	1442.00	707.94	96.44
Mota Engil	**€**	1.61	4.09	2.48	153.73
NCC (B)	**SEK**	221.60	160.05	-61.55	-27.78
OHL	**€**	3.29	5.25	1.96	59.62
Peab (B)	**SEK**	72.30	74.95	2.65	3.67
Sacyr Vallehermoso	**€**	2.29	2.56	0.28	12.01
Salini Impregilo	**€**	3.09	3.29	0.20	6.47
Skanska (B)	**SEK**	214.60	169.85	-44.75	-20.85
Strabag SE	**€**	34.00	35.30	1.30	3.82
Taylor Wimpey	**UK£**	153.50	209.40	55.90	36.42
Tecnicas Reunidas	**€**	38.69	27.77	-10.92	-28.22
Trevi Group	**€**	1.03	0.41	-0.62	-60.00
Veidekke	**NOK**	123.50	90.10	-33.40	-27.04
Vinci	**€**	64.41	86.18	21.77	33.80
YIT	**€**	7.65	6.54	-1.11	-14.51

Period: Week 1-52, 2017

MATERIALS PRODUCERS

Company	Currency	Price at start	Price at end	Change	Change (%)
CEM Index		**190.70**	**198.40**	**7.70**	**4.04**
Buzzi Unicem (Ord)	**€**	22.30	23.32	1.02	4.57
Cemex (CPO)	**MXP**	16.50	15.25	-1.25	-7.58
Cimpor	**€**	0.22	0.36	0.14	63.64
CRH	**€**	31.88	30.70	-1.18	-3.70
Heidelberg Cement	**€**	87.18	92.54	5.36	6.15
Ferguson	**UK£**	49.35	53.66	4.31	8.73
Italcementi	**€**	10.58	10.58	0.00	0.00
Kone (B)	**€**	42.50	45.11	2.61	6.14
LafargeHolcim	**€**	49.62	48.49	-1.13	-2.28
Saint-Gobain	**€**	43.67	47.07	3.40	7.79
Schindler (BPC)	**CHF**	176.30	223.60	47.30	26.83
Schneider Electric	**€**	65.31	71.86	6.55	10.03
Titan Group (Common)	**€**	21.90	22.90	1.00	4.57
Vicat Group (Common)	**€**	57.20	68.35	11.15	19.49
Wienerberger	**€**	16.45	21.08	4.63	28.15

Period: Week 1-52, 2017

Bauer – seen here working on the Rosshaupten dam renovation project in the Koenigswinkel region between Fuessen, Pfronten and Schwangau in South Germany – topped the 2017 share price performance table

price has since fallen, whereas HCEE's share price has almost doubled – a good start for a company with a goal of becoming a top five ranking construction equipment manufacturer on the global market by 2023.

It should be noted that Manitowoc – whose share price jumped by 61.17% over 2017 – performed a one-for-four reverse stock split in November

Manitowoc shareholders approved the reverse stock split and a reduction of the total number of shares of common stock that Manitowoc is authorised to issue, from 300 million to 75 million shares.

CONTRACTORS

Turning to contractors, the overall *CE* Index figure for these companies increased by 15.45%.

German-based Bauer led the pack – and came top of the league table for all listed companies – with an impressive increase of 192.78% in its share price over the year. However, this was from an all-time low just before the start of 2017, when a multi-million-dollar order backlog was taken off the books after the sale of shares in a real estate company.

Despite some minor setbacks, the company reported good overall results for the first nine months of 2017, with total group revenues rising by 22% to €1.4 billion, compared to the €1.14 billion recorded in the first nine months of 2016.

However, just at the start of 2017, the company announced that it no longer expected to be able to achieve its 2017 full-year earnings forecast as a result of the impact of an unexpected outcome to long-standing arbitration proceedings.

While contractors clinched three of the four top positions on the league table, they also occupied the bottom eight positions.

At the very bottom was, unsurprisingly, Carillion. The UK-based company's share price dropped by 92.64% over 2017.

Although the company did not officially go into liquidation until the beginning of 2018, Carillion was showing signs of struggle throughout 2017.

In July 2017, the group chief executive of Carillion quit, as the company issued a profit warning in its first-half trading update. The group highlighted a deterioration in cash flows on a select number of construction contracts.

It also said borrowing had been affected by worsening cash flows on construction contracts, combined with a working capital outflow as a result of a higher than normal number of construction contracts being completed and not being replaced by new contracts starting up.

Another profit warning was issued in November.

Hundreds of sub-contractors and suppliers were left in the lurch when Carillion finally collapsed at the start of this year.

VALUE OF €1

	Beginning of period	End of period	Change	Change (%)
RESERVE CURRENCIES				
British Pound	0.8486	0.8899	0.0413	4.87
Japanese Yen	123.02	135.82	12.80	10.41
Swiss Franc	1.0712	1.1765	0.105	9.84
US Dollar	1.0465	1.2061	0.1596	15.25
EUROPEAN CURRENCIES				
British Pound	0.8486	0.8899	0.0413	4.87
Bulgarian Leva	1.9592	1.9558	-0.0034	-0.17
Czech Koruna	27.018	25.477	-1.541	-5.70
Danish Krone	7.4340	7.4448	0.0108	0.15
Hungarian Forint	310.23	308.51	-1.72	-0.56
Norwegian Kroner	9.0942	9.7547	0.6605	7.26
Polish Zloty	4.4155	4.1540	-0.2615	-5.92
Romanian Lei	4.5164	4.6319	0.1155	2.56
Swedish Krona	9.6200	9.8103	0.1903	1.98
Swiss Franc	1.0712	1.1765	0.1054	9.84

Period: Week 1 - 52, 2017

MATERIALS COMPANIES

Looking at materials companies, their overall *CE* Index figure shifted up only marginally over the year, by 4.04%.

The biggest change was seen by Cimpor, whose share price rose by 63.64%. However, the company lost its status as a public company in September 2017, when the decision was taken at an extraordinary general meeting to delist the company from the Lisbon Stock Exchange.

Wienerberger's share price grew by 28.15% over the course of the year.

In the company's financial >

PROUD TO PERFORM

WA380-8

WHEEL LOADER

ENGINE POWER 143 kW / 192 HP **OPERATING WEIGHT** 18.155 - 19.765 kg **BUCKET CAPACITY** 3,2 - 6,5 m^3

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The new Komatsu WA380-8 wheel loader is a powerful utility performer with an EU Stage IV engine and optimised fuel consumption, perfect for your moving or loading jobs. Komatsu's redesigned bucket, new E-light work mode and auto digging function provide increased fuel efficiency and operating comfort, and will boost the productivity of your WA380-8.

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RANKING BY 2017 SHARE PRICE PERFORMANCE

	COMPANY	SECTOR	CHANGE (%)
1	Bauer	C	192.78
2	Mota Engil	C	153.73
3	Wacker Neuson	E	107.84
4	Morgan Sindall	C	96.44
5	Caterpillar	E	67.64
6	Manitou	E	64.64
7	Hitachi CM	E	63.65
8	Cimpor	M	63.64
9	Manitowoc*	E	61.17
10	OHL	C	59.62
11	Komatsu	E	58.75
12	Deere	E	53.97
13	Terex	E	50.64
14	Volvo (B)	E	48.37
15	Eiffage	C	42.16
16	CNH Industrial	E	39.01
17	Bouygues	C	38.27
18	Taylor Wimpey	C	36.42
19	Vinci	C	33.80
20	Kubota	E	32.63
21	Sandvik	E	31.59
	CEE Index	E	31.52
22	Palfinger	E	30.65
23	Tadano	E	29.19
24	Wienerberger	M	28.15
25	Schindler (BPC)	M	26.83
26	Haulotte Group	E	25.41
27	Vicat Group (Common)	M	19.49
	CET (Total)	T	17.86
28	Keller Group	C	17.12
29	Bam Group	C	16.65
30	FCC	C	16.02
	CEC Index	C	15.45
31	Atlas Copco (A)	E	15.43
32	Sacyr Vallehermoso	C	12.01
33	Ferrovial	C	10.81
34	Balfour Beatty	C	10.46
35	Schneider Electric	M	10.03
36	ACS	C	9.01
37	Ferguson	M	8.73
38	Bell Equipment	E	7.88
39	Doosan Infracore	E	7.80
40	Saint-Gobain	M	7.79
41	Bilfinger	C	7.65
42	Metso	E	7.51
43	Salini Impregilo	C	6.47
44	Heidelberg Cement	M	6.15
45	Kone (B)	M	6.14
46	Buzzi Unicem (Ord)	M	4.57
47	Titan Group (Common)	M	4.57
	CEM Index	M	4.04
48	Strabag SE	C	3.82
49	Peab (B)	C	3.67
50	Acciona	C	0.56
51	Italcementi	M	0.00
52	Hochtief	C	-0.14
53	LafargeHolcim	M	-2.28
54	CRH	M	-3.70
55	Lemminkäinen	C	-6.20
56	Cemex (CPO)	M	-7.58
57	Astec Industries	E	-7.76
58	Kobe Steel	E	-8.81
59	YIT	C	-14.51
60	Hyundai Heavy Industries	E	-16.44
61	Kier	C	-19.81
62	Skanska (B)	C	-20.85
63	Veidekke	C	-27.04
64	NCC (B)	C	-27.78
65	Tecnicas Reunidas	C	-28.22
66	Astaldi	C	-56.75
67	Trevi Group	C	-60.00
68	Carillion	C	-92.64

results for the first three quarters of 2017, it announced a 4% rise in revenues to €2.36 billion, compared to the €2.28 billion recorded in the corresponding period of the previous year.

Wienerberger's EBITDA (earnings before interest, taxes, depreciation and amortization) also grew by 4% to €315 million, from €302.6 million in the first nine months of 2016.

Net profitability rose significantly by 38%, from €68.7 million in the first three quarters of 2016 to €94.7 million in the same period of 2017.

The company reported strong growth in Eastern Europe and healthy development in large parts of Western Europe for its Clay Building Materials Europe business, though the market situation in Belgium and Germany was challenging.

Meanwhile, its subsidiary Pipes & Pavers Europe enjoyed positive infrastructure business in Eastern Europe and the Nordic core markets.

SHARE PRICE DROP

Among the materials companies that saw a fall in share price was Irish-based CRH, whose share price dropped by 3.7% over 2017.

In its financial results for the first three quarters of the year, the company reported a 2% rise in sales compared with the same period in the previous year. Cumulative sales for the nine months to the end of September amounted to €20.7 billion.

CRH said that momentum remained positive in Europe, while in Asia, competitive market conditions continued.

For the full year, the company predicted that EBITDA, including discontinued operations, would come in at €3.2 billion, compared to 2016's €3.13 billion.

CRH made a number of acquisitions over the course of the year, including about €690 million worth of acquisitions and one investment in the Americas.

The materials division completed 11 bolt-on acquisitions, including two in Canada adding a further 2 billion tonnes of aggregates reserves. The products division completed seven acquisitions and one investment, at a cost of around €165 million.

In Europe, about €650 million was spent on eight transactions – five acquisitions and one investment in Europe Heavyside, and two acquisitions in Europe Distribution.

The largest acquisition was Fela, a lime and aggregates business in Germany. This brought 1 billion tonnes of limestone reserves to the group, with the company being acquired at the end of October 2017.

LafargeHolcim's share price dipped slightly over 2017, by 2.28%.

The Swiss-listed cement firm faced allegations early in the year that senior executives at the firm's Jalabiya plant, in Syria's north-east, agreed to pay protection money to potential terrorist organisations.

The company's chief executive, Eric Olsen, later stepped down in an effort to draw a line under the scandal, although, following an internal inquiry, LafargeHolcim said he "was not responsible for, nor thought to be aware of, any wrongdoings".

In its third quarter 2017 financial results, the company reported 4.1% year-on-year growth to CHF6.9 billion (€5.95 billion) on a like-for-like basis.

LafargeHolcim said that pricing, cost discipline and synergies contributed to higher margins, with operating EBITDA margin adjusted improving by 80 basis points in the third quarter, and 100 basis points for the first nine months. ce

KEY INDEXES

Index	Beginning of period	End of period	Change	Change (%)
CEE (Equipment)	311.82	410.10	98.29	31.52
CEM (Materials)	190.70	198.40	7.70	4.04
CEC (Contractors)	223.75	258.32	34.58	15.45
CET (Total)	236.05	278.20	42.15	17.86
Dow	19942	24923	4981	24.98
FTSE 100	7036	7677	641	9.11
Nikkei 225	19428	23506	4079	20.99
CAC 40	4829	5393	564	11.68
DAX Xetra	11545	13104	1559	13.51

Period: Week 1 - 52, 2017

A review of the past 12

A look at the major business events of the year in *Construction Europe* includes some notable success stories, as well as some massive failures

SEPTEMBER 2017

■ Troubled UK contractor **Carillion**'s group finance director, Zafar Khan, left the company with immediate effect, two months after a profit warning from the company. Also, chief operating officer Richard Howson, managing director of Carillion Construction Services Adam Green, and managing director of Carillion Services Nigel Taylor were due to leave the company on 30 September, 2017. Carillion made a number of appointments to the group executive. Emma Mercer was appointed chief financial officer with immediate effect.

■ South Korean company **Doosan Bobcat** said it would be transferring its heavy industrial subsidiary Doosan Heavy business to its infrastructure support business Doosan Infracore, to try to strengthen its position in the EMEA (Europe, Middle East and Africa) region. In the past, Doosan Bobcat EMEA had integrated the sales and distribution businesses of its compact and heavy construction equipment under a single umbrella in order to maximise synergy effects across both businesses. Doosan said this has had the effect of improving Doosan Bobcat EMEA's standing within the region. In part, the transfer was intended to enable Doosan Infracore to enhance the core competencies of Doosan Heavy by leveraging its functional expertise and taking full responsibility for the entire value chain, from sales and product development to production, under a single global leadership.

■ At an extraordinary general meeting, the boards of directors of Finnish contractors **Lemminkäinen** and **YIT** officially agreed to combine the two companies through a statutory absorption merger. All assets and liabilities of Lemminkäinen were to be transferred without a liquidation procedure to YIT, and Lemminkäinen would be dissolved. Subject, in part, to merger control approvals from competition authorities, the merger was intended to be completed on either 1 November, 2017, or 1 January, 2018. As a result of one-off transaction costs related to the merger, Lemminkäinen altered its profit guidance for 2017, estimating that operating profit would decrease to less than €45.1 million.

OCTOBER 2017

■ Andrew Davies was appointed CEO of **Carillion**, with effect from 2 April, 2018, at which point he was also to join the board. It was said that Keith Cochrane would continue to lead Carillion as interim CEO until then. Andrew Davies was the chief executive of Wates Group, another UK-based contractor, at that time, having been appointed to the role in 2014. He was due to leave Wates on 10 November, 2017.

■ Finnish-based **Metso** decided on a new operating model and organisation of the group, which was due to come into effect at the start of 2018. This followed Metso's announcement earlier in the year that a restructuring within the company was going to lead to two separate business areas – Minerals Services and Minerals Consumables. It was said that the reshuffling was designed to accelerate the company's strategy implementation. Metso was aiming for profitable growth by strengthening its service and product businesses in the minerals and flow control markets. The company said this growth would primarily be sought organically, while some would be achieved through acquisitions.

■ The road construction equipment division of Atlas Copco, branded **Dynapac**, became officially owned by French-based **Fayat**. The finalising of the deal announced earlier in the year saw Fayat strengthen its strategic position in the road construction and maintenance segment. The agreement included sales and services operations in 37 countries, production units in four countries – Sweden, Germany, Brazil and China – and a production partnership in India. The Dynapac division was to continue to produce rollers for asphalt and soil applications, pavers and planers, operating as an autonomous manufacturer under the Dynapac brand. Coinciding with the acquisition, Dynapac revealed a new visual identity for its products, painted in red, white and grey.

NOVEMBER 2017

■ **Carillion** issued another profit warning, saying that it thought that its profits for the year to 31 December, 2017, would be "materially lower than current market expectations". It said that it now expected that a combination of delays to certain PPP (public-private partnership) disposals, a slippage in the start date of a significant project in the Middle East, and lower than expected margin improvements across

OCTOBER 2017: A new, low traffic district with approximately 1,350 homes is to be created in Amsterdam, the Netherlands, following the acquisition by the Bam Group's area and property developer AM of the former Bijlmer prison from the Rijksvastgoedbedrijf (the Central Government Real Estate Agency). AM – as leading partner in a consortium with AT Capital, Cairn and the designers OMA and LOLA Landscape – will develop the new district, Bajes Kwartier. The consortium is paying more than €84 million for the site. Bam said that all new buildings would be completely energy-neutral and the houses would be well insulated. Most of the energy needed will come from solar panels. In addition, wind energy will be provided by roof elements with built-in wind turbines. The organic waste from the district will be transformed into electricity.

months

a small number of UK Support Services contracts – partially offset by cost savings initiatives realised in the fourth quarter – would lead to the fall in profits. The company added Alan Lovell as a non-executive director of the company, with effect from 1 November, 2017.

■ **Visedo**, a company which specialises in electric solutions for the off-highway and marine markets, was acquired by Danfoss, which said it was continuing to invest in innovation to enable further growth. Danfoss, based in Denmark, engineers technologies that are used in areas such as refrigeration, air conditioning, heating, motor control and mobile machinery.

■ **Lemminkäinen**'s paving division was looking to improve its competitiveness and profitability in Sweden and Norway through a new programme aimed at saving fixed costs. The Finnish-based contractor said that the market outlook was good in both Sweden and Norway, but that it had suffered from the intense price competition and weak operative performance. It said that it felt that to improve its competitiveness and profitability, it needed to re-estimate its regional presence and seek ways to lighten its operating model in both countries.

DECEMBER 2017

■ **Atlas Copco** announced that its hydraulic attachment tools division would become part of **Epiroc** with effect from 1 January, 2018. The division, which has a 100-strong product range, manufactures hydraulic breakers, cutters, pulverisers, bucket crushers, shears, grapples and magnets. All current products were due be delivered with Epiroc branding from 1 January onwards. The company said it would be business as usual for the division, with products manufactured in the same facilities, developed by the same research and development teams and marketed by the same faces to the customer.

