BMS 2021

YOUR CONNECTION TO CRANES, LIFTS AND MORE

EXCITING NEWS FROM
BMS GROUP OPERATIONS
AROUND THE WORLD

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A YEAR FULL OF CHALLENGES AND GOOD DEVELOPMENT

To say the least, 2020 has been a year full of challenges. Countless plans have had to be revised, agreements changed, projects reworked – all due to the effects of the coronavirus COVID-19.

Despite the significant challenges that have also befallen the BMS Group in the wake of coronavirus, we have managed to maintain a high level of activity. And along the way, it has been possible to consolidate and expand our activities in several markets. New tasks for well-known customers, well-known tasks for new customers.

One of the positive news in 2020 is that we established the second company in the United Kingdom, this time BMS Heavy Cranes UK Ltd. based in Huntingdon north of London. Furthermore, BMS Heavy Cranes is now represented with its own companies in Vietnam, Finland and the Netherlands. BMS Heavy Cranes Vietnam Co. Ltd. is located in Hanoi City, while the BMS Heavy Cranes Oy Finland headquarter can be found in Ulvila in the southwestern part of Finland. As for the third new company – BMS Heavy Cranes B.V. Netherlands – it is situated in Eindhoven.

We have been active in the Russian market for some years, today as a joint venture with the Moscow-based company Greenkran under the name BMS Heavy Cranes Green JSC.

In 2020 the BMS Group won an ESTA Award in the category "Cranes: telescopic, lifting capacity more than 120 tonnes", more specifically for lifting large steel girders under challenging conditions near an airport runway. We received further ESTA recognition in the form of a finalist placement in the category "Cranes: lattice boom" for a sequence of lifts with a pair of lattice boom crawler cranes.

During 2020 BMS Heavy Cranes had the good fortune of being awarded with Vestas 'Supplier Award "Operational Excellence 2020" – with Vestas highlighting our commitment to deliver results in time, flexibility in dynamic environments, support during challenging times, and moving ahead of schedules. Furthermore, it was emphasized that BMS Heavy Cranes continued to work on every single site during the turbulence caused by the coronavirus and ensuring safety and medically sound measures everywhere.

It is one thing to receive awards; something else is to strive every single day to solve each task to the full satisfaction of the individual customer. On time, in the agreed manner and within the financial framework. That is what is still our foremost aim.

I hope you will enjoy reading the BMS Group assignments we have selected for this issue of our annual magazine.

We look forward to doing business with you.

Best regards,

Jens Enggaard
CEO

In 2020, the BMS Group rose from no. 16 to no. 9 on the 'International Cranes and Specialized Transport IC50', a listing of the world's top crane companies using the total load moment rating in ton-metre of the cranes in the company's fleet.

The BMS Group in numbers:

Employees:	925+
Depots:	20+
Wheeled mobile cranes:	375+
Lattice cranes:	50+
Largest crane:	Liebherr LR11350

CRANE INSTALLED BY CRANES

// CRAWLER CRANE & MOBILE CRANE
// OFFSHORE WIND
// DENMARK

What do you do if your Offshore Support Vessel needs to have a new crane boom installed? Why not call BMS Heavy Cranes in order to have it lifted by two of their cranes in tandem.

That is precisely what the customer thought when the approximately 450 tonnes boom arrived from China to the Port of Esbjerg, Denmark, was lifted from the transport vessel and was then installed onboard the Offshore Support Vessel 'Pacific Osprey'.

As with many other tasks carried out by companies in the BMS Group, time was of the essence in this particular case. Indeed, the job was performed pretty smoothly. The lift of the boom onto 'Pacific Osprey' was executed mid-April using two BMS shore cranes and was followed by the installation of wires and hooks. After passing a series of load tests, the final part of the commissioning phase was executed early May, and an updated class approval was obtained shortly thereafter. At the same time training of all crane operators was carried out – and just before 1 June, the installation project was completed.

With the upgraded crane 'Pacific Osprey' is ranking among the most sophisticated windfarm installation vessels in the world as it can install the latest generation of wind turbines. 'Pacific Osprey' is now equipped with a 1,200 tonnes main crane with a hook height 132 m above deck allowing the vessel to handle four Siemens Gamesa 10.0-193 DD wind turbines per loadout, five MHI Vestas V164-10.0 MW or MHI Vestas V174-9.5 MW units, and three General Electric Haliade-X 12 MW turbines per loadout.

'Pacific Osprey' is presently transporting and installing 140 of Siemens Gamesa's SG 11.0-193 DD wind turbines for the Hollandse Kust Zuid 1-4 wind farms in the Dutch part of the North Sea. It will be the largest offshore wind farm in the Netherlands as well as in the world when fully operational in 2023.

The Offshore Support Vessel 'Pacific Osprey':

Built	2012
Length overall	161 m
Width	49 m
Draught	5.2 m
Carrying capacity	13,174 DWT

HELPING EUROPE'S LARGEST ONSHORE WIND FARM ON ITS WAY

// MOBILE CRANE & LATTICE BOOM CRANES
// ONSHORE WIND
// NORWAY

With a massive investment of more than 1 billion EUR, the joint venture company Fosen Vind DA is establishing Europe's largest onshore wind farm in central Norway. The project consists of six individual farms with a total of 277 wind turbines and a capacity of 1,057 MW. Thereby the project is larger than the total Norwegian wind power capacity today and it will be able to produce 3.6 TWh of renewable energy per year. That is enough to supply 180,000 households annually.

The wind farms are located in a coastal area, where there are some of the best conditions for wind power production throughout Europe. The six wind farms are Geitfjellet, Harbaksfjellet, Hitra 2, Roan, Storheia and Kvenndalsfjellet.

In connection with the Kvenndalsfjellet, BMS Heavy Cranes was tasked with the erection of 27 Vestas V117-4.2 MW wind turbines with a total capacity of 113.4 MW and a hub height of 87 metres each. For the task, a Liebherr LTM1750 mobile crane and assisting cranes, trucks and trailers were used for pre-installation, while the main installation was performed with two Liebherr LG1750 lattice boom cranes with assisting cranes, trucks and trailers.

To the great satisfaction of the customer, BMS Heavy Cranes managed to complete the installation of the 27 wind turbines in just one month, which is quite exceptional.

After completing the task on Kvenndalsfjellet, BMS Heavy Cranes' crew and machinery continued to the sister park Harbaksfjellet, where a further 30 Vestas V117-4.2 MW wind turbines were erected. During the same period, BMS Heavy Cranes had two cranes in operation on Geitfjellet and previously BMS' crew and machinery were in operation on Roan as well as Storheia.

Fosen Vind DA is a joint venture company owned by Europe's largest renewable energy producer Statkraft, the Norwegian electricity company TrønderEnergi and Nordic Wind Power DA.