■ **Metso** president and CEO Nico Delvaux resigned from his post at the Finnish company, to take up the same role at lock manufacturer Assa Abloy, having joined Metso in August 2017. Assa Abloy is based in Sweden and claims to be the world's largest lock manufacturer by sales volume. Delvaux said, "I was offered a once-in-a-lifetime opportunity that I could not turn down."

■ **Caterpillar** announced it was to enter into the utility vehicle market (UTV), following a manufacturing and supply agreement with Textron Specialized Vehicles. The company said it would offer UTV models sold through participating Cat dealerships, starting in 2018. Cat's new UTV models were developed in collaboration with Textron Specialized Vehicles, a division of Textron. The company's new models were said to handle up to 450kg of material and tools, and offer 900kg towing capacity.

NOVEMBER 2017: Laing O'Rourke was chosen as the preferred contractor for the retail extension of the Brent Cross Shopping Centre in London, UK. Hammerson and Standard Life Investments, the joint owners of Brent Cross, have appointed UK-based Laing O'Rourke under a pre-construction services agreement as part of a two-stage tender process for the main construction works, with an overall value in the region of £700 million (€784.65 million). Laing O'Rourke was due to work with Hammerson and Standard Life Investments to finalise the design and procurement to enable a start on site in 2018. The regeneration of Brent Cross will double the size of the existing centre to 186,000m² of retail and leisure space.

JANUARY 2018

■ **Carillion** went into compulsory liquidation, having failed in its attempt to persuade stakeholders, including the UK government, to provide help. The liquidation also affected other companies, including **Balfour Beatty** and **Galliford Try**, involved in joint ventures with Carillion, which described itself as an integrated support services business. It employed around 43,000 people, and its operations were in the UK, Canada and the Middle East. It claimed annual revenues of more than £5 billion (€5.62 billion). Carillion Canada – a Canadian subsidiary – said in a statement that it was not in liquidation and would continue uninterrupted.

■ Final approval for the merger of Finnish contractors **Lemminkäinen** and **YIT** was granted by the Finnish Competition & Consumer Authority (FCCA), and the deal was expected to be completed on 1 February, 2018. The FCCA had already said that it would approve the merger unconditionally. The Finnish Market Court had granted the FCCA an extension for investigating the merger until 26 January, 2018, and the FCCA had said it would issue its final approval decision on that date. With the FCA's final approval of the merger, Lemminkäinen and YIT had received all required authority approvals for completing the merger.

■ After discussions with a syndicate of banks, Italian-based construction company **Astaldi** completed the process of redefining the financial covenant for its €500 million revolving credit facility (RCF). The new boundaries laid out in the contract will allow Astaldi more breathing space, accounting for the negative impact the Venezuelan market had on the firm's financial results announced at the end of September 2017. The margins of interest applied to the RCF have not changed.

FEBRUARY 2018

■ Following final approval for the merger of **Lemminkäinen** and **YIT** from the Finnish Competition & Consumer Authority (FCCA), YIT announced its new structure and reported a financially successful 2017. The company's reportable segments were said to be housing in Finland and CEE (Central and Eastern Europe), housing in Russia, business premises, infrastructure projects, paving, and partnership properties. In its full-year financial results for 2017, YIT announced that it had achieved key strategic objectives.

■ Small businesses and workers affected by the crash of UK contractor **Carillion** were in line to benefit from a package of £100 million (€112.94 million) from the British Business Bank, the UK's national economic development bank. Also, UK Finance – a trade association for the UK banking and financial services sector formed in 2017 – confirmed an additional multi-million-pound package for SMEs and extra help for customers concerned about their mortgage or credit card payments.

■ With the crash of Carillion still reverberating around the UK construction sector, fellow UK company **Galliford Try** was looking to raise £150 million (€168.36

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million) of new equity capital from its shareholders in the following weeks. Galliford Try's CEO, Peter Truscott, said, "We have reviewed the impact on our business from the compulsory liquidation of Carillion, which has resulted in a further reassessment of the likely out-turn from our participation in the Aberdeen Western Peripheral Route (AWPR) joint venture, leading to an exceptional charge of £25 million (€28.07 million). Reflecting the additional financial obligations arising from this contract, we have today announced our plans for a capital raise of £150 million."

MARCH 2018

■ **Alpiq Engineering Services**, part of Swiss energy company Alpiq Group, was acquired by **Bouygues Construction** and **Colas Rail**, the rail subsidiary of the Bouygues-owned Colas Group. Alpiq Engineering Services employed around 7,650 people in total, and reported sales of approximately CHF1.7 billion (€1.45 billion) in 2017, saying this was chiefly generated in Switzerland (57%), Germany (24%) and Italy (12%). Bouygues said the acquisition positioned Bouygues Construction as a leading player in energy and services in Europe, and was therefore fully in line with its development strategy for this growth market.

■ UK manufacturer **JCB** announced it would create 600 new jobs in the following three months, with 200 available for immediate start. The company said a healthy order book had meant it needed 200 operatives immediately, including welders, paint sprayers and assemblers. It added a further 400 staff would be required within 12 weeks.

■ Austrian crushing and screening specialist **Rubble Master** continued its expansion by becoming majority owner of **Maximus**, a UK-based screen manufacturer. Maximus, with 120 people and headquartered in Northern Ireland, develops and manufactures mobile tracked screens. Rubble Master – which operates in more than 100 countries worldwide through around 80 sales partners – said the range of products complemented its own equipment portfolio and fits with its plans for growth.

APRIL 2018

■ South African-based **Barloworld**, Caterpillar's dealer in Spain and Portugal with BWIberia, said it was selling its business there to Cat's dealer in Italy and the Balkans – **Tesa**, which operates as CGT. Quinton McGeer, CEO of BWIberia, said that despite the implementation of a business improvement plan, analysis of Iberia, the market potential and growth rates had led the company to conclude that these conditions would not allow it "to achieve the Barloworld group's return expectations as a South African-headquartered company with emerging market capability".

■ Total sales at the **Liebherr Group** in 2017 were €9.85 billion, up 9.3% on the previous year – the highest figure ever recorded by the construction equipment manufacturer. Western Europe, especially Germany and France, saw a significant increase, the company said. Performance in Eastern Europe, particularly in Russia, was described as encouraging. Rises were also seen in the US, the Far East and Australia. Falls were recorded in the Near East, the Middle East and Africa. Construction machinery and mining equipment sales were up 14.5 % to €6,182 million. Sales in the earthmoving division were up €411 million, or 19.8 %, to €2,485 million.

■ **Metso** agreed to acquire Swedish aggregate machinery provider **PJ Jonsson och Söner**, which specialises in mobile crushing and screening equipment. The value of the transaction was not been disclosed, but PJ Jonsson och Söner's sales in 2017 reached SEK342 million (€33 million). With this acquisition, Metso said it aimed to strengthen the breadth and availability of its product and service offering for the aggregates industry in the Nordic region. The acquisition was completed in July 2018.

■ Power solutions provider **Rolls-Royce** agreed to sell its fuel injection systems business L'Orange – including its related operations in Germany, the US and China – to US-based **Woodward** for €700 million. Woodward is a designer, manufacturer and service provider of control system solutions and components for the aerospace and industrial markets. The fuel injection technology supplied by L'Orange is used in engines that power a wide range of industrial equipment, including special-application vehicles and power generators.

MAY 2018

■ Reckless greed among **Carillion**'s board members and a "rotten corporate culture" were blamed for the company's collapse in the final report of the inquiry into Carillion's failure. The report was published by the Work & Pensions and BEIS (the UK government's Department for Business, Energy & Industrial Strategy) committees. The 30,000 suppliers, sub-contractors and other short-term creditors for whom Carillion was said to be a notorious late payer were said to be unlikely to get back much of the £2 billion (€2.29 billion) they were owed. Despite the fact that Carillion's board of directors presented themselves as the victims of coincidental and unforeseeable mishaps, the report suggested they were, in fact, culpable for the company's failure because the problems that caused the collapse were long in the making.

■ **Hitachi** launched a rental initiative in Europe with its dealers offered mid-sized machines for medium- and long-term rentals. Hitachi said it would own the machines, with dealers paying a monthly fee to the manufacturer. The target was for the rental fleet to reach 1,000 units by 2020 with 50 units already available and around 300 by March 2019. Hitachi Construction Machinery (Europe) invested an initial €11 million in new machines for the venture and planned to spend around €100 million by 2020. The plan represented a significant shift in its European strategy, with Hitachi believing that it had to be active throughout the supply chain, from manufacture, sales and service to rentals and used equipment sales. Unlike other OEM rental initiatives, such as Caterpillar's Cat Rental Store network where dealers invest in their own rental fleets, Hitachi decided to own the rental fleet and make it available to dealers through monthly fees.

■ New orders of around €1 billion were said to have been acquired by Italian-based contracting group **Salini Impregilo** since the start of the year. The group's total pipeline of tenders and project initiatives was reported to be over €52 billion. Of the new orders acquired in 2018, €450 million was accounted for by projects to be finalised, >

FEBRUARY 2018: Porr Deutschland was awarded a €360 million contract by the North Rhine-Westphalia Roads Agency for the demolition, new construction and expansion of the motorway bridge over the River Rhine at Leverkusen, Germany, on the A1 from Dortmund to Koblenz. The Rhine bridge is described as one of the busiest motorway bridges in Germany. A significant amount of the long-distance traffic on the A1 towards Belgium and France goes over the bridge. The existing A1 bridge is around 50 years old, has six lanes and is used by 120,000 vehicles a day. When completed in 2024, the capacity of the bridge will increase from six to eight lanes.

and €150 million for variation orders and share increases in ongoing projects. Among the main projects for Salini Impregilo were the extension of line 14 South, Paris Metro, which is worth €203 million. Salini Impregilo won a contract to extend the Metro line to Orly airport south of the French capital. The project marked not only the group's return to France after 20 years, but also its entry into the Grand Paris Express, the massive project that will expand the city's public transport network to the periphery by 2030.

JUNE 2018

Activity at **Vinci Construction** was said to have stabilised, but order intake in the division at 30 June, 2018, was reported to have fallen by 11%. In its first half results, the French-based group reported revenue up 6.7% to €19.8 billion, with sustained traffic growth at Vinci Autoroutes, a strong increase in Vinci Airports passenger numbers, and higher contracting business levels in France. The contracting segment of the business includes Vinci Energies and transport infrastructure firm Eurovia as well as Vinci Construction. Vinci said the upturn in business levels that had begun in 2017, continued at Vinci Energies and Eurovia, while activity at Vinci Construction stabilised.

Salini Impregilo reported adjusted consolidated revenues for the first half of 2018 of €2.62 billion, compared to €2.85 billion for the same period a year ago. The figure included €109.6 million and €130.1 million revenues from non-consolidated joint-ventures – works under management – relating to US subsidiary Lane Construction. Including Lane's Plants & Paving division and at constant exchange rates, consolidated revenues were said to be €2.83 billion for the first half of 2018, which compared to approximately €2.82 billion in the first six months of 2017. Salini Impregilo said it was currently close to selling the Plants & Paving business.

The **YIT** group's first half results were said to have improved since the first months of the year, but president and CEO Kari Kauniskangas said it was not satisfactory as the segments had performed unevenly. The Finnish-based contractor said that cash flow and order backlog had strengthened. In the three months from April to June, operating cash flow after investments amounted to €129.9 million. Order backlog was reported to have grown by 9% from the level at the end of March 2018, and was €5.07 billion. A year earlier, this figure stood at €4.64 billion.

JULY 2018

US-based manufacturer **Dana** signed an agreement to purchase the Drive Systems segment of **Oerlikon**, a manufacturer of high-precision gears, planetary hub drives and products that support vehicle electrification, based in Switzerland. Committed financing was arranged to complete the transaction, which was worth CHF600 million (€519.40 million). It was said that the deal would provide Dana great scope to drive profitable growth because it extended the company's technology portfolio, provided products, controls and software that support vehicle electrification in each of Dana's end markets, and it enhanced the company's global manufacturing presence. The acquisition also added five R&D (research and development) facilities to Dana's network of technology centres.

JULY 2018: The design of the structure, façade and mechanical, electrical and plumbing (MEP) engineering of the new 38,000m^2 Istanbul City Museum in Turkey is to be overseen by UK-based building engineering company Newtecnic. The company was chosen by Salon Architects. The museum is currently being built in the Topkapi district of the city. The firm's US- and UK-based design-engineering teams have been deployed to develop, validate and communicate reliable strategies and plans to optimise all building components and the construction process, based on an evolving 3D digital twin of the project. It was said that algorithms had been created to ensure that the interrelated structural and MEP elements of the building were effectively integrated. The museum is due open in mid-2019.

Nordic and US-based steel company **SSAB** agreed to sell Ruukki Construction's business operations in Russia – Ruukki Rus – to open joint stock company **Salavatneftemash**. The transaction was expected to complete in the fourth quarter of 2018, and was subject to the approval of the Russian competition authority. SSAB said the transaction excluded the right to the Ruukki brand. Ruukki Construction's business operations in Russia were said to consist largely of building frame and envelope structures, with logistics, agricultural, industrial and commercial construction as its most important customer segments in Russia. The transaction now being completed excludes residential roofing products. However, Ruukki Construction will withdraw from local roofing business operations in Russia.

AUGUST 2018

French contractor **Vinci** announced that the result of a vote at its most recent shareholders' general meeting, held in April, had to be changed as a result of an IT glitch that caused an error. The IT malfunction within the banking network changed the number of voting rights, which then had to be reduced. The correct quorum was 57.59%, as opposed to the 58.99% originally stated. As a result of the correction, only 49.49% voted in favour of the proposed 12th resolution, meaning that the services agreement between Vinci and **YTSeuropaconsultants** was rejected and so the agreement was terminated. According to Vinci, the agreement would have enabled the group to benefit from services performed directly by Yves Thibault de Silguy, vice chairman and lead director of the board of directors at Vinci, as part of high-level missions to government authorities and major customers and partners of the group in France and abroad.

Salini Impregilo Group subsidiary **Lane Construction Inc** announced the signing of a contract for the cash sale of Lane's plants and paving division to **Eurovia SAS**, part of the **Vinci Group**, for a total of $555 million. These operations, based in ten states in the US, generate over $600 million in annual revenue and include approximately 40 asphalt-production plants and several quarries. Salini Impregilo said that the sale was in line with its plan to consolidate its growth strategy in large infrastructure projects in the US by exiting from non-core and non-strategic activities. The transaction was subject to clearance by regulatory authorities.

Irish building materials supplier **CRH** reported continued profit growth in the first half of 2018. The company's CEO, Albert Manifold, said, "We have had a good first half despite significant weather disruption in Europe and North America in the first quarter. Construction markets continued to recover and pricing gathered momentum in key European markets while there was solid volume and price growth against a positive economic backdrop in the Americas." Profit before tax was up 5% on the 2017 figure, reaching €497 million in the first half of 2018, compared to €475 million in the same period of the previous year. ce

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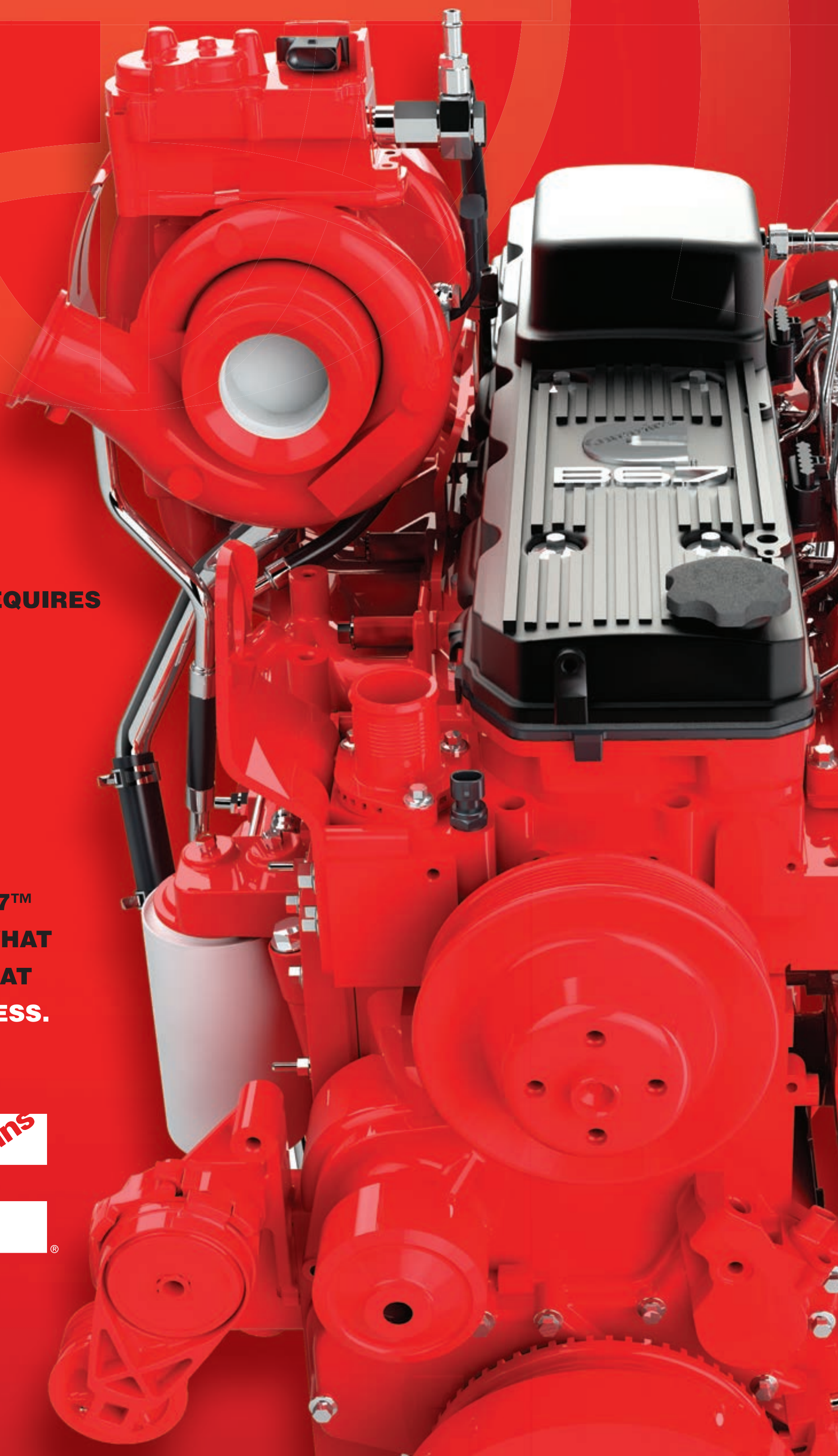

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Benefits of

Management consultant McKinsey & Co recommends collaborative contracting practices, and this is discussed by Lukasz Abramowicz**, a partner in McKinsey's Warsaw office;** Jim Banaszak**, a partner in the Chicago office;** TG Jayanth**, an expert in the Houston office; and** Homayoun Zarrinkoub**, an alumnus of the Montreal office**

Full implementation of integrated project delivery (IPD) or other forms of alliance contracting isn't for everyone, but everyone can and should implement collaborative contracting practices today to improve project outcomes.

Alliance contracting – also called integrated project delivery (IPD) in the US – in which owners, contractors and engineers are integrated into a single contract, has been heralded as the cure for what ails contracting. Indeed, many large firms in other industries, such as retail, healthcare, and financial services, have had great success with IPD.

But for many major construction projects around the world, full-blown IPD implementation may not be feasible. When the owner of a major project is bound by public procurement rules, for example, it is nearly impossible to award contracts to any party but the lowest bidder.

In many other cases, corporate governance functions and the banks that finance projects restrict owners' ability to rewire contractual frameworks completely, and limit their options for recourse when a contractor performs poorly.

Fortunately, this is not an all-or-nothing type of dilemma. There are many collaborative practices – some borrowed from the IPD playbook, others created as innovations in traditional contracting – that construction project owners and contractors can implement today to align the objectives of all parties better, and to boost productivity.

Collaborative contracting, like IPD, treats projects as mutual enterprises. But in the collaborative approach, parties work within the boundaries of traditional contracts, with their agreements resting on a fundamental belief that owners and contractors both want the best possible outcome, and that each party brings unique strengths and capabilities to the table.

Only if participants hold these beliefs – and implement a number of simple but important collaborative practices – can collaborative contracting lead to better project outcomes.

Each stage of a project life cycle presents multiple opportunities for collaborative practices, and in many cases these practices will have a meaningful impact on delivery times and costs, and improve project performance on other metrics, such as safety and quality.

POTENTIAL INCENTIVES

To achieve these benefits, owners must be open to incorporating contractor input early in the process, while selecting the right contractors, clearly articulating the potential incentives, and then working collaboratively with those contractors to develop, apply, and standardise best practices.

For the vast majority of construction project owners and contractors today, the default mode of interaction is adversarial. Both parties fiercely guard their perceived commercial interests and protect against inequitably allocated risks.

This misalignment results in cost inflation, project delays and shortcomings in quality, safety and performance.

In IPD-style contracting, the parties seek to align incentives better by replacing individual transactional contracts – such as those between owners and prime contractors, or between a prime contractor and its subcontractors – with a single agreement signed by all parties.

Collaborative contracting is also geared toward building better relationships, but it lies within the fold of traditional contracting.

It encourages more co-operative relationships along a project's contracting lifecycle, which of course is a central tenet of IPD, by offering incentives for various co-operative

Owners must be open to incorporating contractor input early in the process

collaboration

practices and behaviours. And it achieves this collaboration without completely overhauling the way the contractual relationships work.

KEY PRINCIPLES

The incentives to collaborate are based on four key principles.

First, everyone involved in a project, from the owner to the primary contractor to the subcontractors, should work to articulate a common vision, which involves agreement on target cost and schedule, and defining what constitutes success for the project and for the individual companies involved.

Next, contractors must have the expertise to steer a project towards efficient delivery and positive outcomes. Owners must use this expertise to help encourage specific behaviours that lead to better project outcomes. This takes the form of early contractor involvement in site selection, design constructability reviews, locking a scope at the appropriate time, and long-lead procurement support.

The third principle is that contractors must be allowed to earn a reasonable return on the work, and both risk and reward should be shared.

Finally, performance management and production planning must be done collaboratively and at a systemic level.

To some degree, market forces have made this type of collaborative approach a sheer necessity in contracting.

For example, on the Gulf Coast of the US, modularisation and prefabrication have led to the replacement of on-site, "stick-built" LNG liquefaction plants with plants built from multiple mid- and small-scale process units. This shift has already begun to dilute some of the power of the large construction contractors by forcing them to collaborate with the process-module fabricators, which are fast becoming significant players in this new model.

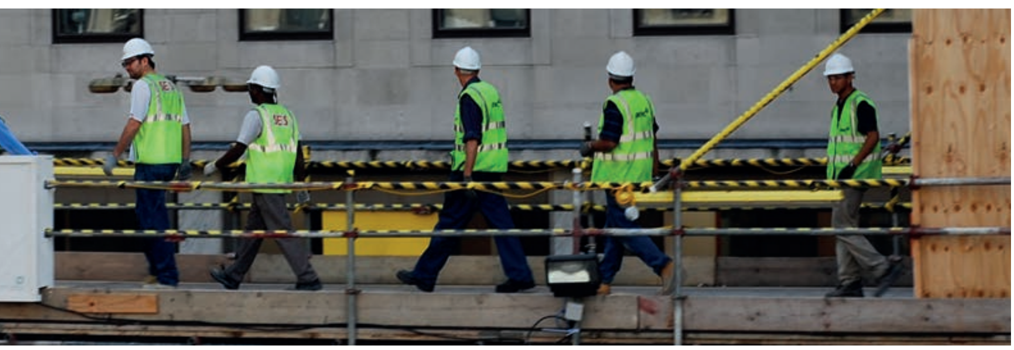
As always, such major changes to convention pose formidable challenges. Participants that cling to the old ways of maximising their own profit will exacerbate these challenges. When major-project owners seize the opportunity to bring diverse interests together under the umbrella of collaborative contracts, on the other hand, they can drastically boost their chances of success.

Everyone involved in a project should work to articulate a common vision

Common misconceptions notwithstanding, collaborative contracting is feasible in many different industries in both the private and public sectors. Based on our experience, we've identified a series of practices built on the four principles above that owners can initiate to spur a more collaborative approach.

Get contractor input early

During the contracting-strategy phase of a project, when owners are deciding on scope and delivery models for each phase of the project such as engineering, procurement and construction (EPC), or engineering, procurement and construction management (EPCm), they would benefit from contractors' input on their capacity and appetite for financial risk.



By soliciting contractor input early in the process, one large oil and gas company was able to design a smart contracting strategy for a technologically and geographically challenging project. It also reduced the duration of the tendering process and improved contract terms for both sides, since the company already knew the capacity and risk appetites of its potential contractors.

Co-create the scope and schedule

Before releasing a request for proposal, contractors eager to help shape a project can work with owners to co-create the scope and schedule. For example, when a European utility engaged in a structured process of consulting on the impact of schedule requirements on bid value with multiple contractors, it was able to reduce the cost of an EPC package for a gas-fired power plant by 27% compared to the first tender, run traditionally just a few years earlier.

Choose the right contractors

When evaluating proposals, owners need to make sure that potential contractors have what it takes to get the job done well.

A rigorous process begins with screening a full list of general contractors for basic >

Owners can find ways to encourage contractors to improve performance

attributes such as financial strength, compliance and safety, team experience and performance history. Then owners can assess proposals for strengths and weaknesses among the people and processes, including a judgment on whether a given contractor is committed to a better contracting model, and is open to sharing cost and other information.

When contracting for a portfolio of plant projects executed over an extended period, owners should ensure that contractors prioritise long-term relationships over short-term profits.

For example, when a metals smelter in Europe needed to select three general contractors for a large project, the owner first conducted quick financial due diligence on all bidders to minimise the risk of selecting a weak contractor. The owner then designed a multifactor selection formula which rewarded contractors' experience on similar projects and their ability to assemble a strong team with experience working together.

Design win-win incentives

During the tender process, owners should design – and discuss with potential contractors – a win-win incentive scheme that can be linked to and propel the value that's actually delivered.

This scheme might align contractor incentives with key operational milestones, such as the production of the first saleable product in the case of a manufacturing plant, or the first product "in tank" in the case of a refinery or chemical plant.

The amount of the incentive should be commensurate with value added. For instance, a European utility building a conventional power plant found ways to offer its EPC contractor incentives for improved boiler efficiency, a key quality parameter that had enormous implications for the net present value of the project.

The incentive resulted in the parties improving efficiency by nearly a percentage point, and the contractor received part of those savings.

Define processes that help capture value.

Unfortunately, even the best-designed incentives won't generate value by themselves. Throughout the project, owners must also create processes that encourage contractors to be aware of those incentives and take advantage of them.

For example, owners can continuously find ways to encourage contractors to innovate and improve performance by implementing advanced production planning and lean processes. A North American utility-scale renewable energy developer used this approach to form an alliance of preferred contractors. These contractors shared ideas with the owner for shrinking costs, such as reducing manpower and improving designs, in return for a portion of any savings generated. Over the course of two years, the approach saved 3% to 5% per project.

In our experience, owners that follow these steps to creating more collaborative partnerships attract contractors that are better partners. Contractors that respond to concepts such as collaboration and win-win incentives are more likely to enter into partnerships with an open-minded approach.

CLEAR VISIBILITY

Of course, for collaborative contracting to work, contractors must be willing to provide clear visibility into project cost drivers, including subcontractor costs, which is not always a comfortable concept.

Contractors must also agree to remain responsible for cost and productivity performance within its assigned scope. In return, owners must be willing to cover all of the contractor's reasonable costs, if conditions outside the contractor's direct control affect project schedule and cost.

When these conditions are met, we have seen significant and continuous improvement in project outcomes.

Owners may fear that collaborative contracting will be difficult and time consuming. But done right, it should never be overwhelming. Reaching a collaborative contracting agreement shouldn't take more than 18 weeks from start to finish – it takes weeks, not months, for owners to identify key goals, and months, not years, to reach them.

And a pilot programme can be rolled out relatively quickly. As with most business transformations, however, while all parties will enjoy some of the benefits of partnership right away, it could take several months to achieve the full benefit.

Across all sectors and asset classes worldwide, we have seen some project owners reap the full benefits of collaborative contracting. But to facilitate the effective delivery of large and complex projects, and to break the construction productivity curse, more owners must embrace true collaboration in contracting.

Moving from an adversarial approach to a collaborative model means taking into account the many construction value drivers beyond up-front bid price.

It also requires both owners and contractors to believe that they can indeed share and apply best practices, continuously learn, correct errors, and to plan better to reduce management complexity and cost.

But in the end, our experience suggests owners must lead the charge toward collaborative contracting, and that they will find willing partners with their most motivated contractors.

More about McKinsey's Global Infrastructure Initiative can be found at globalinfrastructureinitiative.com. ce

Strengths and weaknesses among the people and processes can be assessed

ADVERTORIAL

'We foresee a digitalised construction world in that excavators dig holes alone'

Start-up company Vemcon rethinks simplified machine control ensuring that man, machine, and material are perfectly aligned in the work process and with this increase productivity substantially. Founders **Jan Rotard** and **Julian Profanter** explain their vision of construction sites without heavy physical work

Control heavy machines with a joystick and a CoPilot – the Vemcon founders Jan Rotard and Julian Profanter are pursuing this idea, and since the foundation of their start-up in 2012, based in Haar near Munich, they have already launched a series of operating systems on the market, each of which is adapted to the needs of the users.

What they have in common is that hand movements can be translated into tool movements in an intuitive and logical way. With joysticks, operating concepts that are precisely tailored for different machines and processes, operator assistance solutions, self-learning software and cloud services, Vemcon simplifies machine operation up to the point of full automation.

They facilitate the control of excavators, graders and attachments ensuring that man, machine and material are perfectly aligned in the work process.

HOW WILL THE CONSTRUCTION INDUSTRY LOOK LIKE IN THE NEAR FUTURE?

Jan Rotard: The construction industry will continue to grow. Construction companies have to co-ordinate their numerous projects, manage those in ever shorter timeframes and will have to increase transparency and efficiency of work processes to reach higher productivity levels.

Furthermore, the industry is threatened by a shortage of skilled workers. In order to meet those challenges and also demands by the state, such as applying BIM to major building projects, companies are looking into the possibilities and chances of digitalisation.

Thanks to digitalisation the industry will experience construction areas, where man, machine and material are communicating with each other, and work seamlessly together. The starting points are easy-to-operate machines with joysticks that offer numerous useful functionalities to simplify machine control.

Similar to road traffic, machine operators are supported by driver assistance systems. Those take physical and mental burden from the driver and help to manage their ever-increasing workload.

The development will even go beyond pure driver assistance. Thanks to the connectivity of machines, those will be able to communicate with each other, and through this co-ordinate work processes autonomously. Companies that take advantage of the opportunities offered by digitalisation, will manage more projects, win new clients, increase profitability, and therefore remain competitive.

This interview is part of a series, Construction Start-up Radar by consultancy Roland Berger.

WHAT MAKES YOUR COMPANY SPECIAL?

Julian Profanter: We rethink machine control. In this context we offer technologies and products that start with easy machine control through tailormade joysticks, cover driver assistant systems, and end in virtual operators that enable autonomously operating machines.

Jan Rotard: The starting point is our in-depth knowledge about work processes and our hands-on mentality on construction sites. We combine this with our expertise in hydraulics, robotics, ergonomics and artificial intelligence in order to enable work processes, in that man, machine and material work seamlessly together and with this increase productivity. The result is the development of unique selling points for OEMs and retrofit solutions for the aftermarket.

The heart of our solutions is a modular system platform, which can be supplemented with various hardware and software modules, depending on the desired degree of support and automation. In addition to OEMs and retrofitters, our clients are operating companies,

Rotard (left) and Profanter founded Vemcon in 2012 and also providers of digital services. In short: We cover the complete value-added chain. Furthermore, we go beyond the construction industry and cover the agriculture, communal, mining, material handling industries in the same way.

Julian Profanter: We believe that our elaborate business model, combined with our hands-on mentality and our understanding of digitalisation and work processes is distinctive. It leads to unique solutions from a single source.

WHAT IS YOUR VISION FOR THE COMING YEARS?

Julian Profanter: We foresee a productive construction world in that excavators dig holes alone, rollers follow the grader without human help, agricultural machines plough the field while the farmer pursues other tasks. At the heart of this is Vemcon with its products, technologies and services.

Jan Rotard: We will be a technology company known worldwide for its hands-on approach and forward-thinking digitisation. OEMs will integrate our people into their teams and our solutions into their machines. Those machines will be easy to operate, communicate with the driver and with each other, and work (semi)autonomously. This will drive a new worldwide productivity wave in the construction industry that will find its way into more industries depending on mobile work machines.

WHAT DOES YOUR REVENUE MODEL LOOK LIKE?

Julian Profanter: We make our money by equipping mobile work machines. When upgrading, the focus is always on the simplified control of the machine.

This can be achieved on the one hand through hardware, such as our easy-to-use ergonomic joystick, and on the other hand through software in our driver assistance systems, the Vemcon CoPilot, or in our Vemcon Toolmanagement for the plethora of required tools for the machine, and in our Vemcon Virtual Operator, that enables the full automation.

In this context connectivity components are used for man-to-machine and machine-to-machine communication. Clients are able to combine, complement and expand the main components of their choice.

Jan Rotard: The second revenue streams are digital services. With our modular technology platform and the multiple modules, the prerequisites for future applications have already been created today.

By integrating software/apps, different modular functions can be activated.

Example: Today, the contractor activates the function of even extraction. On the next construction site, the operator also needs a function that prevents him from going beyond the defined areas. The company uses the Vemcon service and easily downloads the appropriate app.

Last but not least, and approved by customers, via our sensors we collect data that is valuable for providers in the digital ecosystem, who can buy this anonymised data in accordance with the law to develop and improve their services.

HOW IS YOUR COMPANY FUNDED?

Julian Profanter: At the beginning we were financed by bootstrapping and scholarships. With the help of the ESA BIC incubator we were able to speed up our development. Last year, we received seed financing from a strategic investor, Vector Venture Capital GmbH.

WHAT IS YOUR NEXT GOAL?

Jan Rotard: Vemcon serves a globally growing market that is about to take a technological leap forward. We are looking for companies and employees who share our vision as well as our hands-on mentality and contribute to the digitisation of the construction site. >

The Vemcon CoPilot driver assistance system

For the continuous development of our technologies and ongoing expansion, we are also looking for investors who are inspired by the chances of digitalisation, artificial intelligence and Internet of Things in the global multi-billion Euro market for heavy mobile machines.

WHO ARE YOUR KEY CLIENTS?

Julian Profanter: Our key clients include OEMs, dealers, suppliers and users, in particular construction companies, of mobile machinery. Mobile machinery covers, for example, excavators, graders, wheeled loaders as well as agricultural and municipal machinery.

WHAT ARE THE BIGGEST CHALLENGES YOUR CLIENTS ARE CURRENTLY FACING?

Jan Rotard: The challenge for construction companies is to increase productivity. They will succeed as soon as man, machine and material are perfectly integrated in the working process, work smoothly together and through this become more productive. For this they have to turn the advantages of digitalisation into reality.

One of the biggest challenges for construction companies is the shortage of skilled workers. This can be counteracted by the simplified operation of the machines. Operators are given machines with which they can intuitively work, training times are reduced. Furthermore they can considerably better cope with the increasing workload.

Manufacturers need to deliver the respective machines and the linked digital environment to construction companies. With this they must go beyond their traditional knowledge base and, at the same time, focus on time to market and competitiveness through unique selling points and new revenue streams. This is where Vemcon comes in with process knowledge, hands-on mentality, and the right technology.

WHAT OPTIONS DO YOU OFFER TO POTENTIAL CLIENTS TO FACE THEIR CHALLENGES?

Julian Profanter: Our decision-making processes are short, all our staff are very familiar with our products, technologies and chances of digitalisation. Therefore we can react fast and flexible to inquiries.

When working with clients we listen well and work with them on construction fields and in machines to understand the very detail of their challenges. When solving clients' problems, we do not only put a prototype on their table, but spend a lot of time on explaining what and how artificial intelligence is applied to work processes.