Nordic Wind Power DA is an investor consortium established by the energy infrastructure investment company Credit Suisse Energy Infrastructure Partners and supported by the Swiss power company BKW AG (formerly known as Bernische Kraftwerke AG).

NO AWARDS WITHOUT HARD-WORKING AND PROACTIVE PEOPLE

Of course, it is a nice feeling when you yourself are aware that a given task has been solved in the best possible way. Nevertheless, it is something exceptional when you receive an award from your industry for the work you do.

This happened in particular in 2020, when the BMS Group won an ESTA Award in the category "Cranes: telescopic, lifting capacity more than 120 tonnes", more specifically for lifting large steel girders weighing 75 tonnes in difficult conditions near an airport runway. The task made special demands, as there were both height restrictions and the need to place the crane on 6-metres-high supports surrounded by a 20-metres concrete wall.

The BMS Group received further ESTA recognition in the form of a finalist placement in the category "Cranes: lattice boom". This was a sequence of lifts completed using a pair of LR11350 lattice boom crawler cranes. This task culminated in a spectacular 753 tonnes tandem lift of a 12 MW wind turbine nacelle installed with a hook height of 166 metres for a hub height of 135 metres.

ESTA – the European association of abnormal road transport and mobile cranes – was founded in 1976. The organization has members in 18 countries and has established very close ties to the equipment manufacturers who supply the heavy transport and mobile crane industry, giving ESTA members the opportunity to voice ideas on future developments and technical issues.

The ESTA Awards are overseen by 12 independent jurors who judge several categories in line with their expertise. Furthermore, there are two chairmen – one crane and one transport related. The Jurors' Coordinator oversees the whole operation.

In 2020, there was a record number of participants in the ESTA competition, with 38 finalists being selected for ten categories representing 24 companies and 13 countries.

2020 also brought another award, as BMS Heavy Cranes won Vestas' Supplier Award "Operational Excellence 2020". In connection with the prize, Vestas highlighted the commitment to deliver results in time, flexibility in dynamic environments, support during challenging times, and moving ahead of schedules. Furthermore, it was emphasized that BMS Heavy Cranes continued to work on every single site during the turbulence caused by COVID-19 and ensuring safety and medically sound measures everywhere.

For both the ESTA and Vestas awards, it is worth emphasizing the efforts that are made on a daily basis by hardworking and proactive employees in all parts of the BMS Group. Without them, no awards. All the more so, the BMS Group is extremely proud of the work effort, commitment, flexibility, and performance of the employees.

The BMS Group has twice before received an ESTA Award. In 2007, the BMS Group achieved a second place in the category "Crane Job of the Year (+100 tonnes)" for five cranes lifting a 200-tonnes bridge girder in Copenhagen, Denmark. The following year, the BMS Group won first place in the same category for special transport and four crane lifts for the installation of a 193-tonnes pedestrian bridge, also in the Danish capital.

THE FERRY WILL BE IN PORT SHORTLY

// MOBILE CRANES & TRUCK-MOUNTED CRANES
// INFRASTRUCTURE
// DENMARK

With a fleet of 15 vessels, Molslinjen operates nine routes in Denmark with a total of more than eight million passengers annually. Molslinjen's largest ferries carry over 400 cars and 60 motorcycles as well as up to 30 trucks on a crossing.

At the end of 2020, Denmark's largest domestic ferry company Molslinjen opened a new ferry terminal in one of the ports that the company calls at many times every day of the year.

In this connection, three of the companies in the BMS Group – that is BMS Aarhus, BMS Krangården and BMS Kruse – were involved in bringing the new ferry bridges, the ramps for the ferries' upper decks and a skywalk for walking passengers in place.

The BMS companies used lots of equipment to solve the extensive task, including a Liebherr LTM 1450-8.1, a LTM 1300-6.2, a LTM 1220-5.2, and a LTM1090-4.2 mobile crane as well as a Palfinger 200002L-SH, a Palfinger PK110002 SH, and an HMF 9529-K truck mounted crane.
Construction of the new ferry terminal in Denmark's second-largest city Aarhus was initiated in 2018. The overall intention has been to move the ferries and their significant car and truck traffic away from the inner city to a port area southeast of central Aarhus.
On that occasion, the company chose to invest in both wider and longer ramps, ensuring cars and trucks better access conditions to the ferries. Besides, the new ferry terminal allows Molslinjen's ferries to use electricity from land, which means that it is no longer necessary with fuel-powered generators to produce electricity when the vessels are in port.
Finally, the terminal has a new covered skywalk, which ensures pedestrians direct access to and from the ferries secured against the changeable Danish weather.
The ramps are an essential part of the new terminal, as they ensure that thousands of cars and trucks get off and on the ferry easily and quickly every day. The ramps, which together weigh over 1,000 tonnes, have been custom-made in China and sailed to Aarhus via Rotterdam, the Netherlands.

Molslinjen has some of the world's largest high-speed ferries, all built in Australia. The newest of them is Express 4, which is designed to give passengers supreme comfort and the fastest possible crossing. This ferry can carry over 1,000 passengers and travels at a speed of 40 knots, equivalent to 75 km/h.

ELECTRICAL EQUIPMENT MEETS STRICTER ENVIRONMENTAL REQUIREMENTS

// BATTERY-POWERED CRANE & TRUCK
// INDUSTRY
// DENMARK

When an external partner has to enter a clean environment in food, pharmaceutical and packaging companies, it is understandable that special requirements are placed on cleanliness.

This is the reason why BMS Kruse Vest has recently acquired a battery-powered crane. The new equipment has, for example, been used at the Danish company DermaPharm, where the crane was delivered in a closed trailer.

The job also included a newly purchased electric truck with hydraulic crane arm. The equipment was used in connection with the delivery of a new tank and the relocation of tanks internally at the factory.

The crane is a Hoeflon C30e, which the manufacturer describes as an 'electric pick and carry crane'. The crane is fully lithium powered with a continuous jack adjustment option. Each levelling jack calculates its position to determine the hoisting capacity. Its low centre of gravity and extending crawler undercarriage make it highly suitable for manoeuvring on a slope. The crane is fitted with sloping crawler supports for large ground clearance. The machine has a compact jib making it especially short. The transport height remains two meters as the fly jib fits in the centre of the device.

The electric crane has a capacity of 9,000 kg, a maximum range of 12.2 m with 20 m fly-jib, and a maximum hoisting height of 14.5 m with 22 m fly-jib. The crane is the first equipment of this kind in Denmark, and the BMS Group expects many similar tasks for food, pharmaceutical and packaging companies with a strong focus on hygiene and working environment.

The electric Linde truck with hydraulic crane arm is custom made for the BMS Group by N.C. Nielsen A/S, which is Denmark's largest supplier of forklifts, terminal tractors and special machines. The new equipment is an extension of the BMS Group's significant fleet of electric trucks, however, it is the first with a hydraulic crane arm.

DermaPharm specializes in the manufacture of mild, environmentally friendly personal care products. Located in Denmark, the company is subject to the strict Danish laws in terms of high standards and quality control. Additionally, Danish consumers are considered the most critical and demanding in the world when it comes to health and environmental concerns. DermaPharm develops and manufactures its products at an ISO-certified plant.

EXTREMELY DIVERSE

Throughout the year, BMS Krangården is involved in extremely diverse tasks. These are a few examples of where the company's crew and equipment – often in collaboration with other parts of the BMS Group – have been deployed.

BMS Krangården was responsible for the delivery of cranes and low loaders when unloading the ship 'Meri', carrying three types of equipment for wind turbines. The biggest challenge was the handling of a 500-tonnes tower grillage, which had to be driven of the ship. The task was solved with two large low loaders from Torben Rafn A/S, each 22 axles long. After completion of the transport, the grillage had to be secured on BMS supports, so that the customer could work safely on the structure.

BMS Krangården has been a very active player in the extensive construction of Aarhus Docklands, a new neighbourhood in Denmark's second-largest city. Within the past year, the BMS Group has assisted in setting up more than ten tower cranes – most of them at the height of about 80 metres. Along the way, anything between 130 and 500 tonnes mobile cranes have been used – the latter with tip, as two tower cranes from one position were installed within three days.

The massive construction work is converting a former container port to a residential, educational, commercial and recreational area, consisting of high-rise buildings of modern architectural designs, seaside promenades and a network of canals. Fully developed, the Docklands is intended to sustain 10-12,000 residents and 10,000 jobs.

BMS Krangaarden has also been entrusted with the task of driving two sets of blade frames through the entire port of Esbjerg. The items, which were up to 13 metres wide, 23 metres high and weighing 130 tonnes, were driven on a 24-axle SPMT. Along the way, it was necessary to navigate through very narrow passages with less than 2 cm clearance. The task was carried out in collaboration with Nicon Industries, for whom the BMS Group has solved a substantial number of large transports in recent years.

The BMS Group is also heavily involved in connection with transport and lifting tasks for the Østerild Wind Turbine Test Field, a facility managed by the Technical University of Denmark for testing offshore wind turbines with a pinnacle height up to 330 metres. Thus, using two mobile cranes, BMS Krangården unloaded a 94-metres long blade and transported it on SPMT's to the test field. In fact, even larger equipment has been handled as BMS Krangården has participated in the replacement of 94-metres blades with 97-metres blades. In the course of three days, three old blades were driven to the port of Hanstholm, where a ship delivered the new blades on the last day of transport. After combined unloading and loading of the vessel followed three days of driving in the opposite direction. For this task, the BMS Group provided SPMT's for transport, smaller cranes for loading and unloading at the port and the test facility, as well as 500 tonnes and 750 tonnes cranes for loading and unloading the ship.

TO RUSSIA WITH LOVE

// MOBILE CRANE
// ONSHORE WIND
// RUSSIA

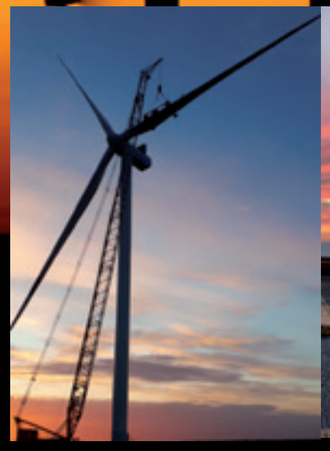
For the past two years, BMS Heavy Cranes has been represented in the vast Russian market, more specifically in a joint venture with Greenkran. The Moscow-based company, which provides a wide range of crane services between 80 and 750 tonnes, cooperates with BMS Heavy Cranes under the name BMS Heavy Cranes Green JSC.

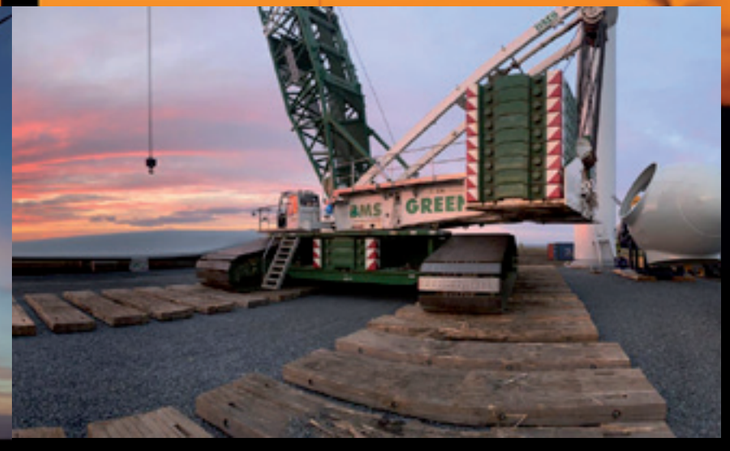
Since 2018, BMS Green has installed no less than 178 wind turbines at several locations in Russia. This includes the Kalmykia, Kazachya and Gukovo projects, which have been carried out with Vestas wind turbines, while the Azovskaya project has been erected with wind turbines from Siemens Gamesa.

Siemens Gamesa obtained its first order in Russia in the form of 26 SG 3.4-132 wind turbines for the Azovskaya wind farm in southern Russia near the Black Sea. This project contributes to the Russian targets to develop local renewable energy resources and a local wind energy industry.

The wind turbines, which have a total capacity of 90 MW, have been erected on an area of 133 hectares. The wind farm is expected to have an annual production of around 320 GWh, which will reduce carbon dioxide emissions by 250,000 tonnes annually. The owner of this wind farm is the Russian company in the Enel Group, a multinational power company and a leading operator in the power and gas markets of Europe and Latin America.

The Gukovo wind farm approximately 100 kilometres north of Rostov, on the river Don, not far from the Black Sea includes 26 Vestas V126/3450 wind turbines with a hub height of 87 metres while the park in Kazachya consists of 24 Vestas V126-4.2 MW wind turbines. This facility is located about 350 kilometres northwest of Rostov on the river Don. Finally, there is the wind farm in Kalmykia, which is one of 21 autonomous republics in the Russian Federation. Located in the south of the Volga, on the shores of the Caspian Sea, a wind farm with a capacity of 450 MW is being built. The climate of Kalmykia is dry, sharply continental, the territory is a semi-desert plain, and leading industries are oil and gas, electricity generation, mechanical engineering, and food processing – and within a foreseeable future also wind energy.





Siemens Gamesa is a leading supplier of wind power solutions to customers all over the globe. The company has installed over 107 GW in 75 countries. It is headquartered in Spain and listed on the Spanish stock exchange.