Jan Rotard: Furthermore, we train our partners and clients in their workshops on how to implement and run our systems. Also our dealers get an in-depth training on the functionalities of our system and guidance on how to sell those solutions best.

WHAT PREREQUISITES DO YOUR CLIENTS NEED TO BRING?

Jan Rotard: Trust, curiosity about change and the willingness to break new ground with new technologies that increase productivity, come with unique selling points, and open up new revenue streams.

Furthermore, it is more important to know what they don't need when working with us: they don't need to build up in-house departments specialised on the digital world of information technology, robotics and big data. They won't be able to do this within a reasonable time and cost frame. They will team up with Vemcon.

Julian Profanter: Looking into the situation on construction sites, operators of course need to familiarise themselves with the use of information and communication technology in their work processes. Just, like they are used to experiencing in their private lives, when driving a car or using the first smart home devices in their house.

Vemcon's key clients include OEMs, dealers, suppliers and users – in particular construction companies – of mobile machinery

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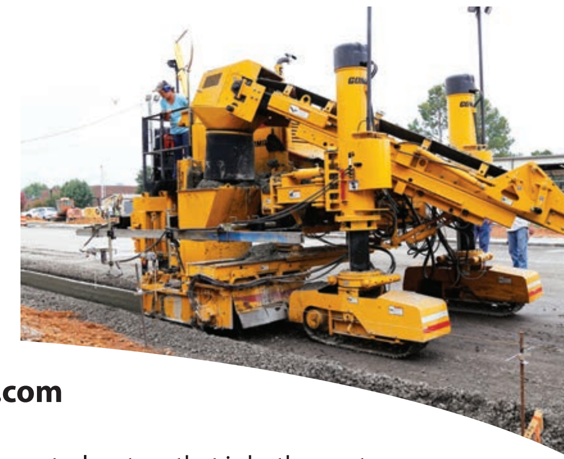


Katainen told the conference that two megatrends in the world economy in the coming years would be artificial intelligence (AI) and the circular economy

Major EU priority is to stimulate investment

Euroconstruct's 85th conference, held in Finland, heard from European Commission Vice President Jyrki Katainen, and Sandy Guthrie spoke to him

The public sector will continue to play an important role in housing and infrastructure investment, and in the face of increasing pressure on the public budget, innovative financial instruments could leverage public funding and draw investments from the private sector, according to European Commission vice president Jyrki Katainen.

Katainen, a former Prime Minister of Finland, leads the Jobs, Growth, Investment & Competitiveness project team at the European Commission, and he was speaking at the 85th Euroconstruct Conference in Helsinki, Finland.

He said that the commission had clear political guidelines that focused on 10 priority areas.

"Many of them matter for construction," he said. "In particular, stimulating investment is a major priority for the EU."

He said, "EU support alone would, of course, not be sufficient to close investment gaps in all areas. We need to mobilise the private investor. Without private engagement and money, we cannot achieve our objectives, and we must achieve a much higher leverage of public funds through wider use of financial instruments."

He explained that the European Fund for Strategic Investment (EFSI) addressed these investment deficits in the EU, using the EU budget in projects which were strategically important for the EU.

The investment fund has mobilised €290 billion in investments to date, according to Katainen, who said it was mostly private capital, out of a target of raising €500 billion by 2020. He added that almost 400 projects across Europe had been approved so far.

He said, "For the next budgetary period, which is supposed to start from the beginning of 2021, we propose to continue and scale up this kind of support in a single InvestEU fund.

"Its target will be to mobilise some €650 billion in total investment from 2021 to 2027."

BUSINESS ENVIRONMENT

Katainen told the Euroconstruct Conference that financing was not the only issue which had relevance for the construction sector. He said, "We also need to look at the business environment – at European level and also internationally.

"Two megatrends in the world economy in the coming years are artificial intelligence (AI) and the circular economy, and they both need to be looked at through the regulatory angles."

He said that if Europe wanted to promote these two areas, regulatory changes needed to be considered to let them flourish in Europe.

"The construction sector is at the very core of the modernisation of the European economy," he said. "Environmental challenges – not only challenges but also opportunities – the circular economy and artificial intelligence are the driving forces, and the construction sector is a facility for all the developments that we have seen."

He also mentioned smart buildings, and said that these factors were the reason that it could be expected that the construction sector should be one of the drivers in the years to come.

After the conference, Katainen talked more about artificial intelligence, saying, "There are two angles. The first one is to improve the smartness of buildings by using AI."

The second point, he said, was that, especially in urban areas, changes were coming >

> "We need to mobilise the private investor"
>
> **JYRKI KATAINEN**

about because cities used different ways of organising, for example, public transport and other public services.

"So there is an infrastructure investment need because AI will reshape the way we live in cities."

On the topic of investment by manufacturers, he said there was no one way of achieving this because Europe was so diverse.

"There are more drivers in the construction sector now than was the case, let's say 10 or 15 years ago.

"For instance, AI and everything that it enables for changing the physical environment in cities is one driver. Second, there is growing consumer demand for cleaner, low-carbon solutions on constructions."

SMART MOBILITY

He said that the development of smart mobility, for instance, was very different between the various regions and countries, but that this was another driver.

"There are different kinds of drivers which are not happening at the same time to the same extent everywhere. If 20 years ago there was a need for housing and a need for roads, now the drivers are more diverse."

He said, "What the EU can do in this respect is to support innovations in the construction sector. It's very important in order to achieve, for instance, climate targets and to improve productivity at the same time.

"The second thing is to provide financing to renew the existing building stocks to become more energy efficient, and this can happen everywhere – there is a need for this everywhere."

The Euroconstruct conference also heard from Anni Sinnemäki, Helsinki's deputy mayor for urban environment, who told delegates that growth, as was being seen in the city, was a positive thing.

"Helsinki is growing rapidly," she said. "There are 645,000 people, but there will be 860,000 by 2050."

A strategic master plan was formulated two years ago, with 5,000 homes to be built each year.

"Helsinki is different from the rest of the country – there is minus growth in the rest of the country," said Sinnemäki.

The goal, she said, was to reduce CO_2

> "Goal is to be carbon neutral by 2035"
>
> **ANNI SINNEMÄKI**

emissions by 60% in the period from 1990 to 2030, and to be carbon neutral by 2035.

"Last year was 24% lower than 1990," she said, "therefore we have to be faster."

She added that construction offered challenges, for both newbuild and refurbishment.

REFURBISHMENT

She said refurbishment was more complex and that it had to be considered whether the incentives were in the right place, and whether they should be stricter.

The main reason for the Euroconstruct conference was to look at the performance of the European construction market.

A research and consulting group, Euroconstruct was founded in 1975, and offers analysis of and forecasting for construction market trends in Europe. It has members representing 19 countries around Europe. Its 85th conference was hosted by its Finnish member – Forecon – and was held at the Finlandia Hall in the Finnish capital.

The conference heard that European construction was growing well on the back of low interest rates, good economic growth and "pent-up needs".

Forecon said that economic growth was expected to remain solid, unemployment would decrease, exports would grow, interest rates would remain low and the confidence of consumers, and business and industry, in the future was high.

As a result of this, tax revenue will increase, it said, allowing, for example, increasing investment in public construction, transport networks and other infrastructure. It added that urbanisation, immigration and internal migration, and ageing of the population were other important factors from the viewpoint of construction.

The Euroconstruct forecast at June 2018, suggested that European construction would grow 2.7% this year. It said the pace would slow down from last year's 3.9%.

Growth will continue in 2019 and 2020, but at a slower rate, it said, adding that construction would "no longer be the European engine of growth".

It pointed out that growth in European construction was broad-based and was seen in all main sectors – residential, non-residential and civil engineering, both new construction and renovation.

The role of new housing construction as the engine of growth was forecast to diminish and the focus of growth to shift to civil engineering construction.

Despite the growth, the volume of construction is below the 2007 level, the conference heard.

"European construction has seen large fluctuations in the last 10 years," it said. "After the financial crisis, construction contracted for five years and turned to growth in 2014.

"This is the fifth consecutive year of growth. As growth is expected to continue also in 2019 and 2020, the sector is in for a seven-year growth streak."

It said, however, that the rise from the 2013 low had been slow, and the volume of construction in the Euroconstruct area would still be 14% lower than in 2007.

"Considering the unhealthily high construction volumes of a few European countries before the financial crisis and the very powerful collapse, the volume of construction can be said to reach the 2007 level this year," it said.

FASTEST GROWTH

The Euroconstruct forecast said that 2018 and the next two years would see the fastest construction growth in Hungary, Poland, Ireland and Portugal.

It is predicting nearly 12% a year growth in Hungary, while it will be 7 to 8% in the other three countries.

Euroconstruct felt that growth would stop in the next few years in Finland, Germany and Sweden.

In the Eastern European (CEE-4) countries, it said growth was rapid. The expected average growth was said to be 7.5% per year, while that of the western European (EC-15) countries was 1.7%.

Euroconstruct noted that Nordic construction had grown briskly in recent years.

"In 2016 and 2017, it was about 5%, while the European figures stood at 2.5% and 3.9%. This year Nordic construction growth will slow to just over 3%, and in 2020 it will be only 0.5%."

It said that Sweden and Finland were responsible for the Nordic slowdown. In 2019 and 2020, the average growth was predicted to be somewhat negative in Finland and in Sweden, but would remain positive in Norway and in Denmark. ce

The Euroconstruct conference in Finland was held at the Finlandia Hall, Helsinki

4.0 to top the agenda

The new president of FIEC, Kjetil Tonning, tells Sandy Guthrie what his priorities will be

After nearly a lost decade, construction activity in Europe is "going better and better", according to the new president of FIEC (the European Construction Industry Federation).

However, Kjetil Tonning's two-year term as president comes at an interesting time for the industry in Europe, with the next election for members of the European Parliament due next year, and huge changes on the horizon.

He said those changes were probably going to happen faster than expected, because in his experience, it was hard to appreciate how fast the speed of development had been.

"If people had asked me ten years ago," he added, "I could not have predicted what was going to happen."

While much, if not all, of the FIEC focus is on the Brussels machinery, Tonning comes from outside the European Union. Having worked in the construction industry for more than 30 years, he has been at Veidekke, Norway's largest contractor, for four and a half years. Before that, he spent 11 years with NCC.

UNEQUAL POSITION

There are a number of main goals in his sights, including the perceived unequal position regarding Chinese state-owned enterprises (SOEs) and EU public procurement. Then there is the new posting of workers Directive concerning the cross-border provision of services within the EU.

Probably at the top of Tonning's list, though, is what is increasingly being called Construction 4.0 – the fourth industrial revolution. Effectively, this means the digitalisation of the industry, and everything that this entails.

Tonning said that a working group had been established within FIEC a couple of years ago, and that there had been a lot of interest from all the federations participating in it.

"So it is obviously at the top of the agenda, not only for federations but for construction companies – both large companies and small companies – involving the entire value chain."

He said construction had to ensure that it was part of the digitalisation process, rather than just the IT industry.

"If we are not involved, the IT industry would take charge and we need to avoid that."

He said he didn't see digitalisation as a threat internally within companies.

"But it is a threat that the stakeholders and the authorities consider the IT industry to own this topic and not the end user, which is the construction industry. We have to actually focus on the end user, and our needs.

"We have been accused of being an industry that is lagging behind, doing more or less what we were doing 20 years ago."

Tonning felt that there was a shift within the industry, and there was a need to attract young people into it.

"It has been considered a dirty industry, or not very high tech, but the introduction and the way we include construction 4.0 into all branches is probably going to help us a lot in making us a more attractive industry for younger people.

"They are the ones who are actually able to use the new technology, I expect, to a higher extent than the older ones."

He stressed that misconceptions lay at the heart of the "old fashioned" labels.

"Construction is not low tech, it is not low productivity," he said, adding that these perceptions needed to be changed.

"We already made a BIM (building information modelling) manifesto, together with more or less the entire construction industry – the suppliers, the products. This will probably make people outside the industry aware of the kind of role we are playing."

The various industry associations, many of whom have a raft of shared goals, are increasingly working together to deal with the barriers which are lying in their way.

"We are much stronger if we join forces with others in the same value chain – and we need to be. So when we are saying something and we have a kind of consensus, we are much stronger representing a lot of the production in Europe, and this is a part of the new way of working," he said.

"People realise that using BIM, using these tools, is involving the entire value chain. If you are not doing that, you are not benefiting 100% from what you can gain from the new technology.

"So we are depending on SMEs (small and medium-sized enterprises), we are depending on the suppliers – so everybody is dependent on each other to take full advantage of the new technology."

Tonning said the industry needed SMEs.

> "Construction is not low tech, it is not low productivity"
>
> **KJETIL TONNING, FIEC president**

"We are always depending on SMEs, and we are involving them – and they are rather quick in absorbing and using the new technology. Sometimes you think that the smaller companies are less developed – they more or less have the same skills."

BLUE COLLAR/WHITE COLLAR

He pointed out that there was not a big difference between white collar and blue collar workers nowadays when it came to using new technologies.

"Blue collars are as good as we are at using mobile phones and taking pictures. They understand that in the same way we do.

"In the early 1980s, it was more or less only the white collars that understood what was going on, but that is not the situation anymore. It's completely different."

FIEC has also expressed its concern about Chinese state-owned enterprises (SOEs) and EU public procurement, and is looking for a level playing field in the matter.

Tonning said, "The access of Chinese state-owned enterprises to EU public procurement markets has become an active issue again.

"Considering that China excludes foreign contractors from domestically-financed

tenders, and with respect to China's overarching strategy, covering business, transport, science, education and society in the whole world, it is high time that the EU and the Member States developed strategies for defending the interests of their industries and citizens."

Tonning gave what he described as "particularly striking examples". He cited OBOR (One Belt, One Road, also known as BRI – Belt & Road Initiative), and the meetings of China with Central and Eastern European Countries in the framework of China's 16+1 initiative, in which bi-lateral relations are being fostered and financial dependencies created.

FIEC felt that contrary to China's advertising of the BRI as a win-win situation for the whole world, it actually exported Chinese construction capacities overseas.

"In fact, OBOR/BRI can be considered as a kind of a Trojan horse", said Tonning. He pointed out that for the European construction industry, the consequences were becoming increasingly visible, both in the EU Internal Market and in third country markets.

For example, the recent award of the EU-financed contract for the Pelješac bridge in Croatia to a consortium of Chinese SOEs was said to raise issues such as abnormally low tenders, distortion of competition by state aid, the use of EU funds and reciprocity.

The question of reciprocity was also said to be relevant in relation to third markets, as well as project financing, export credits and tied aid/loans.

"The EU Commission should investigate the project and the absence of a real check of this abnormally low tender by the Croatian authorities," said Tonning.

For the European construction industry, FIEC and EIC (European International Contractors) are asking the European Commission and the co-legislators, the Parliament and Council, to take urgent action in order to create fair competition and a level playing field for European contractors, worldwide, as soon as possible.

CROSS-BORDER PROVISION

FIEC said that with the adoption of the new modified Posting of Workers Directive, the EU legislator was intending to provide some answers to problems and fraud observed in the cross-border provision of services within the EU.

"Ensuring a level playing field for companies requires a legislative framework which provides an adequate balance between the freedom to provide services within the Internal Market and the protection of workers' rights," said Tonning. "This plays a crucial role in the competitiveness of genuine companies.

"However, contrary to what some organisations are claiming, the recent modifications to the Posting Directive are not the panacea against all fraud. We therefore remain careful at this stage about the possible positive added value introduced by the new provisions."

He added that much of the fraud seen in the area of posting was due, among other things, to factors such as fraudulent A1 forms, unpaid or incorrectly paid social security contributions, undeclared working time, etc, which would normally require other types of intervention.

FIEC at EU level, and its members at national level, will, it said, continue to co-operate in a constructive manner with the concerned authorities and stakeholders, in order to develop a comprehensive framework that can effectively guarantee fair mobility and the respect of workers' rights within the Internal Market.

GROWTH FORECAST

Presenting FIEC's annual statistics for the construction industry, Tonning said there was a 3.5% growth in activity in the overall EU construction industry in 2017, and a forecast of 2.9% growth in 2018.

He said, "In 2017, an increase in activity was seen in all segments, even in civil engineering which is the most dependent on public investment.

"And 2018 will also show an overall increase in activity, although a bit less strong."

FIEC figures showed that overall, EU total construction output amounted to €1,364 billion in 2017, which represents an increase of 3.5% compared to 2016.

Tonning said, "This is positive, but we have not yet reached the pre-crisis levels, except in the housebuilding segment."

According to FIEC, behind the overall figure for the EU as a whole, disparities between Member States remained significant in some cases. In general terms, North Western European countries are still doing better than those in the South East of the continent.

A positive sign, however, was said to be that even those countries that were the hardest hit by the crisis were starting to see light at the end of the tunnel.

It added that the main driving forces in 2017 were clearly the new housebuilding segment, which was up 8.6%, and the private non-residential segment, which rose 2.8%, influenced by the overall economic recovery.

FIEC also said that "the very good news" was that a recovery started in civil engineering activity, at 2.8%, which it pointed out depended most on public investment. While it claimed this was certainly not the only driver, it said it was a sign that the investment policy launched under the Juncker Commission was starting to show effects.

In contrast, FIEC figures showed that the public non-residential segment's recovery had remained timid, at a rise of just 0.4%.

It said that despite the overall decline in general government deficit, several Member States were still having to cope with the necessary budgetary consolidation measures which had often led to significant cuts in public investment.

FIEC said this was still having an impact on the sector, in particular when it came to building and maintaining public infrastructure.

Renovation and maintenance activity maintained relatively stable development before and throughout the crisis, it said, and this therefore had an important cushioning effect for the entire construction sector.