With 40+ years in the wind industry, Vestas has more experience than anyone else in making wind work. Vestas has installed more than 122 GW of wind power capacity in 82 countries. The Vestas headquarter is located in Denmark and the company is listed on the Danish stock exchange.

RESTORATION OF A NATIONAL SYMBOL

// TRUCK-MOUNTED CRANE & MOBILE CRANE
// BUILDING RESTORATION
// DENMARK

At the top of Dybbøl Banke – an elevation in the landscape – in the southern part of the Danish mainland stands Dybbøl Mill. As a building, the mill is neither particularly old nor very special. Its iconic significance as a Danish symbol is due to its location as it became the centre of the fierce fighting in the Schleswig Wars of 1848-49 and 1864.

As a prelude to the celebration of the 100th anniversary of North Schleswig's reunification with Denmark in 1920, new wings were to be mounted on the mill. That task was given to the company Møllebygger Petersen, which made good use of the BMS Group's expertise in connection with dismantling and reassembly of the windmill hat and wings.

To solve the task, BMS Esbjerg and BMS Kolding used an 85tm truck-mounted crane and a 250-tonnes mobile crane fitted with 88-tonnes counterweight and an outlay of 30 metres.

Furthermore, the top of the mill with a weight of 16 tonnes was lifted down, as the masonry under it had to be replaced with a pre-cast ring, which was prepared on the ground next to the mill. The new installation weighs 7 tonnes and was lifted up by a 130-tonnes crane.

The reason for the replacement of the 21.5 m wings was that they had been in use for four decades and needed to be replaced with a new set. Usually, wings last 25 to 30 years, so the old ones have done well – and the same will hopefully be the case for the wings that the BMS Group has helped to bring into place.

In 2020, Dybbøl Mill received the Sønderborg Municipality Award for Recognition of Beautiful Renovation and Maintenance as the repair of the mill "contributes to the dissemination of the Dutch mills as a unique building type in a Danish context and enables the mill to convey the story of the fortification area both before and after 1864." As a significant neighbour of the History Centre Dybbøl Banke in the middle of the Dybbøl fortification, Dybbøl Mill is once again in its best condition – now with new wings.

The story of Dybbøl Mill is that of destruction and rebuilding – and as such, it has become the most significant national symbol of Danish endurance. Here is the story in short:

1744	The first mill – made of wood – is built
1800	Lightning hits the mill, it burns down but is soon rebuilt, once again in wood
1849	Prussian grenades hit the mill, and it burns down once more
1853	The mill is rebuilt as a Dutch windmill in tiles
1864	A Prussian bombardment destroys the mill again – it is rebuilt as a Dutch windmill of tiles but as Denmark loses the Duchies of Schleswig, Holstein and Lauenburg the mill becomes part of Prussia, later Germany
1918	World War I ends and democratic polls determine the Danish-German border
1920	The northern part of Schleswig – with Dybbøl Mill – returns to Denmark
1935	The mill is rebuilt after a fire
1990	Dybbøl Mill is taken out of active operation
1995	Sønderborg Castle Museum organizes exhibitions in the mill and the grain repository
2012	The mill house next to the mill is established for the administration of the mill and the History Centre Dybbøl Banke

BMS' NEWLY DEVELOPED MODULAR CRANE IS PURE WIN-WIN-WIN

When installing escalators, the BMS Group often encounts particular challenges in terms of safety and time. This has led to considerations for optimized solutions – and most recently to the development of BMS' self-developed modular crane.

Based on experience with handling escalators throughout Europe – often in a minimum of space – BMS Engineering, in close collaboration with the BMS Group's people in the field, has developed a modular crane that can go through an ordinary door opening.

The new modular crane allows companies in the BMS Group to ensure optimal documentation prior to the planned tasks. And when working on the specific job it is possible to operate in a limited space, just as working hours can be reduced significantly. Furthermore, the BMS Group is able to perform safe and controlled lifts in a much better manner as the operator can maneuver the module crane via remote control at a good distance and with the best overview.

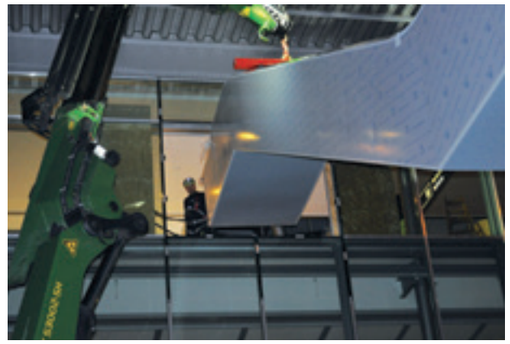
Another benefit of the BMS modular crane is that you no longer have to follow traditional methods of lifting escalators, which have often been very stressful for the employees.

When installing an escalator – whether it is the construction's first or a replacement of an existing one – the key points are safety, space and time. The BMS module crane meets all three criteria:

// Thanks to the modular construction of the crane, it is possible with great precision to perform calculation and documentation of how much both the crane and the practical installation work will load the floor and bearing beams.

// Because each part of the module crane measures a maximum of L 100 x W 80 x H 200 cm and weighs less than 500 kg per module, the vast majority of elevators can handle it – and it is minimal how much space must be available to be able to bring the crane safely to and from the job.

// Since the installation of the modular crane can typically be completed in about half an hour, it is not unusual that the total time consumption can be reduced by 25 per cent – this is not least crucial when installing escalators, which often have to be done at night with a very limited time window available.



BMS MODULAR CRANE

// Each part of the module crane measures a maximum of L 100 x W 80 x H 200 cm

// The modular crane weighs less than 500 kg per module

// All parts of the module crane can pass through a door opening of W 80 x H 200 cm

// Ballast frames can weigh 500, 600, 700, 800, 900 or 1,000 kg depending on the load-bearing capacity of the floor

// Setup time is only about 30 minutes

// Outlay with 4 tonnes with tilt mounted is 2,036 mm

// Outlay with 8 tonnes is 1,274 mm

// Current pressure at the edge of the module crane as well as evenly distributed pressure of the erected crane is documented

// Wireless remote control ensures the operator good distance and an overview of the lift as a whole

// The modular crane can also be used as a winch for, for example, mounting long escalators on sloping foundations, as they are known primarily in Norway and Sweden.

WHY DON'T WE DRIVE ON THE WATER?

// MOBILE CRANE
// BUILDING CONSTRUCTION
// DENMARK

Ferring Pharmaceuticals' new domicile located in a development area in the southern part of Copenhagen is designed by the British architects Foster + Partners. They are known for prominent buildings such as the Smithsonian Institute in Washington D.C., the Reichstag in Berlin and the British Museum in London. The headquarters, which houses 24,000 square metres of offices and laboratories, is designed as a triangular glass house on a plinth. The building, which is very visible on approach to Copenhagen Airport, overlooks the strait to Malmö, where Ferring Pharmaceuticals was founded.