FIEC felt this trend was expected to slow down in the near future – at 1.1% in 2017, and 0.8% in 2018 – as new construction was taking the lead again. ce

European Stat

Europe in facts and figures, and how these relate to the construction industry

EU PLUS SWITZERLAND AND NORWAY AT A GLANCE	
Population	**523.54 million**
Area	**5.34 million km²**
GDP 2017	**€16.32 trillion**
Construction as percentage of GDP (2017 average)	**8.7%**
Number of construction companies (2017)	**3,297,000**
Number of construction jobs (2017)	**15,082,000**

EU PLUS SWITZERLAND AND NORWAY IN FIGURES

COUNTRY	POPULATION (MILLION)	AREA (KM²)	CONSTRUCTION OUTPUT 2017 EST (€ BILLION)	GDP 2017 (€ BILLION)	CONSTRUCTION AS % OF GDP 2017	NUMBER OF CONSTRUCTION COMPANIES	NUMBER OF CONSTRUCTION JOBS
AUSTRIA	8.75	82,409	40	370	10.9	35,000	277,000
BELGIUM	11.50	30,280	45	438	10.2	113,000	279,000
BULGARIA	7.04	108,560	6	50	10.9	20,000	175,000
CROATIA	4.16	55,960	3	48	5.2	13,000	66,000
CYPRUS	1.19	9,250	2	19	8.4	7,000	31,000
CZECH REPUBLIC	10.62	77.240	16	182	9.0	172,000	390,000
DENMARK	5.75	42,430	27	288	9.3	32,000	183,000
ESTONIA	1.31	42.390	3	23	11.9	10,000	49,000
FINLAND	5.54	303,890	32	225	15.3	41,000	187,000
FRANCE	65.23	547,557	171	2,289	7.5	440,000	1,746,000
GERMANY	82.29	348,560	322	3,263	9.9	370,000	2,493,000
GREECE	11.14	128,900	8	122	4.7	85,000	149,000
HUNGARY	9.69	90,0530	6	112	5.2	93,000	346,000
IRELAND	4.80	68,890	18	298	6.0	50,000	134,000
ITALY	59.29	294,140	123	1,716	7.2	511,000	1,416,000
LATVIA	1.93	62,200	3	27	10.9	3,000	58,000
LITHUANIA	2.87	62,674	3	42	6.1	8,000	99,000
LUXEMBOURG	0.59	2,590	6	56	9.8	4,000	43,000
MALTA	0.43	320	1	11	6.5	6,000	9,000
NETHERLANDS	17.08	33,720	63	731	8.7	161,000	475,000
NORWAY	5.35	365,268	64	405	15.9	57,000	212,000
POLAND	38.10	306,230	48	495	9.8	160,000	1,162,000
PORTUGAL	10.29	91,590	11	192	5.8	44,000	308,000
ROMANIA	19.58	230,170	9	187	4.7	77,000	454,000
SLOVAKIA	5.45	48,088	7	86	7.7	3,000	223,000
SLOVENIA	2.08	20,140	2	43	4.5	18,000	56,000
SPAIN	46.40	498,800	113	1,163	9.7	403,000	1,128,000
SWEDEN	9.98	410,340	55	483	11.3	104,000	339,000
SWITZERLAND	8.54	39,516	57	581	9.4	48,000	335,000
UK	66.57	241,930	221	2,372	9.3	209,000	2,260,000
TOTAL	**523.54**	**5,335,052**	**1,485**	**16,317**	**8.7**	**3,297,000**	**15,082,000**

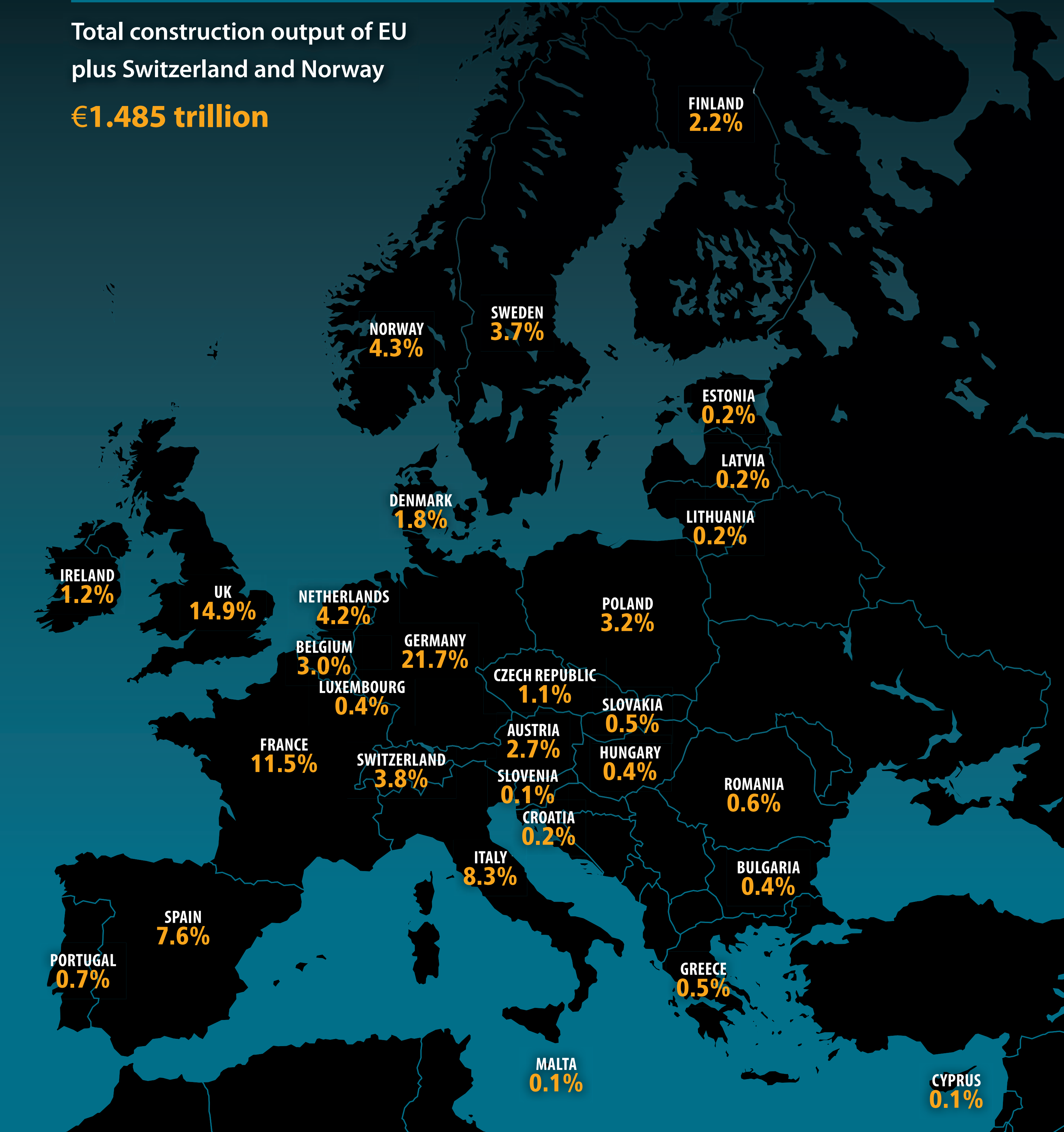
SOURCE: FIEC

istical Review

CONSTRUCTION OUTPUT PER COUNTRY AS A PERCENTAGE OF THE TOTAL (2017 ESTIMATED)

Total construction output of EU plus Switzerland and Norway

€1.485 trillion



Europe's top

Strengthening European and global economies have allowed the top ten contractors to hold their positions and UK companies to rise through the ranks

The top ten places in the league table have seen no movement this year, with every company maintaining their rank.

Vinci has remained number one since the CE-100 league table was started 17 years ago, so it perhaps comes as no surprise that the French contractor has maintained its position at the top.

In its full-year 2017 financial results, Vinci reported growth in revenue from both its French and international activities.

Total revenue grew from €38.07 billion in 2016 to €40.88 billion in 2017. Within that, revenue from Vinci's French activities increased from €22.42 billion in 2016 to €23.68 billion in 2017, and revenue from its international activities rose from €15.66 billion in 2016 to €16.57 billion in 2017.

The company's EBITDA (earnings before interest, taxes, depreciation and amortization) also grew, from €5.97 billion in 2016 – when it represented 15.7% of revenue – to €6.5 billion in 2017 – representing 16.2% of revenue.

Looking specifically at Vinci's construction business, revenue increased from €13.68 billion to €13.96 billion between 2016 and 2017, while EBITDA rose from €529 million to €547 million.

Looking at the top 20, the biggest mover was another French company, Spie, which climbed six positions, from 20th place to 14th place.

In 2017, the firm's revenue grew by 24.8% at constant currency, or 5.8% excluding SAG (selling, administrative and general expenses), from €4.94 billion in 2016 to €6.13 billion in 2017. At

Global standings


CONTRACTOR TABLE

The global top 200

The league table of the world's biggest construction contractors reflects a positive overall year for the construction industry and sees China-based companies strengthening their position at the top of the list, reports **Andy Brown**

CE's sister magazine, *International Construction (iC)* has published a companion piece to the *CE*-100, a league table of the world's top 200 contractors. The highest placed European contractor is Vinci in 5th position, behind four Chinese state-owned contractors. The largest of these, China State Construction & Engineering (CSCEC) achieved revenues last year of some CNY1.04 trillion (€130.23 billion) – making it more than three times the size of Vinci.

Apart from the Chinese contractors, the other global players of a comparable size to Europe's top ten come from other more economically developed countries, such as the US, Japan, and Australia. Most of the *CE*-100 feature in the global Top 200 – the lowest placed European contractor in the global rankings is Bowmer & Kirkland, which ranked 200th in the *iC* global Top 200 and holds 85th position in the *CE*-100. The UK-based company reported revenues of €1.132 billion for 2016.

For full details of the *iC* global Top 200, see the July-August 2018 edition of the magazine. Free subscriptions and digital issues are available from www.khl.com.

THE *CE*-100 LEAGUE TABLE

	REVENUE (€ M)	COMPANY	COUNTRY	2017 RANK	CHANGE
1	40876	**Vinci**	France	1	-
2	34898	**ACS**	Spain	2	-
3	32904	**Bouygues' Construction Divisions**	France	3	-
4	22630	**Hochtief**	Germany	4	-
5	16667	**Skanska**	Sweden	5	-
6	15263	**Eiffage**	France	6	-
7	15085	**TechnipFMC**	UK	7	-
8	13508	**Strabag**	Austria	8	-
9	12208	**Ferrovial**	Spain	9	-
10	8666	**Saipem**	Italy	10	-
11	8395	**Balfour Beatty**	UK	11	-
12	7253	**Acciona**	Spain	14	2
13	6603	**Bam Group**	Netherlands	13	-
14	6128	**Spie**	France	20	6
15	6046	**Petrofac**	UK	12	-3
16	5939	**Salini Impregilo**	Italy	16	-
17	5802	**FCC**	Spain	15	-2
18	5769	**NCC Group**	Sweden	17	-1
19	5714	**VolkerWessels**	Netherlands	18	-1
20	5662	**Barratt Developments**	UK	21	1
21	5292	**Peab**	Sweden	24	3
22	5067	**Tecnicas Reunidas**	Spain	25	3
23	5006	**Kier Group**	UK	22	-1
24	4828	**Taylor Wimpey**	UK	26	2
25	4293	**Porr**	Austria	32	7
26	4167	**Persimmon**	UK	30	4
27	4044	**Bilfinger**	Germany	27	-
28	3950	**Ackermans & van Haaren**	Belgium	23	-5
29	3893	**Interserve**	UK	29	-
30	3863	**Laing O'Rourke**	UK	37	7
31	3716	**Fayat Group**	France	31	-
32	3544	**Implenia**	Switzerland	39	7
33	3502	**Maire Tecnimont**	Italy	48	15
34	3400	**Morgan Sindall**	UK	35	1
35	3353	**Nexity**	France	41	6
36	3293	**Galliford Try**	UK	38	2
37	3292	**Berkeley Group**	UK	44	7
38	3260	**Ed Züblin**	Germany	33	-5
39	3235	**Veidekke**	Norway	36	-3
40	3216	**Obrascon Huarte Lain**	Spain	28	-12
41	3115	**Bellway**	UK	45	4
42	3092	**Sacyr Vallehermoso**	Spain	42	-
43	3066	**Compagnie D'Entreprises CFE SA**	Belgium	46	3
44	2900	**Mostotrest**	Russia	49	5
45	2888	**Astaldi**	Italy	43	-2
46	2597	**Mota-Engil**	Portugal	52	6
47	2521	**Keller Group**	UK	53	6
48	2481	**Goldbeckbau**	Germany	54	6
49	2378	**Enka**	Turkey	34	-15
50	2365	**DEME**	Belgium	56	6
51	2337	**Boskalis Westminster**	Netherlands	47	-4
51=	2337	**Besix**	Belgium	50	-2
53	2128	**Isolux Corsan**	Spain	72	19
54	2080	**ISG**	UK	66	12
55	2060	**Renaissance Construction***	Turkey	40	-15

contractors

THE *CE*-100 LEAGUE TABLE

	REVENUE (€ M)	COMPANY	COUNTRY	2017 RANK	CHANGE
56	2051	**Costain Group**	UK	59	3
57	2021	**Redrow**	UK	61	4
58	1993	**YIT**	Finland	64	6
59	1907	**Strukton Groep**	Netherlands	51	-8
60	1904	**Swietelsky**	Austria	57	-3
61	1869	**NGE**	France	68	7
62	1866	**Ellaktor**	Greece	58	-4
63	1863	**Wates Group**	UK	60	-3
64	1825	**JM**	Sweden	67	3
65	1758	**Jan De Nul**	Belgium	55	-10
66	1756	**Bloor Holdings**	UK	74	8
67	1700	**Max Boegl**	Germany	65	-2
68	1667	**Bauer**	Germany	75	7
69	1600	**TBI Holdings BV***	Netherlands	69	-
70	1543	**Tekfen Holding**	Turkey	73	3
71	1530	**Van Oord**	Netherlands	62	-9
72	1503	**Per Aarsleff AS**	Denmark	76	4
73	1489	**Willmott Dixon**	UK	71	-2
74	1479	**Abengoa**	Spain	70	-4
75	1468	**AF Gruppen**	Norway	82	7
76	1459	**Budimex SA**	Poland	81	5
77	1448	**Techint Engineering & Construction***	Italy	-	NEW
78	1402	**Heijmans**	Netherlands	77	-1
79	1396	**Glavstroy***	Russia	78	-1
80	1390	**Kaufman & Broad**	France	83	3
81	1369	**LSR**	Russia	79	-2
82	1185	**GEK Terna**	Greece	85	3
83	1183	**Dura Vermeer***	Netherlands	89	6
84	1180	**Köster***	Germany	90	6
85	1132	**Bowmer & Kirkland**	UK	86	1
86	1100	**SRV Group**	Finland	91	5
87	1085	**CMC Ravenna**	Italy	84	-3
88	1080	**Comsa EMTE**	Spain	-	NEW
89	1035	**Teixeira Duarte**	Portugal	87	-2
90	1033	**Trevi SpA**	Italy	88	-2
91	1021	**MT Hojgaard**	Denmark	-	NEW
92	920	**Aldesa**	Spain	-	NEW
93	837	**RZD Story***	Russia	92	-1
94	831	**Condotte d'Acqua**	Italy	80	-14
95	822	**Miller Homes**	UK	96	1
96	750	**Van Wijnen***	Netherlands	95	-1
97	744	**Bonatti**	Italy	93	-4
98	740	**Ballast Nedam**	Netherlands	94	-4
99	683	**Renew Holdings**	UK	98	-1
100	683	**Grupo San Jose**	Spain	99	-1

* Estimate

METHODOLOGY: The *CE*-100 is based on sales revenues in 2017 – either full or financial years. It is compiled from a range of sources including audited annual accounts, companies' own statements of revenues and information from reputable third parties such as Dun & Bradstreet. In some cases *CE* has estimated company revenues.

the same time, Spie's EBITDA also improved from €341.9 million in 2016 to €388 million in 2017, representing a 13.5% increase.

Overall, the eight French companies listed in the table accounted for almost a quarter of the total revenues of the top 100.

The country with the greatest number of firms in the league table is the UK, and they account for just under one fifth of the total revenues of the top 100.

It was also from the UK that the greatest number of upward shifts were seen – although Carillion, previously ranked 19th, has of course disappeared from the table since it went into liquidation at the start of 2018.

Lemminkäinen also disappeared because it was merged into Finnish contractor YIT this year.

The most significant upward shift in the table was seen by Spanish contractor Isolux Corsan, which jumped 19 places to number 53. However, in July of last year, it was announced that the company had applied for bankruptcy proceedings and its president, along with six members of the board of directors, submitted their resignation. New directors were subsequently appointed.

A few companies are new to the table this year, highest among them being Italian contractor Techint Engineering & Construction, which has moved into 76th position.

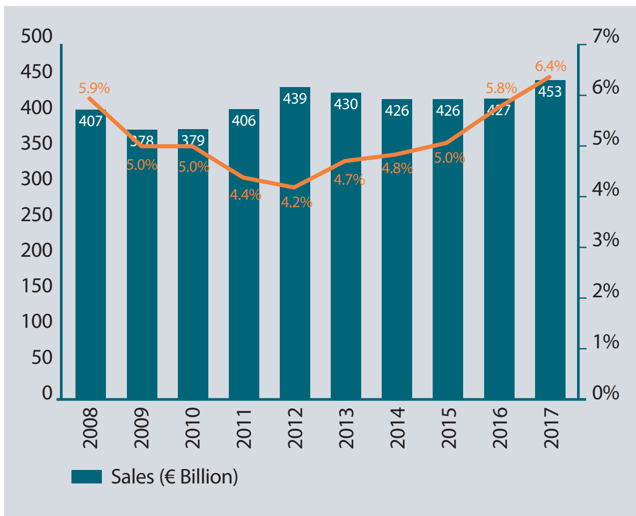
In its financial results for 2017, the company reported a growth in revenue from the previous year, from €1.28 billion to €1.43 billion. However, EBITDA dropped from €104.3 million in 2016 to €62.1 million in 2017, and profits fell from €42.4 million to €16.6 million over the same period. **ce**

Financial analysis

Total revenues for this year's *CE*-100, which is based on 2017 figures, came to €453 billion. This represented a rise of 6.09% on the *CE*-100 2016 figure of €427 billion, which was up just 0.23% on the total revenue figure for 2015.