At a planning meeting during the construction of the new headquarters for Ferring Pharmaceuticals, it was discussed how best to remove a tower crane used at the construction site. Under normal circumstances this could be done using a Liebherr LTM 1750-9.1 with 84 m tilt, super lift and 204 tonnes of ballast. However, as the new building was constructed on an artificial island with only one proper access road this crane would block all deliveries in the eight to ten days the job was scheduled to last. It was not good at all, so it was necessary to think alternatively.

Workable solutions were pondered until one of BMS Copenhagen's participants in the meeting raised the question: Why don't we drive on the water? That is, move a Liebherr LTM 1450 8.1 with main boom on board a jack-up, sail out to the island and dismantle the tower crane from there. Then the job could be done without inconvenience to the rest of the construction site.

After thorough investigations of the practical challenges associated with the untraditional solution, the vessel 'Aarsleff Jack V' was called in, and the mobile crane was driven on board.

Unfortunately, two days followed with somewhat problematic weather and wind, but once it was over, the operation could be carried out precisely as planned.

As an extra spice to the task, it had to be performed at night, as it was necessary with the least possible traffic at Copenhagen Airport, located very close to the construction site.

NEW BRIDGE IS REHEARSAL OF GIANT CONNECTION

Some years ago, an analysis carried out by the company responsible for maintenance and traffic control on all of the state-owned Danish railway network showed that the Storstrøm Bridge from 1937 is in poor condition. If this part of the Danish infrastructure were to be maintained, it would require extensive maintenance work within the next few years. Furthermore, the bridge would not be able to support the increasing traffic load via the Fehmarn link between Denmark and Germany when this is scheduled to open at the end of this decade.

Due to these challenges, it was decided to demolish the existing bridge and the Danish Road Directorate is presently building a new Storstrøm Bridge, which will be a significant part of the future railway corridor between the two countries.

Over the past year, the BMS Group – not least in the form of the BMS Lolland Falster department – has worked closely with the Italian Storstrøm Bridge Joint Venture (SBJV) in particular. This collaboration, which includes everything from smaller crane tasks to large test loads and heavy lifting, is expected to continue until 2023, when the new bridge will be completed.

The approximately 4 km long Storstrøm Bridge – Denmark's third longest bridge – will be constructed with a double track electrified railway for 200 km/h and a two-lane regional road. In addition, the bridge will have a lane for cyclists and pedestrians. The bridge is expected to be ready for cars in 2023 and for railway traffic in 2024.

Visualizations: The Danish Road Directorate

The Storstrøm Bridge is of great importance in the region and, at the same time, it is an important part of the Danish-German railway corridor. Over the coming years, this corridor will be significantly strengthened by the construction of the Fehmarn link complete with railway infrastructure on land.

Speaking of the Fehmarn link: The BMS Group not only sees the new Storstrøm Bridge as an essential project in its own right. It can also be considered as a dress rehearsal in relation to the tasks ahead of the Fehmarn project, which is expected to be one of the largest construction undertakings in the European Union.

The Fehmarn project will include an approximately 18 km long tunnel that will connect Denmark and Germany with a two-lane, electrified railway and a four-lane motorway. The connection, which is expected to be completed around 2029, will be a central part of the north-south corridor in the trans-European transport network and will close the gap between the Scandinavian and the rest of the European railway network. The Fehmarn connection has therefore been designated by the European Commission as a priority project.

The new Storstrøm Bridge is built as a cable-stayed bridge, where a pylon with a height of some 102 metres will support the navigational span of the bridge.

Length:	About 4 km
Total height:	102 m
Width:	Approximately 24 m
Navigational clearance:	26 m
Price:	550 million EUR (including demolition of the existing bridge)
EU support:	15 million EUR

HANG ON – THAT'S NOT MY TREE!

// LATTICE BOOM MOBILE CRANE
// AUSTRALIA

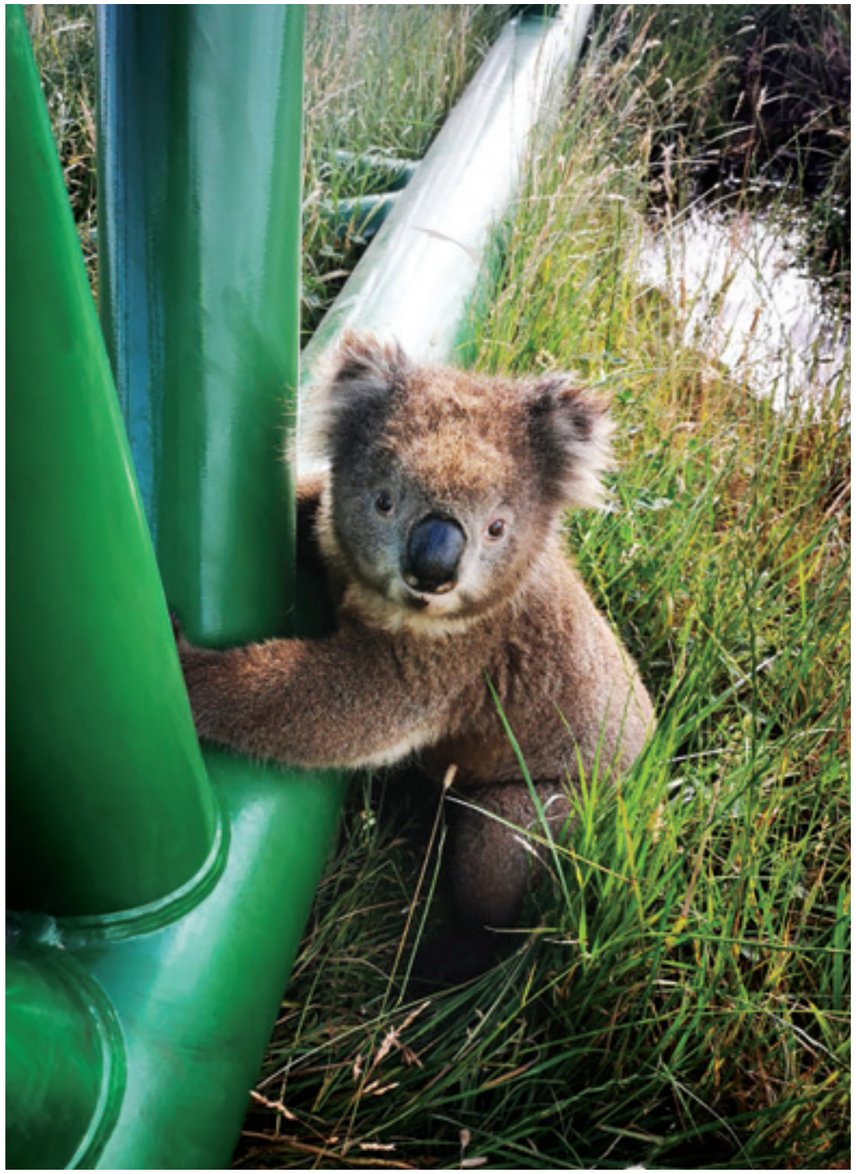
For many, the koala is synonymous with Australia's extraordinary wildlife. Together with the kangaroo, many thus see the koala as the symbol of the country, and for a short time, BMS Heavy Cranes Australia Pty. in fact had a live koala as its mascot.