This is in line with reports that 2017 has been a stronger year for the European construction industry, giving reason to believe that the market is well on the way to recovery. It was recently reported at a Euroconstruct conference in Germany, for instance, that growth figures in 2017 for the European construction market reached their highest level since 2006, and this was helped by an upswing in both the European and global economies.

Operating margin has also been on the rise, increasing to 6.41% of revenue in 2017, compared to 2016 when it was 5.76% of total revenue.

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Contractors across Europe

Construction Europe has compiled a list of Europe's leading construction companies. This list has been designed to give a clear overview of the European construction sector, in alphabetical order. A league table of the top contractors in Europe is on pages 34 and 35.

Information in this directory has been compiled from a number of sources, including *Construction Europe's* own survey, data from financial analysts and annual reports. It should be noted however that while financial data is presented in €, exchange rates do vary, so these figures are for general guidance only.

Whenever possible, turnover (sales) and construction figures apply to construction output only, but other group activities may be included. *Construction Europe* has made every effort to ensure that information presented here is correct, but cannot be held responsible for any inaccuracies.

COMPANY COUNTRY WEB ADDRESS	ADDRESS	SENIOR EXECUTIVE & CONTACT NUMBERS	YEAR	GENERAL FINANCIAL DATA (€ MILLION) TURNOVER	OPERATING PROFIT	MAIN AREAS OF WORK (SEE END OF TABLE FOR KEY TO CODES)	NO. OF EMPLOYEES
ABBEY Ireland www.abbeyplc.ie	9 Abbey House, Main Street, Clonee, Meath 23541	Charles Gallagher Executive Chairman t +353 1 8253540 f +353 1 8013999	2014 2015 2016 2017	172 221 216	46 60 63.5	IR UK	234
ABENGOA Spain www.abengoa.es	Campus Palmas Altas, Calle Energía Solar, 1, Seville, Andalusia 41014	Gonzalo Urquijo Fernández de Araoz, Executive Chairman t +34 (0)95 4937 000 f +34 (0)95 4937 002	2014 2015 2016 2017	7151 5755 1510 1479	821 -438 -241 -379	ES	20250
ACCIONA Spain www.acciona.es	Avda. Europa 18, Alcobendas, Madrid 28108	Jose Entrecanales Chairman & CEO t +34 (0)91 6632850 f +34 (0)91 6632851	2014 2015 2016 2017	6499 6544 5977 7253	176 364 413 604.17	ES DE ME FE NAm SAm AF	37403
ACKERMANS & VAN HAAREN Belgium www.avh.be	Begijnenvest 113, B-2000 Antwerpen	Jan Suykens CEO t +32 3 231 87 70 f +32 3 225 25 33	2014 2015 2016 2017	 4011 4901 3950	 369 224 303	BE NL	22749
ACS Spain www.grupoacs.com	Avda Pio XII 102, 28036 Madrid	Florentino Perez Rodriguez Executive Chairman & Co-CEO t +34 91 3439200 f +34 91 3439456	2014 2015 2016 2017	34881 34925 31975 34898	510 1012 1368 1514	ES FR UK DE IT GR NL BE SE NO PL NAm SAm FE AF AU ME	200813
AEGEK Greece www.aegek.gr	18-20 Amarousiou-Chalandriou, Amarousion, Athens 151 25	Spiros Papgeorgiou Chairman t +30 (0)210 6306000 f +30 (0)210 6306136	2014 2015 2016 2017	83 83	-19 -19	GR ROM CIS	1518
AF GRUPPEN Norway www.afgruppen.no	Innspurten 15, Oslo, PS 0663	Morten Grongstad CEO & President t +47 (0)228 91100 f +47 (0)228 91101	2014 2015 2016 2017	1183 1378 1267 1468	62 93 111 109	NO	3000
ALDESA Spain www.aldesaconstrucciones.es	C/Bahía de Pollensa 13 , 28042– Madrid	Antonio Fernandez Rubio Chairman & Director t +34 (0)913 819 220 f +34 (0)913 817 803	2014 2015 2016 2017	675 882 188 920	81 9	ES	2622
ALVES RIBEIRO LDA Portugal	Rua Sanches Coelho 3F, 1699 Lisboa	Vitor Manuel da Silva Ribeiro President t +351(0) 791 72 00 f +351(0) 793 25 49	2014 2015 2016 2017	 65	 20		160
ASTALDI Italy www.astaldi.it	Via Giulio Vincenzo Bona, 65 Roma, 00156	Paolo Astaldi Chairman t +39 06 417661 f +39 06 41766720	2014 2015 2016 2017	2540 2730 2852 2888	126 98 79 94	IT	10491
ATHENA SA Greece www.athena-sa.gr	Mesogion Ave 357-359, 15231Ag Paraskevi, Athens	Pavlos Lekkakis Chairman t +30 (0)16 50 11 11 f +30 (0)16 50 15 05	2014 2015 2016 2017	99 83	-46 -44	GR	99
BALFOUR BEATTY UK www.balfourbeatty.com	5 Churchill Place, Canary Wharf, London, E14 5HU	Leo Quinn CEO & Executive Director t +44 (0)20 7216 6800 f +44 (0)20 72166950	2014 2015 2016 2017	8952 9278 8225 8395	-431 -380 -117 47	UK ME FE AF NAm	20238
BALLAST NEDAM Netherlands www.ballast-nedam.nl	Ringwade 71, 3439 LM Nieuwegein, Utrecht	Cenk Düzyol Chairman t +31 (0)30 285 33 33 2017	2014 2015 2016 740	1166 850 789 -22	-102 59	BE NL LUX	1900

COMPANY COUNTRY WEB ADDRESS	ADDRESS	SENIOR EXECUTIVE & CONTACT NUMBERS	YEAR	GENERAL FINANCIAL DATA (€ MILLION) TURNOVER	OPERATING PROFIT	MAIN AREAS OF WORK (SEE END OF TABLE FOR KEY TO CODES)	NO. OF EMPLOYEES
BAM GROUP Netherlands www.bam.nl	Runnenburg 9, PO Box 3981 AZ Bunnik	Rob P van Wingerden CEO t +31 (0)30 659 8988 f +31 (0)30 659 8296	2014 2015 2016 2017	7314 7423 6976 6603	-32 16 95 33	NL BE UK	19837
BARRATT DEVELOPMENTS UK www.barratthomes.co.uk	Rotterdam House, 116 Quayside, Newcastle Upon Tyne NE1 3DA	David Fraser Thomas Chief Executive t +44 (0)191 227 2000 f +44 (0)191 227 2001	2014 2015 2016 2017	3916 5173 5085 5662	479 792 814 923	UK NAm	6214
BAUER Germany www.bauer.de	BAUER-Straße 1, Schrobenhausen, Bayern (Bavaria), 86529	Prof Thomas Bauer CEO t +49 (0)8252 970 f +49 (0)8252 972900	2014 2015 2016 2017	1376 1379 1397 1667	13 17 68 125	DE EU FE ME SAm NAm	10738
BELLWAY UK www.bellway.co.uk	Seaton Burn House, Dudley Lane, Seaton Burn, Newcastle upon Tyne NE13 6BE	Jason Honeyman CEO & Non-Executive Director t +44 (0)191 217 0717 f +44 (0)191 236 6230	2014 2015 2016 2017	1842 2428 2806 3115	301 496 599 696	UK	2864
BERKELEY GROUP UK www.berkeleygroup.com	Berkeley House, 19 Portsmouth Road, Cobham, Surrey	Tony Pidgley Chairman t +44 (0)1932 868555 f +44 (0)1932 868667	2014 2015 2016 2017	2630 2816 2828 3292	617 691 646 949	UK	2800
BESIX Belgium www.besix.com	Gemeenschappenlaan 100 / Avenue des Communautés 100, 1200 Brussels	Johan Beerlandt Chairman t +32 (0)2 402 62 11 f +32 (0)2 402 62 00	2014 2015 2016 2017	2001 2160 2359 2337	65 -2 	BE NL LUX FR FE ME AF	17690
BILFINGER Germany www.bilfingerberger.de	Carl-Reiss-Platz 1-5, 68165 Mannheim	Thomas Blades Chairman-Executive Board t +49 (0)621 4590 f +49 (0)621 4592366	2014 2015 2016 2017	7697 6481 4248 4044	118 77 -67 -66	DE AT PL ME FE NAm AF	35644
BLOOR HOLDINGS UK www.bloorhomes.com	Ashby Road, Measham , Swadlincote, Derbyshire, DE12 7JP	John Bloor Director t +44 (0)1530 270100 f +44 (0)1530 271440	2014 2015 2016 2017	1116 1337 1400 1756	92 142 126 395	UK	3158
BONATTI Italy www.bonatti.it	Via Nobel 2/A, 43100 Parma Chairman & CEO	Paolo Ghirelli 2015 t +39 0521 6091 f +39 0521 607700	2014 933 2016 2017	730 799 744	 105 83	IT	6000
BOSKALIS WESTMINSTER Netherlands www.boskalis.com	Rosmolenweg 20, PO Box 43, 3350 AA Papendrecht	Dr Peter A.M. Berdowski Chairman-Management Board t +31 (0)78 6969000 f +31 (0)78 6969555	2014 2015 2016 2017	3167 3240 2596 2337	616 533 287 144	NL UK BE FR NO ES PT TK DE SE SF ME NAm SAm FE AF	6410
BOUYGUES' CONSTRUCTION DIVISIONS France www.bouygues.com	32, Avenue Hoche, Paris, Ile-de-France, 75008	Martin Bouygues Chairman & CEO t +33 (0)1 44201000 f +33 (0)1 4420199	2014 2015 2016 2017	26515 28961 25001 32904	1572 1501 1173 1514	FR DE CH ME FE UK	64606
BOWMER & KIRKLAND UK www.bandk.co.uk	High Edge Court, Heage, Belper, Derbyshire DE56 2BW	John Kirkland Director t +44 (0)1773 852636 f +44 (0)1773 857561	2014 2015 2016 2017	909 1008 1134 1132	36 75 129	UK	1495
BUDIMEX SA Poland www.budimex.com.pl	ul. Stawki 40, Warsaw, 01-040	Dariusz Jacek Blocher President t +48 (0)22 6236000 f +48 (0)22 6236001	2014 2015 2016 2017	1183 1226 1277 1459	50 60 115 128	PL DE	6539
CMC RAVENNA Italy http://cmcgruppo.com	48122, Via Trieste, 76, Emilia-Romagna, Ravenna	Roberto Macri CEO t +39 0544 428111 f +39 0544 428554	2014 2015 2016 2017	1105 1170 1200 1085	123 140 83 	IT AF	7712
COLAS France www.colas.fr	7 Place Rene Clair, 92653 Boulogne, Billancourt Cedex	Alain Dupont Chairman & CEO t +33 (0)1 47617500 f +33 (0)1 47617600	2014 2015 2016 2017	12396 11960 11700	770 -115 -27	FR UK DE CH FE NAm AF	59682
COMPAGNIE D'ENTREPRISES CFE SA Belgium www.cfe.be	Avenue Hermann Debroux 40-42, 1160 Brussels	Luc Jacques Bertrand Chairman t +32(0)2 6 61 12 11 f +32(0)2 6 61 17 95	2014 2015 2016 2017	3511 3239 2797 3066	140 123 227 154	BE NL LUX	8689
COMSA EMTE Spain www.comsaemte.com	Edificio Numancia 1, C./ Viriato, 47, 08014 - Barcelona	Jorge Miarnau Montserrat Chairman t +34 (0) 933 662 100 f +34 934809299	2014 2015 2016 2017	1364 1575 508 1080		ES	8500
CONDOTTE D'ACQUA Italy www.condottespa.it	Via Salaria 1039, 00138 Roma	Carlo Vieggi President t +39 06 883341 2017	2014 2015 2016 831	1174 1352 1315 34	67 71 71	IT	2800


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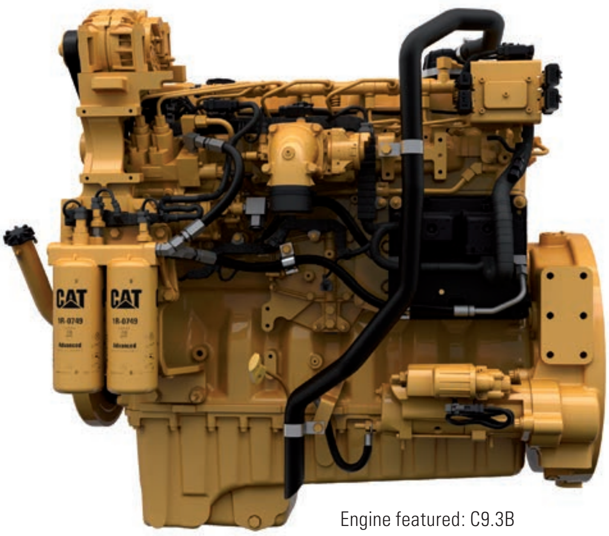

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				TURNOVER	OPERATING PROFIT		
COOPSETTE	42024 Castelnovo Sotto (RE),	Eng E Banfi	2014	314		IT DE FR	740
Italy	Via S Biagio 75	Vice President	2015	215			
		t +39 0522 682741	2016				
www.coopsette.it		f +39 0522 683401	2017				
COSTAIN GROUP	Costain House,	Andrew Wylie	2014	1329	30	UK ME FE NAm AF	4008
UK	Vanwall Business Park,	CEO & Executive Director	2015	1739	42		
	Maidenhead,	t +44 1628 842444	2016	1917	47		
www.costain.com	Berkshire SL6 4UB	f +44 1628 674474	2017	2051	55		
DEME	Haven 1025,	Luc Bertrand	2014	2420	224	BE NL SE ES FR UK	4000
Belgium	Scheldedijk 30,	Chairman	2015	2286		SAm FE AF	
	2070 Zwijndrecht	t +32 (0)3 250 52 11	2016	1978	227		
www.deme.be		f +32 (0)3 250 56 50	2017	2365			
DEMOCO NV	Kolonel Dusartplein 20,	Cyriel Demot	2014	127		BE NL LUX PO	314
Belgium	3500 Hasselt	Chairman	2015	127	6		
		t +32 (0)11 22 45 26	2016				
www.democo.be		f +32 (0)11 22 56 31	2017				
DESTIA	Neilikkatie 17,	Tero Kiviniemi	2014	432	15	FI	1515
Finland	PO Box 206,	President, CEO & Director	2015	463	13		
	01301 Vantaa	t +358 (0)20 444 11	2016	493	14		
www.destia.fi		f +358 (0)20 444 2297	2017	479	13		
DURA VERMEER*	Rotterdam Airportplein 21,	D J M Dura	2014	1000		NL	2515
Netherlands	Rotterdam,	Chairman	2015	1004			
	Zuid-Holland, 3045 AP	t +31 102808700	2016	940	2		
www.duravermeer.nl			2017	1183	21		
ED ZÜBLIN	Albstadt Weg 3, 70	Dr Jürgen Kuchenwald	2014	3305	59	DE AT HU CIS FE	13983
Germany	567 Stuttgart 80	Chairman	2015	3415		SAm AF	
		t +49 (0)711 78830	2016	3397			
www.zueblin.de		f +49 (0)711 7883390	2017	3260	32		
EIFFAGE	163, quai du Docteur	Benoit de Ruffray	2014	13948	1234	FR DE LUX PO ES CH	64606
France	Dervaux, Asnieres-sur-Seine	Chairman & CEO	2015	14060	1333	ME FE NAm AF	
	Cedex, 92600	t +33 (0)1 41 32 80 00	2016	14307	1552		
www.eiffage.fr		f +33 (0)1 41 32 80 10	2017	15263	1678		
EIFFAGE	2 rue de Laborde,	Jean-Francois Roverato	2014	3733	156	FR, ES	12537
CONSTRUCTION	75418 Paris	Chairman & CEO	2015	3514			
France		t +33 (0)1 44904444	2016				
www.eiffage.fr		f +33 (0)1 44904490	2017				
EIFFAGE TRAVAUX	2 rue de Laborde,	Jean-Francois Roverato	2014	3957	95	FR	64093
PUBLICS	75418 Paris	Chairman & CEO	2015	4400			
France		t +33 (0)1 44904444	2016				
www.eiffage.fr		f +33 (0)1 44904490	2017				
ELLAKTOR	25 Ermou Street, Athens	Christos Stergios Glavanis	2014	1545	84	GR	5755
Greece	- Lamia National Road,	Chairman	2015	1533	75		
	Nea Kifisia, 145 64	t +30 (0)210 8185000	2016	1943	77		
www.ellaktor.com		f +30 (0)210 8185001	2017	1866	142		
ENKA	Balmumcu Mahallesi,	Agah Mehmet Tara	2014	4386		TR DE Nam AT BE AF	20392
Turkey	Zincirlikuyu Yolu No 10,	President & CEO	2015	4099		FR SF NL UK ES SE	
	Besiktas, Istanbul, IB, 34349	t +90 (0) 212 3761000	2016	3172		CH IT FE PO HU	
www.enka.com		f +90 (0) 212 3761980	2017	2378			
EUROVIA	1, cours Ferdinand	Jacques Tavernier	2014	8188	249	FR DE UK NAm	41502
France	de Lesseps,	President	2015	7900	233		
	92851 Rueil-Malmaison	t +33 (0)1 47163500	2016				
www.vinci.com		f +33 (0)1 47519102	2017				
FAYAT GROUP	137 Rue du Palais Gallien,	Jean-Claude Fayat	2014	3498		FR	19400
France	BP 28,	President	2015	3440			
	33029 Bordeaux Cedex	t +33 (0)5 56 00 21 00	2016	3527	48		
www.fayat.com		f +33 (0)5 56 44 37 68	2017	3716	93		
FCC	Av. del Camino de Santiago,	Pablo Colio Abril	2014	6334	279	ES SAm	92290
Spain	40 28050 Madrid	CEO	2015	6476	173		
		t +34 (0)91 3595400	2016	5952	94		
www.fcc.es		f +34 (0)91 7224193	2017	5802	429		
FERROVIAL	Principe de Vergara 135,	Joaquín del Pino y Calvo-Sotelo	2014	8802	729	ES IT NL PT UK NAm	75978
Spain	28002 Madrid	External Director	2015	9701	762	SAm	
		t +34 (0)91 5862500	2016	10759	602		
www.ferrovial.es		f +34 (0)91 5862677	2017	12208	1386		
GALLIFORD TRY	Cowley Business Park,	Peter Truscott	2014	2193	119	UK	5485
UK	Cowley, Uxbridge,	CEO & Executive Director	2015	3231	169		
	UB8 2AL	t +44 (0)1895 855001	2016	3038	148		
www.gallifordtry.co.uk		f +44 (0)1895 855298	2017	3293	178		
GEK TERNA	85 Mesogeion Avenue,	Georgios Peristeris	2014	934	-61	GR	1902
Greece	Athens, GH 115 26	CEO & Chairman	2015	972	80		
		t +30 210 6968000	2016	1163	180		
www.terna.gr		f +30 210 6968098	2017	1185	184		

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GLAVSTROY* Russia www.glavstroy.ru	45/1, Build.1, Prechistenskaya naberezhnaya, Moscow 119019	Arkady Sarkisyan Chief Executive t +7 (0)495 644 02 00 f +7 (0)495 644 02 02	2014 2015 2016 2017	1955 1351 1349 1396		RU, TK, CIS, AT, IN	20500
GOLDBECKBAU Germany www.goldbeckbau.de	Ummelner Straße 4-6, 33649 Bielefeld	t +49 (0)521 9488 0 f +49 (0)521 9488 1029	2014 2015 2016 2017	1570 1880 2080 2481		DE UK CZ PL	3905
GRUPO SAN JOSE Spain www.grupo-sanjose.com	Ronda de Poniente 11, 28760 Tres Cantos, Madrid	Jacinto Rey González Executive Chairman t +34 (0)91 806 54 00 f +34 (0)91 806 54 01	2014 2015 2016 2017	465 536 613 683	1 0 20 31	ES FR DE PT NAm SAm	2723
HEIJMANS Netherlands www.heijmans.nl	Graafsebaan 65, 5248 JT Rosmalen	A G J Hillen CEO & Chairman-Executive Board t +31 (0)73 5435111 f +31 (0)73 5435220	2014 2015 2016 2017	1868 1979 1370 1402	-12 -5 -83 26	NL DE BE AF	4554
HENRY BOOT UK www.henryboot.co.uk	Banner Cross Hall, Sheffield, S11 9PD	John T Sutcliffe CEO t +44 (0)114 255 5444 f +44 (0)114 258 5548	2014 2015 2016 2017	183 242 374 497	30 45 48 67	UK	514
HOCHTIEF Germany www.hochtief.de	Opernplatz 2, D-45128 Essen	Pedro José López Jiménez Chairman-Supervisory Board t +49 (0)201 8240 f +49 (0)201 824 2777	2014 2015 2016 2017	22099 21097 19908 22630	-164 511 401 714	DE UK FR PL CZ AU NAm FE	51490
HOCHTIEF EUROPE Germany www.hochtief.de	Rellinghauser Strasse 53-57, 45128 Essen	Friedel Abel Chairman t +49 (0)201 8240 f +49 (0)201 8242777	2014 2015 2016 2017	2521 1660	-37 -20	DE UK FR PL CZ	9946
HURKS Netherlands www.hurks.nl	Pastoor Petersstraat 3, 5612 WB Eindhoven	J M Hurks Chairman t +31 (0)40 26 26 100 f +31 (0)40 26 26 101	2014 2015 2016 2017	237 237	-12	NL	590
IMPLENIA Switzerland www.implenia.com	Industriestrasse 24, Dietlikon 8305	André Wyss CEO t +41 58 4747474 f +41 58 4747475	2014 2015 2016 2017	2404 3074 3000 3544	83 73 106 53	CH FR DE IT	9710
INTERSERVE UK www.interserveplc.co.uk	Ruscombe Park, Twyford, Reading RG10 9JU	Debbie White CEO & Executive Director t +44 (0)118 932 0123 f +44 (0)118 932 0206	2014 2015 2016 2017	3613 4409 3835 3893	75 90 68 -111	UK	55350
ISG UK www.isgplc.com	Aldgate House, 33 Aldgate High Street, London EC3N 1AG	Paul Cossell CEO t +44 (0)20 7247 1717 f +44 (0)20 7499 8719	2014 2015 2016 2017	1839 2268 1618 2080	13 18 25	UK	2659
ISOLUX CORSAN Spain www.isoluxcorsan.com	Av. de Manoteras, 18, 4 Planta, Madrid 28050	Antonio Portela Álvarez CEO & Executive Director t +34 9144 93000 f +34 9144 93333	2014 2015 2016 2017	2128 2204 1447 2128	252 836 969 161	ES	5604
JAN DE NUL Belgium www.jandenul.com	Tragel 60, Aalst, Oost-Vlaanderen, 9308	Jan-Pieter De Nul General Manager t +32 (0)53 73 17 11 f +32 (0)53 77 17 60	2014 2015 2016 2017	2200 2244 2044 1758	 632 339 365	BE NL EU AF ME FE NAm	1165
JM Sweden www.jm.se	Gustav 111, Boulevard 64, Solna, Stockholm, 169 82	Hans Johan Skoglund President & CEO t +46 (0)8 7828700 f +46 (0)8 7828600	2014 2015 2016 2017	1563 1490 1615 1825	207 154 204 258	SE NO DK SF PO	2600
KAUFMAN & BROAD France www.kaufmanbroad.fr	127, avenue Charles de Gaulle, Neuilly-sur-Seine (Cedex), 92200	Nordine Hachemi Chairman & CEO t +33 (0)1 41 43 43 43 f +33 (0)1 41 43 46 64	2014 2015 2016 2017	1083 1063 1238 1390	80 87 101 117	FR	813
KELLER GROUP UK www.keller.co.uk	1 Sheldon Square, 5th Floor, London W2 6TT	Alain Michaelis t +44 (0)7769 654163 f +44 (0)20 8340 6981	2014 2015 2016 2017	1984 2150 2168 2521	105 138 116 122	UK AT DE BE FR IR PO ME FE NAm AF	10000
KIER GROUP UK www.kier.co.uk	Tempsford Hall, Sandy, Bedfordshire SG19 2BD	Haydn J Mursell CEO & Executive Director t +44 (0)1767 355000 f +44 (0)1767 355633	2014 2015 2016 2017	3664 4507 5008 5006	81 99 140 110	UK	16641
KÖSTER* Germany www.koester-bau.de	Sutthauser Strasse 280, 49080 Osnabruck	Dieter Köster Chairman t +49 (0)54 1999 80 f +49 (0)54 1999 81 099	2014 2015 2016 2017	900 930 930 1180		DE	1750


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LAGAN CONSTRUCTION UK www.laganconstruction.com	Rosemount House, 21 – 23 Sydenham Road, Belfast, Northern Ireland, BT3 9HA	Colin Loughran Managing Director t +44 (0)28 9045 5531 f +44 (0)28 9045 8940	2014 2015 2016 2017	205 278	6 6	UK, IE, NAm, Asia	510
LAING O'ROURKE UK www.laingorourke.com	Bridge Place 1 and 2, Anchor Boulevard Crossways, Dartford, Kent DA2 6SN	Ray O'Rourke CEO t +44 (0)1322 296200 f +44 (0)1322 296262	2014 2015 2016 2017	4434 4307 3060 3863	66 101 -100	UK, ME, AP, AUS	8146
LSR Russia www.lsrgroup.ru	ul. Kazanskaya 36, Sankt-Peterburg, 190031	Andrey Yuryevich Molchanov Chairman t +7 (0) 812 3205642 f +7 (0) 812 3205642	2014 2016 2016 2017	1805 1278 1323 1369	280 274 3	RU	16000
M J GLEESON UK www.mjgleeson.com	Sentinel House, Harvest Crescent, Ancells Business Park, Fleet, Hampshire GU51 2UZ	Jolyon Harrison CEO & Managing Director t +44 (0)1252 360 300	2014 2016 2016 2017	101 162	13 24	UK	266
MAIRE TECNIMONT Italy www.mairetecnimont.com	Via Gaetano De Castillia 6/A, Milan, 20124	Fabrizio Di Amato Chairman t +39 02 63131 f +39 02 63139002	2014 2016 2016 2017	1545 1637 2409 3502	116 126 160 219	IT ME FE NAm SAm AF	4538
MAX BOEGL Germany www.max-boegl.de	Postfach 1120, 92301 Neumarkt	Stefan Bögl CEO t +49 (0) 9181 9090 f +49 (0) 9181 905061	2014 2016 2016 2017	1600 1632 1650 1700	 1650	DE CR PL NL FE	6500
METROSTAV AS Czech Republic www.metrostav.cz	Kozeluzska 2246, 180 00 Praha 8	Jiri Belohlav Chairman t +420 (0)266 019 000 f +420 (0)266 018 000	2014 2016 2016 2017	702 704 667 649	19 15 18 249	CZ SK	5000
MICHANIKI Greece www.michaniki.gr	91 Meg. Alexandrou St, Marousi, Athens 151 24	Prodromos Emfetzioglou Chairman t +30 (0)210 6143340 f +30 (0)210 6143359	2014 2016 2016 2017	 15	 -67	GR	926
MILLER HOMES UK www.miller.co.uk	Miller House, 2 Lochside View, Edinburgh Park, Edinburgh EH12 9DH	Chris Endsor Chief Executive t +44 (0)870 336 5000 f +44 (0)870 336 5002	2014 2016 2016 2017	836 687 688 822	28 108 125 146	UK	1860
MORGAN SINDALL UK www.morgansindall.co.uk	Kent House, 14-17 Market Place, London, W1W 8AJ	John Morgan CEO & Executive Director t +44 (0)20 7307 9200 f +44 (0)20 7307 9201	2014 2016 2016 2017	2753 3281 3120 3400	22 14 48 77	UK	6122
MOSTOSTAL PLOCK Poland www.mostostal-plock.com.pl	ul.Targowa 12, Plock, 09-400	Wiktor Guzek President t +48 (0)24 3671111 f +48 (0)24 3671250	2014 2016 2016 2017	29 23	1 0	PL	440
MOSTOSTAL WARSZAWA Poland www.mostostal.waw.pl	Konstruktorska 12a, Warsaw, 02-673	Miguel Angel Heras Llorente President t +48 (0)22 2507000 f +48 (0)22 2507788	2014 2016 2016 2017	361 305 321 252	8 11	PL CZ NL DE BE SE	1490
MOSTOSTAL ZABRZE Poland www.mz.pl	ul. Wolnosci 191, Zabrze, 41-800	Dariusz Pietyszuk President t +48 (0)32 3734444 f +48 (0)32 2715047	2014 2016 2016 2017	206 181 149	6 -3 -19	PL	2250
MOSTOTREST Russia www.mostotrest.ru	6 Barklaya str., bld. 5, Moscow, 121087, Russia	Vladimir Vlasov CEO t +7 (0) 495 669 79 99 f +7 (0)495 669 77 11	2014 2016 2016 2017	2943 2107 2363 2900	260 105 67 161		15729
MOTA-ENGIL Portugal www.mota-engil.pt	38 Rua do Rego Lameiro, Edificio Mota No. 38, Porto, 4300-454	Gonçalo Moura Martins Vice Chairman & CEO t +351 (0)22 5190300 f +351 225 191261	2014 2016 2016 2017	2368 2434 2210 2597	273 155 88 193	PT ME AF	29860
MOURIK Netherlands www.mourik.com	Voorstraat 67, 2964 AJ Groot-Ammers	J C Mourik Chairman t +31 (0)184 667200 f +31 (0)184 662316	2014 2016 2016 2017	430 430 442	7 7 5	NL BE DE IT ES ME SAm NAm	2007
MOURY CONSTRUCT Belgium www.moury-construct.be	Rue du Moulin 320, Liege, WA 4020	Georges Moury Chairman t +32 4 3447211	2014 2016 2016 2017	91 84	5 5	BE NL	233
MT HOJGAARD Denmark www.mthojgaard.dk	Knud Højgaards Vej 7, DK-2860 Søborg	Anders Heine Jensen CEO t +45 (0)3954 4000 f +45 (0)7013 2421	2014 2016 2016 2017	405 404 413 1021	-12 8 18 24	EU DK NAm	3846

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NCC CONSTRUCTION DENMARK Denmark www.ncc.dk	Tuborg Havnevej 15, DK-2900 Hellerup	Torben Biilman President t +45 (0)39 10 39 10 f +45 (0)39 10 39 20	2014 2016 2016 2017	581 379	32 24	DK	2105
NCC CONSTRUCTION FINLAND Finland www.ncc.fi	Mannerheimvägen 103 a, P O Box 13, 00281 Helsingfors	Timo U. Korhonen President t +358 (0)10 507 51 f +358 10 507 52 62	2014 2016 2016 2017	728 180	17 7	SF	2772
NCC CONSTRUCTION NORWAY Norway www.ncc.no	Innspurten 9, 0663 Oslo, Postboks 93 Sentrum, N-0101 Oslo	Sven Christian Ulvatne President t +47 (0)22 98 68 00 f +47 (0)22 98 68 01	2014 2016 2016 2017	740 175	17 3	NO	1624
NCC CONSTRUCTION SWEDEN Sweden www.ncc.se	SE-170 80 Solna, Vallgatan 3	Tomas Carlsson President t +46 (0)8 585 510 00 f +46 (0)8 85 77 75	2014 2016 2016 2017	2285 754	74 30	SE	8606
NCC GROUP Sweden www.ncc.se	SE-170 80 Solna, Vallgatan 3	Tomas Carlsson President & CEO t +46 (0)8 585 510 00 f +46 (0)8 85 77 75	2014 2016 2016 2017	6251 6680 5592 5769	297 346 162	SE NO FI DK DE PL CIS	17762
NCC HOUSING Sweden www.ncc.se	SE-170 80 Solna, Vallgatan 3	Peter Wågström President t +46 (0)8 585 510 00 f +46 (0)8 85 77 75	2014 2016 2016 2017	1114 782	106 107	DE	744
NCC PROPERTY DEVELOPMENT Sweden www.ncc.se	SE-170 80 Solna, Vallgatan 3	Roger Wagstrom President t +46 (0)8 585 510 00 f +46 (0)8 585 523 75	2014 2016 2016 2017	344 158	20 21	SE NO FI DK DE PL CIS	124
NCC ROADS Sweden www.ncc.se	SE-170 80 Solna, Vallgatan 3	Goran Landgren President t +46 (0)8 585 510 00 f +46 (0)8 585 523 58	2014 2016 2016 2017	1336 594	53 -4	SE NO FI DK DE PL CIS	2142
NEXITY France www.nexity.fr	19, Rue de Vienne, TSA 50029, Paris, Ile-de-France 75801	Alain Dinin Chairman & CEO t +33 1 85551212	2014 2016 2016 2017	2370 2876 2975 3353	152 189 252 299	FR	7032
NGE France www.nge.fr	Parc d'Activites de Laurade, BP 22, Cedex, Tarascon, 13156	Joël Rousseau Chairman t +33 (0) 4 90 91 60 00 f +33 (0) 4 90 91 60 01	2014 2016 2016 2017	1477 1497 1592 1869	 117	NL EU	800
OBRASCON HUARTE LAIN Spain www.ohl.es	Torre Espacio, 259 D, Paseo de la Castellana, Madrid, 28046	Juan Villar-Mir de Fuentes Chairman t +34 (0)91 3484100 f +34 (0)91 3484207	2014 2016 2016 2017	3731 4369 3863 3216	-190 -165 -754 -132	ES PT NAm SAm	21464
PEAB Sweden www.peab.se	Margretetorpsvagen 84, Forslov, 260 92	Jesper Göransson President & CEO t +46 (0)431 89000 f +46 (0)431 451700	2014 2016 2016 2017	4796 4828 4895 5292	203 185 207 227	SE NO SF PL	14344
PER AARSLEFF AS Denmark www.aarsleff.dk	Hasselager Allé 5, 8260 Viby J, Denmark	Ebbe Malte Iversen General Manager t +45 (0)87 44 22 22 f +45 (0)87 44 22 49	2014 2016 2016 2017	1143 1375 1397 1503	14 63 56 48	DK DE UK SE PL	4932
PERSIMMON UK www.persimmonhomes.com	Persimmon House, Fulford, York YO19 4FE	Jeffrey Fairburn CEO & Executive Director t +44 (0)1904 642199 f +44 (0)1904 610014	2014 2016 2016 2017	3193 3992 3819 4167	538 846 930 1165	UK	4713
PETROFAC UK www.petrofac.com	4th Floor, 44 Esplanade, St Helier, Jersey, JE4 9WG	Ayman Asfari CEO & Executive Director t +44 (0)20 7811 4900 f +44 (0)20 7811 4901	2014 2016 2016 2017	4701 6164 7105 6046	459 48 501 502	UK	19000
PIZZAROTTI Italy www.pizzarotti.it	Via Anna Maria Adorni, 1 - 43121 Parma	Paolo Pizzarotti Chairman t +39 0521 2021 f +39 0521 207461	2014 2016 2016 2017	1142 1121 539 455	96	IT	1738
POLIMEX MOSTOSTAL Poland www.polimex-mostostal.pl	al. Jana Pawla II 12, Warszawa, 00-124	Wojciech Kowalczyk Chairman t +48 (0)22 8297100 f +48 (0)22 8297400	2014 2016 2016 2017	412 609 611 555	-92 14 -12	PL CZ NL DE BE SE	4210
PORR Austria www.porr.at	Absbergasse 47, Vienna 1100	Karl-Heinz Strauss CEO t +43 (0)50 6260 f +43 (0)50 6260111	2014 2016 2016 2017	3009 3140 3417 4293	-55 -12 35 -5	AT CZ DE HU PL SZ	17372