In Mortlake South Wind Farm near Mortlake in Moyne Shire, Victoria 35 Nordex 4.5MW turbines are being completed. When fully operational they will produce up to 157.5 MW – that is energy enough for 117,000 households – and the wind farm will be part of the Victorian Renewable Energy Target aiming at 40 per cent of electricity generation from renewable sources by 2025.

Situated at the foot of the dormant volcano Mount Shadwell, the Mortlake wind farm is being constructed on cleared open and level land that is predominantly used for dairy farming. The location is exposed to consistent high winds, making the site ideal for wind-powered electricity generation. Livestock grazing will continue around the wind turbines once construction is complete – but cows are not the only animals interested in this area.

While off-loading components for two Liebherr LG1750 cranes, the BMS crew was one early morning visited by a koala, apparently trying to figure out the resemblance between a boom piece for a crane and a eucalyptus tree. After a small photo session, the animal was brought to a more familiar environment – but the memory of the little visitor remains while BMS crew and machines work on erecting the turbines.

The koala *(Phascolarctos cinereus)* is an arboreal herbivorous marsupial native to Australia. It is found in coastal areas of the mainland's eastern and southern regions, inhabiting Queensland, New South Wales, Victoria, and South Australia. Koalas typically live in open eucalypt woodlands, and the leaves of these trees make up most of their diet. According to official sources the 2019-2020 Australian bushfires, and especially fires in New South Wales, resulted in the death of up to 8,400 koalas. That is around a third of the local population on New South Wales' mid-north coast.



BMS AT WORK IN DENMARK'S ENERGY CAPITAL

The proximity to the North Sea is undeniable when you look at the tasks that BMS Esbjerg performs – either alone or in collaboration with one or more companies in the BMS Group.

For example, at the port in the company's home city, BMS Esbjerg has lifted a 50-t walkway on the Multipurpose Platform Supply Vessel 'Wilson Arctic'. The task consisted of lifting the walkway off, putting a new tower section in place and reassembling the walkway.

This was a joint lift performed with a 160-t crane and a 250-t crane from BMS Kolding.

'Wilson Arctic' is working within the oil and gas as well as the offshore wind industry.

The Norwegian-registered Offshore Supply Ship 'Island Diligence' has also received help from crew and machinery from the BMS Group, as among other things the footbridge had to be hoisted. The job was planned by BMS Esbjerg and carried out with BMS Krangården's 200-t crane.

At the Danish Crown Foods A/S owned food producer Mou Suppe, a refrigeration system had to be replaced. Including installation of the new unit weighing 27 t and with a length of 11 m stretched over two to three weeks and had precise deadlines, as during the replacement the plant was shut down for 48 hours.

Among other things, BMS Esbjerg was responsible for planning as well as removing the old plant, while the construction group Arkil A/S took care of permits and closure of public roads.

The task was quite equipment-intensive, as a 250-t, a 130-t, a 100-t, a 78-tm and a 53-tm crane were involved – together with tractor units with drop-deck trailers from the BMS company Torben Rafn A/S.

Esbjerg is Denmark's fifth-largest city and municipality. The city itself first developed with the establishment of the harbour in 1868. Still, the municipality also includes Ribe, which with roots back in the early 700s is the country's oldest, still existing settlement.

Esbjerg is described as Denmark's energy capital, which is based on several decades of a dominant position within oil and gas from the North Sea. Today, however, the focus is also on green energy and energy technology.

BMS Esbjerg has also carried out test lifts of a pipe system for Global Gravity ApS, a company specializing in the development of a new setup for handling drill pipes in the North Sea. It is Global Gravity's mission to supply the world's first Tubular Transport Running System. The system provides optimization of all processes for pipe handling within all types of well interventions and drilling operations across the globe.

POWER TO THE PEOPLE

// TRUCK-MOUNTED LIFT
// HIGH-VOLTAGE TRANSMISSION
// BELGIUM

When it is your mission to lead the way in the energy transition, you have to make sure you always have the best equipment. That is why Elia – the Belgian electricity transmission system operator and a key player at European level – has recently been upgrading the Mercator-Horta high-voltage line.

The BMS Lift Department in cooperation with Debru Hoogwerk were trusted with a critical role in the operation as this part of the BMS Group had up to seven lifts working simultaneously on the project delivering lift equipment of 70 m and higher.

The Mercator-Horta high-voltage line – running from east of Bruges to south of Antwerp in Belgium – is an essential link in the European electricity system.

By upgrading the line, renewable energy from offshore wind farms can be distributed onshore, and energy exchanges with neighbouring countries can be improved.

Firstly, the towers and foundations over the entire route were upgraded and then followed the replacement of the high-voltage cables, the so-called conductors, with a new type of cable able to transmit more energy.

In a rapidly changing energy landscape, innovation is a cornerstone in understanding, anticipating and promptly adopting the changes needed to ensure the transition towards a more reliable, affordable and efficient energy system. Therefore, the upgrading of the Mercator-Horta line was carried out to make it possible to import and export more energy from and to Belgium, improving international trade opportunities and making the energy price more competitive. Furthermore, the line connects renewable energy from offshore wind farms to the grid.

Hopefully without being too technical the Mercator-Horta project is all about upgrading the transferring capacity between two substations by exchanging the existing Aluminium Steel Reinforced (AMS) high-voltage conductors for new High Temperature Low Sag (HTLS) conductors.

The difference between these two types of conductors is the material compositions which affect the performance of the conductor in terms of nominal transferring capacity in combination with the conductor's sag between two towers at a higher core temperature. The AMS high voltage conductor transfers the flow of current by the aluminium part of the conductor while the steel centre core is carrying the linear tensioning of the cable. Operated at nominal transferring capacity, the steel centre core can reach a temperature of +85°C, which causes it to expand increasing the sag of the conductor between the towers.

If the grid operator wants to increase the transferring capacity of a specific high-voltage connection, an alternative conductor type able to handle a higher core temperature is needed. However, the downside is that if the conductor is operated on a higher core temperature, it will expand even more and therefore significantly increase the conductor's sag between two towers as well as the load on the towers and fittings. To compensate for the sag, the grid operator will therefore need to increase the height of the tower. In summary, this would mean a new high-voltage line with new towers and new foundations.

The solution for the problem is the usage of an HTLS conductor which consists of an aluminium body and a composite core with better characteristics when it comes to linear strength and expansion coefficient. Therefore, this type of conductor will sag less when operated at a core temperature of some +160°C.

Together with the colleagues at 50Hertz in Germany, the Belgian company Elia is part of the Elia Group, one of Europe's five leading transmission system operators. The Elia Group ensures that electricity production and consumption is balanced around the clock, supplying 30 million end-users through almost 20,000 km of high-voltage connections. With a reliability level of 99.999 per cent, the Elia Group gives society a robust power grid, which is vital for socio-economic prosperity.

NEW ESCALATORS SERVE SEVERAL TYPES OF TRAINS

// MOBILE CRANE, CRAWLER CRANE, TRANSPORT & RIGGING
// INFRASTRUCTURE
// DENMARK

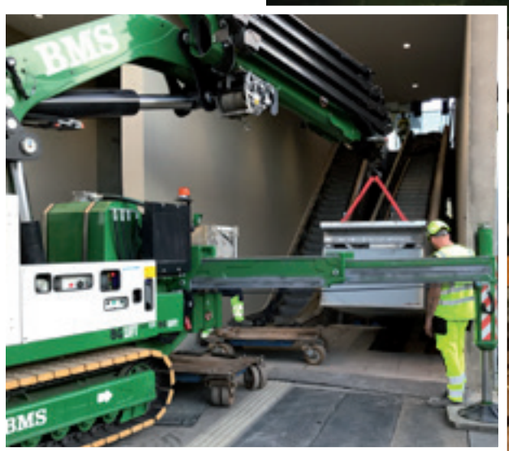
Companies in the BMS Group have on several occasions been involved in both new construction and renovation projects on the steadily growing system of main line, hybrid urban-suburban rail and metro stations in the Danish capital Copenhagen.

Among the most recent examples is the replacement of two escalators at Østerport Station, where once again several of the companies in the Group cooperated. The rigger department at BMS Copenhagen was responsible for the initial planning. At the same time, the transport of the new escalators from Hamburg, Germany as well as the removal of the old ones was carried out by the BMS company Torben Rafn A/S. The hoist itself took place with the help of a 450-tonnes mobile crane located at ground level, a 52.5 tm crawler crane situated on the platform and a 5-t electric truck to aid the riggers. The length of the escalators is 18.67 m, and they weigh 12 tonnes each.

As Østerport Station is one of Copenhagen's busier stations, the old escalators were removed, and the new ones installed during five nights.

Østerport Station is a main line and hybrid urban-suburban railway station named after the historic Østerport city gate. The station is served by EuroCity services to international destinations, InterCity services across Denmark, regular and frequent regional train services to and from Zealand and southern Sweden, as well as commuter rail services. Since September 2019 it has also served two of the Copenhagen Metro lines. These lines do, however, have their own station located underground, connected to the original Østerport Station.

Originating from 1897 the Østerport Station is used by some 30,000 passengers daily. The original building has survived to this day but has been updated on several occasions. In connection with the opening of the Metro City Ring in 2019, an increasing number of passengers was expected, and it was therefore decided that, among other things, two new escalators supplied by ThyssenKrupp AG should be installed.



ThyssenKrupp AG is a German multinational conglomerate with a focus on industrial engineering and steel production. Divided into more than 650 subsidiaries worldwide, it is one of the world's largest steel producers. The company is the result of the 1999 merger of Thyssen AG and Krupp.

The elevator and escalator part of ThyssenKrupp AG goes back to the 1860ies and 1880ies when the mother companies were founded. They developed the first paternoster elevator in 1890 and Germany's first escalator sixteen years later.

VALHALLA IN THE MODERN VERSION

// MOBILE CRANES & LATTICE BOOM MOBILE CRANES
// ONSHORE WIND
// SWEDEN

For many, the word Valhalla will most likely refer to Norse mythology, where it is the name of a majestic, enormous hall located in Asgard and ruled over by the prominent god Odin.

Valhalla has inspired works of art, publication titles, and elements of popular culture. However, it is also the name of a project that includes the wind farms Åmot-Lingbo and Tönsen, located about 200 kilometres northwest of the Swedish capital Stockholm.

The Valhalla project comprises a total of 85 wind turbines with an expected production of just over 1.1 TWh per annum, which corresponds to the annual consumption of electricity for approximately 230,000 households.

BMS Heavy Cranes has been involved in the erection of all 85 wind turbines, which are of the type Vestas V136-4.2 MW with a hub height of 112 metres and a total capacity of 357 MW. In connection with the project, which lasted about four months, BMS Heavy Cranes initially supplied a Liebherr LTM1750 mobile crane with assisting cranes, trucks and trailers for pre-installation, while the main installation was carried out with four Liebherr LG1750 lattice boom mobile cranes with assisting cranes, trucks and trailers.

Valhalla is among the largest projects that BMS Heavy Cranes has worked on to date. Usually, a job is carried out with one or two main cranes, while sometimes a third main crane can come into play, depending on the size and course of the project. At Valhalla, however, it was a project in the absolute heaviest class, in which as many as four main cranes were used.

The Valhalla project will lead to a reduction of carbon dioxide emissions by 90,000 tonnes per year when it displaces coal and gas power in Sweden and neighbouring countries or enables electrification of the transport sector and industry.

ALMOST INFINITE NUMBER OF COMBINATIONS

// TRANSPORT
// BUILDING CONSTRUCTION
// DENMARK

In Denmark, there is a long tradition of modular construction – and one of the companies that operated early in this field is BM Byggeindustri A/S. For almost three decades, the company has manufactured prefabricated modules based on wooden elements. And in numerous cases, the BMS Group's haulage company Torben Rafn A/S has been responsible for transporting the components for residential, institutional and industrial buildings.

In short, modular construction involves constructing buildings of room-sized wooden modules. Compared with more traditional construction methods it has the clear advantage that both the price and the construction time can be kept down without compromising on quality.

In the production hall, BM Byggeindustri A/S' employees assemble everything from floors and tiles to kitchens and toilets in the prefabricated modules, which are then transported to the specific construction site.

BM Byggeindustri A/S emphasizes the importance of the quality of the individual modular construction being top-notch, which is why all subcontractors and suppliers are carefully selected – and among them is Torben Rafn A/S.

As soon as Torben Rafn A/S has transported the modules to the construction site, they are hoisted into place, always with mobile crane assistance from one or more companies in the BMS group. Assembly takes place immediately and thanks to this fast work process, moisture damage does not occur in connection with the storage of the prefabricated modules on the construction site.

Torben Rafn A/S has some 25 tractor units, block semi-trailers and axles for modular heavy hauliers, including equipment such as beds, tower modules, boiler decks, spacers, turntables, road train equipment, and bogie equipment.