COMPANY COUNTRY WEB ADDRESS	ADDRESS	SENIOR EXECUTIVE & CONTACT NUMBERS	YEAR	GENERAL FINANCIAL DATA (€ MILLION) TURNOVER	 OPERATING PROFIT	MAIN AREAS OF WORK (SEE END OF TABLE FOR KEY TO CODES)	NO. OF EMPLOYEES
REDROW UK www.redrowplc.co.uk	Redrow House, Flintshire, St. David's Park CH5 3RX	Stephen Peter Morgan Chairman t +44 (0)1244 520044 f +44 (0)1244 520580	2014 2016 2016 2017	1072 1582 1849 2021	162 293 318 392	UK	2333
RENAISSANCE CONSTRUCTION* Turkey www.rencons.com	No:33 Portakal Cicegi Sokak, Yukari Ayranci Cankaya, Ankara, 06540	Nematollah Farrokhnia CEO & Director t +0 3124413141 f +90 3124425948	2014 2016 2016 2017	1544 2166 2992 2060		TR, ME	30571
RENEW HOLDINGS UK www.renewholdings.com	Yew Trees, Main Street North, Aberford, Leeds, West Yorkshire LS25 3AA	Paul Scott CEO t +44 113 2814200 f +44 1132814210	2014 2016 2016 2017	576 715 641 683	16 23 2 20	UK NAm	2864
RZD STORY* Russia www.rzdstroy.ru	8 ul. Kazakova, 105064, Moscow	Oleg Toni VP & Director General t +7 (0)499 260 34 32 f +7 (0)499 260 34 00	2014 2016 2016 2017	1289 891 809 837	4		
SACYR VALLEHERMOSO Spain www.sacyr.com	Paseo de la Castellana 83-85, 28046 Madrid	Manuel Manrique Cecilia Chairman & CEO t +34 91 5455000 f +34 91 5566986	2014 2016 2016 2017	2901 2949 2860 3092	199 39 153 108	ES PT SAm GR IR FE	32457
SAIPEM Italy www.saipem.it	Via Martiri di Cefalonia, 67, San Donato Milanese, Milan, 20097	Stefano Cao CEO & Non-Ind. Exec. Director t +390 (0)2 5201 f +390 (0)2 5204 4415	2014 2016 2016 2017	12873 11507 9976 8666	466 -245 539 561	IT NL UK ME FE NAm AF	39503
SALINI IMPREGILO Italy www.impregilo.it	Via dei Missaglia, 97, Milan, 20142	Pietro Salini CEO & Director t +39 02 24422111 f +39 02 24422293	2014 2016 2016 2017	4096 4595 5760 5939	209 195 222 31	IT ME FE NAm SAm AF	31137
SISK GROUP Ireland www.sisk.ie	Wilton Works, Naas Road, Clondalkin, Dublin 22	Richard Sisk Director t+353 (0)1 409 1600 f +353 (0)1 409 1611	2014 2016 2016 2017	1000 650 535 500	30 14	IR UK AF	1304
SKANSKA Sweden www.skanska.com	Warfvinges vag 25, Stockholm, AB, 11274	Anders Danielsson President & CEO t +46 10 4480000 f +46 (0)8 755 12 56	2014 2016 2016 2017	15754 16358 15357 16667	549 538 537 417	SE NO FI DK UK PL CZ US NAm, SAm	43122
SKANSKA CZECH Czech Republic www.skanska.cz	Kubanske nam 1391/11, CZ-1000 05 Praha 10 - Vrsovice	Zdenek Burda President t +420 (0)2 67 310 476 f +420 (0)2 67 310 644	2014 2016 2016 2017	532 578	5 13	CZ SK	
SKANSKA FINLAND Finland www.skanska.fi	P.O. Box 114, FIN-00101 Helsinki	Juha Hetemaki President t +358 (0)9 6152 21 f +358 (0)9 6152 2271	2014 2016 2016 2017	738 678	28 26	FI ET	
SKANSKA NORWAY Norway www.skanska.no	Postbox 1175 Sentrum, NO-0107 Oslo	Geir Aarstad President t +47 (0)40 00 64 00 f +47 (0)23 27 17 30	2014 2016 2016 2017	1494 1273	48 41	NO	
SKANSKA POLAND Poland www.skanska.pl	Generala Zajaczka 9, PL-01-518 Warsaw	Roman Wieczorek President t +48 (0)22 561 3000 f +48 (0)22 561 3001	2014 2016 2016 2017	1134 1060	54 50	PO	
SKANSKA SWEDEN Sweden www.skanska.com	Rasundavagen 2, SE-169 83 Solna	Mats Williamson President t +46 (0)8 504 350 00 f +46 (0)8 755 63 17	2014 2016 2016 2017	3250 3346	153 152	SE	
SKANSKA UK UK www.skanska.co.uk	Maple Cross House, Denham Way, Maple Cross, Rickmansworth, Hertfordshire WD3 9SW	David Fison President t +44 (0)1923 776666 f +44 (0)1923 423900	2014 2016 2016 2017	1669 1970	52 47	UK	
SPIE France www.spie.eu	Parc Saint Christophe, 10 avenue de l'Entreprise, 95863 Cergy Pontoise Cedex	Gauthier Louette Chairman & CEO t +33 (0)1 344 18181 f +33 (0)1 34243321	2014 2016 2016 2017	5220 5432 5156 6128	334 211 321 320	FR UK BE DE DK GR CZ	46852
SRV GROUP Finland www.srv.fi	Derby Business Park, Tarvonsalmenkatu 15, Espoo, UU 02601	Juha Pekka Ojala President & CEO t +358 (0)201 455 200 2017	2014 2016 2016 1100	684 719 884 17	19 23 22	FI	1111
STRABAG Austria www.strabag.com	Triglavstraße 9, Villach, Wien (Vienna), 9500	Thomas Birtel CEO t +43 (0)1 224 220 f +43 (0)1 224 220	2014 2016 2016 2017	12476 13123 12400 13508	81 122 93 892	DE AT BE CH HU LUX NL ME AF	72904

COMPANY COUNTRY WEB ADDRESS	ADDRESS	SENIOR EXECUTIVE & CONTACT NUMBERS	YEAR	GENERAL FINANCIAL DATA (€ MILLION) TURNOVER	 OPERATING PROFIT	MAIN AREAS OF WORK (SEE END OF TABLE FOR KEY TO CODES)	NO. OF EMPLOYEES
STRUKTON GROEP Netherlands www.strukton.com	Westkanaaldijk 2 - Utrecht - P.O. Box 1025 - 3600 BA MAARSSEN	Gerard Sanderink Chairman t +31 (0) 30 248 69 11 f +31 (0) 30 248 64 66	2014 2016 2016 2017	1775 1680 2300 1097	-7 71 67 33	NL	6500
SWIETELSKY Austria www.swietelsky.com	Edlbacherstraße 10, A - 4020 Linz	Peter Gal Managing Director t +43 (0) 732 69710 f +43 (0) 732 6971 7410	2014 2016 2016 2017	1897 2069 1976 1904	 87 	AT HU	8957
TAYLOR WIMPEY UK www.taylorwimpey.com	Gate House, Turnpike Road, High Wycombe, Buckinghamshire, HP12 3NR	Pete Redfern CEO & Executive Director t +44 (0)149 455 8323 f +44 (0)149 488 5663	2014 2016 2016 2017	3332 4320 4477 4828	567 847 903 1012	UK	5183
TBI HOLDINGS BV* Netherlands www.tbi.nl	Wilhelminaplein 37, PO Box 23134, 3001 KC Rotterdam	Daan Sperling Chairman t +31(0)10 290 85 00 f +31(0)10 486 57 88	2014 2016 2016 2017	1700 1577 1573 1600	 14 -7 	NL BE	5701
TECHINT ENGINEERING & CONSTRUCTION* Italy www.techint.it	Via Monte Rosa 93, 20149 Milano	Paolo Bigi CEO t +39 02 4384 1 f +39 02 4693026	2014 2016 2016 2017	2388 1803 1448		IT AF EU Nam	3665
TECHNICAL OLYMPIC Greece www.techol.gr	20 Solomou Street, GR-174 56 Athens	Constantine Stengos Chairman t +30 (0)10 9969700 f +30 (0)10 9955586	2014 2016 2016 2017	70 42	-7 -15	GR US	663
TECHNIPFMC UK www.technip.com	1 St Paul's Churchyard, London, EC4M 8AP	Douglas Pferdehirt CEO t +33 (0)1 47782121 f +33 (0)1 47783340	2014 2016 2016 2017	10074 10338 13742 15085	759 750 1241 1219	FR DE LUX PO ES CH ME FE NAm AF	34411
TECNICAS REUNIDAS Spain www.tecnicasreunidas.es	c/Arapiles 13, Madrid, Madrid 28015	Jose Llado Fernandez-Urrutia Chairman t +34 (0)91 5920300 f +34 (0)91 5920397	2014 2016 2016 2017	3149 4188 4793 5069	183 112 236 156	ES	8644

COMPANY COUNTRY WEB ADDRESS	ADDRESS	SENIOR EXECUTIVE & CONTACT NUMBERS	YEAR	GENERAL FINANCIAL DATA (€ MILLION) TURNOVER	 OPERATING PROFIT	MAIN AREAS OF WORK (SEE END OF TABLE FOR KEY TO CODES)	NO. OF EMPLOYEES
TEIXEIRA DUARTE Portugal www.tduarte.pt	Lagoas Park, Edificio 2, Porto Salvo, 2740-265	Pedro Teixeira Duarte Chairman & CEO t +351 (0)21 7912300 f +351 (0)21 7941120	2014 2016 2016 2017	1716 1412 1115 1035	197 90 14 109	PT	3015
TEKFEN HOLDING Turkey www.tekfen.com.tr	Kultur Mahallesi, Tekfen Sitesi, Budak Sokak, A-Blok, No 7, Ulus-Besiktas, Istanbul, IB 34340	Osman Cengiz Birgili President t +90 212 3593300 f +90 212 3593305	2014 2016 2016 2017	1542 1287 1418 1543	 44 94 136	TR, ME	13234
TK DEVELOPMENT Denmark www.tk-development.dk	Vestre Havnepromenade 7, 9000 Aalborg	Soren Kempf Holm CEO t +45 (0)88 96 10 10 f +45 (0)88 96 10 11	2014 2016 2016 2017	115 44 106	1 2 -44	DK DE SE SF PO CZ HU	84
TREVI SPA Italy www.trevifin.com	Via Dismano 5819, Cesena, FC 47522	Davide Trevisani Chairman t +39 0547 319111 f +39 0547318542	2014 2016 2016 2017	1211 1342 1081 1033	46 38	IT ES UK AF ME FE NAm	7867
VAN OORD Netherlands www.vanoord.com	Schaardijk 211, 3063 NH Rotterdam	Pieter van Oord CEO t + 31 88 8260000 f +31 888265010	2014 2016 2016 2017	2104 2579 1710 1530	119 169 159	NL BE FR UK DE ES PT DK AF ME FE	4912
VAN WIJNEN* Netherlands www.vanwijnen.nl	Baarnsche dijk 14 Baarn, Postbus 76, 3740 AB Baarn	Edwin van den Berg Chairman t +31 (0)35 548 28 28 f +31 (0)35 548 28 27	2014 2016 2016 2017	699 693 700 750	16	NL	1659
VEIDEKKE Norway www.veidekke.no	Skabos vei 4, Oslo, PS 0278	Arne Giske CEO t +47 (0)21 05 50 00 f +47 (0)21 05 50 01	2014 2016 2016 2017	2862 2688 3064 3235	92 75 113 77	NO SE DK	7736
VIANINI LAVORI Italy www.vianinigroup.it	Via Montella 10, 00195 Roma	Franco Cristini CEO & Managing Director t +39 06 374921 f +39 06 3728546	2014 2016 2016 2017	180 180	-3 -3	IT DE FR FE	51
VINCI France www.vinci.com	1, cours Ferdinand de Lesseps, 92851 Rueil-Malmaison	Xavier Huillard Chairman & CEO t +33 (0)1 47 16 35 00 f +33 (0)1 47 51 91 02	2014 2016 2016 2017	39043 39161 38547 40876	3308 3436 4174 4374	FR DE UK BE EUR NAm SAm FE ME	190704
VINCI CONCESSIONS France www.vinci.com	1, cours Ferdinand de Lesseps, 92851 Rueil-Malmaison	David Azema President t +33 (0)1 47163500 f +33 (0)1 47519102	2014 2016 2016 2017	5823 5800	2428 3900	FR UK	16814
VINCI CONSTRUCTION France www.vinci.com	1, cours Ferdinand de Lesseps, 92851 Rueil-Malmaison	Richard Francioli President t +33 (0)1 47163500 f +33 (0)1 47519102	2014 2016 2016 2017	15419 14500	319 299	FR UK BE DE AF NAm SAm ME FE	59682
VOLKERWESSELS Netherlands www.volkerwessels.com	Podium 9, 3826 PA Amersfoort	Jan de Ruiter Chairman t +31 (0) 88 1866186 f +31 (0)10 4244233	2014 2016 2016 2017	4400 4906 5490 5714	228 235 254 164	NL DE UK BE NAm	16179
WATES GROUP UK www.wates.co.uk	Leatherhead, Wates House, Station Approach, Leatherhead, Surrey KT22 7SW	James Wates Director t +44 (0)1372 861000 f +44 (0)20 8679 8223	2014 2016 2016 2017	1302 1661 1863 1863	27 39 55 39	UK	4000
WILLMOTT DIXON UK www.willmottdixon.co.uk	Suite 201, The Spirella Building, Bridge Road, Letchworth Garden City, Herts SG6 4ET	Rick Willmott Chief Executive t +44 (0)1462 671852 f +44 (0)1462 681852	2014 2016 2016 2017	1561 1824 1489 1489	27 17 34 34	UK	3024
YIT Finland www.ytigroup.com	Panuntie 11, FIN-00621, Helsinki	Kari Kauniskangas President & CEO t +358 (0)20 43311 f +358 (0)20 4333700	2014 2016 2016 2017	1779 1732 1678 1993	74 61 10 75	FI CIS SE ME AF	5427

Key to areas of work codes:

AF	Africa
AT	Austria
AU	Australia
BE	Belgium
CH	Switzerland
CIS	Conf. Ind. States
CR	Croatia
CZ	Czech Republic
DE	Germany
DK	Denmark
ES	Spain
EU	Europe
FE	Far East
FR	France
GB	Great Britain/UK
GR	Greece
HU	Hungary
IE	Ireland
IT	Italy
LU	Luxembourg
LV	Latvia
ME	Middle East/Asia Pacific
NAm	North America
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
R-Fed	Russian Federation
SAm	South America
SF	Finland
SL	Slovakia
SU	Russia
SW	Sweden
TU	Turkey
UK	United Kingdom
YU	Yugoslavia

Utility range
What do you integrate?

Atlas Copco

Atlas Copco's utility compressors are lightweight, compact and easy to install in any truck. Your source of compressed air, no matter where you need to be.

The dictionary defines the word utility as the state of being useful, profitable or beneficial – the 8 Series Utility range combines all three benefits inside a light weight, compact package.

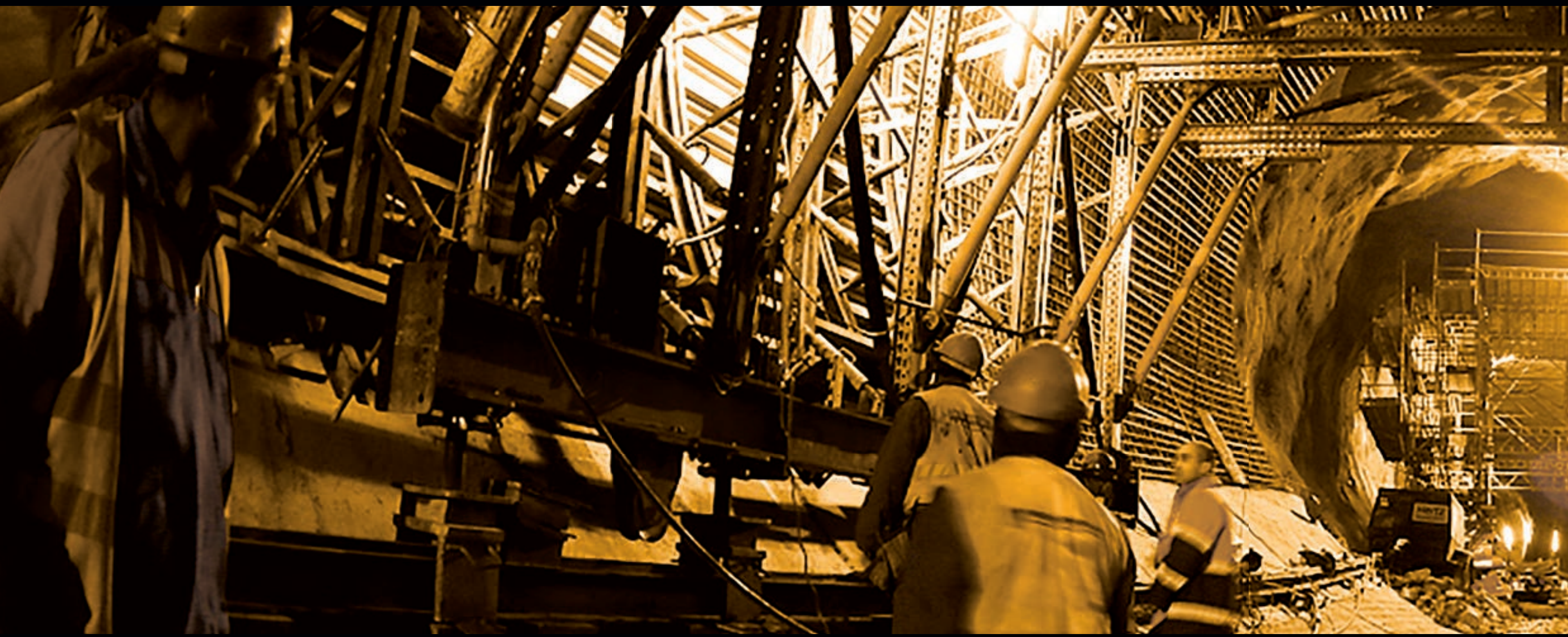
Boost your versatility

All 8 Series compressors are under 750 kg and service can always be completed under one hour. The Utility range offers models with our revolutionary PACE system. PACE enables you to control the pressure from 5 to 10.5 bar at the touch of a button – giving you even more versatility to handle the toughest applications. All models come with a corrosion free C3 rated canopy. Several models can also be equipped with an integrated generator.

Boost your productivity with pneumatic tools

Atlas Copco also offers a wide range of pneumatic breakers, hammers and drills. The utility air compressor is a perfect match with the RTEX breaker range. Combine for example the U110 with 2 RTEX 25 breakers.

www.atlascopco.com/utility



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