For lighter loads such as the ones for BM Byggeindustri A/S, Torben Rafn A/S has an almost infinite number of trailer combinations. The light haulage department handles jobs requiring straight trailers (up to 30 metres and 35 to 40 tonnes) as well as drop deck trailers (up to 15 metres and 35 to 40 tonnes).

MIGRATING TO THE FIRST GLOBAL HEALTH AND SAFETY MANAGEMENT SYSTEM


DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 247218-2017-AHSO-DEN-DANAK
Initial certification date: 26 February 2010
Valid: 21 April 2020 - 20 April 2023

This is to certify that the management system of

BMS Group
Troldholm 8, 9400 Nørresundby, Denmark
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:
Crane, manlift, skidding, haulage & heavy lift solutions.

Place and date:
Hellerup, 21 April 2020

DANAK

For the issuing office:
DNV GL - Business Assurance
Tuborg Parkvej 8, 2., 2900, Hellerup, Denmark

Jesper Schultz
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

The BMS Group is also ISO 9001:2015-certified by DNV GL, which shows the Group's commitment to deliver the highest quality to customers in every aspect of its business. The management system reflects the BMS Group's efforts to perform, inform and communicate with the customers as much as possible and to renew and keep the highest standard in the equipment fleet at all times.

The BMS Group has chosen to migrate from OHSAS 18001 to the first global health and safety management system, the ISO 45001 standard – and more than a year before required the transition is a success.

In 2018 the new international standard was released, and all of the BMS Group has worked hard to gain this accreditation to show commitment to the health and safety of employees as well as customers.

By achieving re-certification and migration to this new standard, the BMS Group has proven to be an organization that strives hard to proactively improve its safety performance, to provide a safe and healthy workplace by preventing work-related injury and ill health, to consistently provide services that meet customer and regulatory requirements, and to currently enhance the environmental strategies.

By means of information, communication and involvement the entire BMS Group staff is dedicated to think safety and help each other to improve the ways of working each and every day.

Time and commitment are required of any company aiming at being certified. The BMS Group initiated internal preparations for certification in 2019 by evaluating the existing documents and procedures and aligning them with the new requirements. Since the system was well established and compliant with the current standards, a good foundation was already laid out. The DNV GL audited the BMS Group in February 2020 and two months later documented the successful transition to ISO 45001:2018 from OHSAS 18001.

As a company continually striving to improve its systems, operating according to an effective occupational health and safety management system is paramount for the BMS Group. All the more it is with much delight that the BMS Group has successfully achieved this new standard, well in advance of the required migration date.

EXPANSION IN THE BALTIC

For many years BMS Heavy Cranes has worked to become one of the international industry leaders in handling special cargo. In recent years, BMS Heavy Cranes has placed great emphasis on market development not only in Europe but also internationally. The company's country of birth is Denmark, but today the place of work is global.

The vision of the BMS Group is to become a preferred global and major player within cranes, man lifts and transport solutions, maintaining a strong local presence. With a look ahead and with a focus on market expansion, BMS Heavy Cranes has decided to enter the Baltic region as well. However, operations in this part of the world are not new to the company as over the years, BMS Heavy Cranes has become an expert in the successful installation of wind farm projects.

For geographic reasons and looking at the pipeline for the Baltic region, BMS Heavy Cranes has chosen to be regionally anchored via a subsidiary in Finland. Indeed, Finland is one ´of the best places to be located in the Baltic region for wind industry at the moment.

With a confirmed pipeline in Finland for 2021, BMS Heavy Cranes expects a stable expansion of the market share in the Baltic region in infrastructure and logistic projects as well as renewable energy projects.

With wind power as one of the solutions when addressing climate change, no doubt, the coming years will bring further expansion among other places in the Baltic region.

The Baltic states (or the Baltic countries, the Baltic republics, the Baltic nations, or simply the Baltics) is a geopolitical term, typically used to group the three sovereign states Estonia, Latvia, and Lithuania.

The Baltic Region (or the Baltic Sea Region, the Baltic Rim countries, the Baltic Rim, or the Baltic Sea countries/states) refer to slightly different combinations of countries in the general area surrounding the Baltic Sea in Northern Europe. Depending on the context the Baltic Sea Region might stand for the countries with shorelines along the Baltic Sea – that is Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden and sometimes the autonomous region the Åland Islands.

SPECIAL WORKING CONDITIONS IN AIRPORTS

// CRAWLER CRANE
// BUILDING CONSTRUCTION
// DENMARK

Liebherr LR 1250.1 is a newly designed crawler crane in the 250-tonnes class. The reinforced main boom achieves improved lifting capacities while the sophisticated jack-up and self-assembly system allows for fast set-up without assist crane. The intelligent crane control system guarantees extremely precise load handling, even on construction sites with a restricted view.

Max. load capacity	250 t
Max. hoist height	148 m
Max. radius	97 m

Steadily increasing air traffic requires more space for parking of passenger cars, and this has been taken into account in Denmark's two largest airports. In both locations, equipment and crew from the BMS Group have been involved in the construction of additional parking facilities.

The new car park at Copenhagen Airport – the main international airport in Denmark with approximately 30 million passengers annually – is 270 m long, 32 m wide and has seven decks with space for more than 2,300 cars.

The parking facility, constructed in concrete to ensure better space for the cars, fewer load-bearing columns and a maintenance-free surface, is located on a narrow, long plot along the motorway between terminals 1 and 2. It has provided a number of additional challenges for both BMS Crawler Cranes and other companies involved in the construction of the building.
There has been virtually no space on the construction site for materials, facilities for employees and machines. In addition, due to the proximity to the airport, it has been necessary with one hour's notice to be able to take the crane down if, due to special weather conditions, it was necessary for the airport to use a runway close to the construction site.

BMS Crawler Cranes was chosen for the task at Copenhagen Airport because, instead of a traditional tower crane, a solution could be offered where the crane could be laid down if necessary.

At Copenhagen Airport, BMS Crawler Cranes has used a Liebherr LR1200 SX with a 26 m main boom and a 35 m luffing jib.

Billund Airport is a major air cargo and charter airline airport in Denmark originally established as a private airstrip for the LEGO Group. After a few years, however, several neighbouring municipalities invested in the area, which has developed into the country's second-largest airport.
Here, too, there is a need for better parking facilities, and therefore a building for 1,250 cars has been erected. There is a great demand for being able to park close to the terminal; thus, the new facility has been constructed as an extension of the original with the same capacity.

At Billund Airport, BMS Crawler Cranes has used a newly acquired Liebherr LR1250.1 crane with a 26 m main boom and a 41 m luffing jib. This is a new Liebherr model on its first job at the airport. Here too, there have been special considerations to take concerning air traffic, and therefore it has been ideal to have a crane with large outlay and low height.

YOUR CONNECTION TO CRANES, LIFTS AND MORE

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Headquarter:
Moscow

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Australia
Headquarter:
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