Brokk NEWS

Brokk News no 1 I November 2009 I Subscribe at info@brokk.com or visit www.brokk.com for more information.

In this issue

Dear Brokk customer,

I am very excited to write this column. This is not only the first newsletter since I started as CEO for Brokk Group in August, but it is also the first Brokk newsletter this year. In addition, the timing of this newsletter coincides with an increasing number of signs that the worst of this economic downturn is behind us and there is more optimism for the future again.

In my first months at Brokk, I have had the opportunity to meet and talk with many Brokk customers. We are very fortunate to have such passionate Brokk supporters, enthusiastic about how Brokk can help them solve problems, make money or reduce costs. I have also found that our customers are very knowledgeable and a great source of information, both in terms of what we are doing well and what we can improve on.

In talking to customers, Brokk representatives, distributors and service partners, it has also become evident that Brokk machines represent something very special that is common across markets and applications. It is the Brokk promise of quality, experience, versatility and innovation in the field of remote controlled demolition. By delivering on that promise, Brokk products get adopted in new markets and applications through "word of mouth" all the time.

The articles in this issue of the newsletter show the breadth of applications that Brokk machines are used in nowadays; construction, tunnelling, aluminium plants and nuclear waste handling. This is still just scratching the surface of what Brokk machines are used for today.

And if you haven't had the time to catch up on the new Brokk 260 that we launched at World of Concrete earlier this year, there is an article about this highly anticipated "all-around" machine that closes the gap between the Brokk 180 and the Brokk 400.

I look forward to meet and get to know many more of you over the coming months and years and continue the dialogue that we have started, perhaps at our stand at Bauma in 2010. Having the opportunity to meet you and discuss Brokk products is one of the most enjoyable parts of my job.

With kind regards,

Martin Krupicka

Breaking the walls of Singapore´s tourist complex

Singapore has started building a large hotel and casino complex and the project is expected to be completed in record time. The entire complex is built on reclaimed land and the soft ground conditions create major challenges for the foundation. Thick diaphragm walls had to be built and part of the walls had to be demolished after the foundation was laid. This tough job – in confined space and under a tight time schedule – was an excellent job to test the first Brokk 400 in Asia.

The construction of the three 57 story hotel towers

Conceptual image of the completed complex

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Two diaphragm walls with steel struts in between for stabilization

The mini excavator's low energy breaker with an arm system optimized for digging resulted in a very low performance

he Southeast Asian city-state of Singapore, an internationally renowned financial centre and one of the busiest and most modern freight handling centres in the world, is now also striving to become a top tourist destination. With its ambitious Marina Bay Sands project, Singapore will in a near future have a gigantic complex complete with convention facilities, casino, theatres, museum and an impressive hotel complex. The hotel will consist of three 57 story towers with a total of 2,600 hotel rooms. The rooftops of the three towers will be connected using a sky terrace at a height of nearly 200 metres. The terrace will offer a view of Singapore's shore and skyline and have gardens, scenic walks, restaurants, a swimming pool and an observatory.

Diaphragm walls due to soft soil

The entire development was built on reclaimed land with soft ground conditions. With almost 40 percent of the total development underground, the foundation proved to be a very challenging project. In order to avoid subsiding ground, deep diaphragm walls had to be installed into the ground before the area could be excavated. If the entire basement was to be excavated before the starting the construction of the towers, there would have been a long delay. Also, the bigger the excavated area, the more complex it will be to secure the diaphragm walls with struts and supporting slabs. To expediate construction, it was decided to build smaller cofferdams with diaphragm walls for each of the hotel towers. These samller cofferdams could be excavated without struts and, as soon as the foundation was laid, the constructon of the towers could commence. The construction of the permanent diaphragm walls and the excavation of the rest of the underground complex could be done simultaneously as the towers were built. The contract to construct the towers, once the cofferdams were excavated, was awarded to Sangyong Engineering & Construction.

A challenging demolition task

Once the entire underground complex was excavated, and the foundation secured, the temporary diaphragm

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walls separating the hotel basements had to be demolished. Technocrete Pte. Ltd., one of the leading specialist demolition contractors in Singapore and in the region, was awarded the contract for all demolition work in the hotel construction project. Technocrete was faced with a tough challenge and a very tight schedule. The demolition of the diaphragm walls could only be done after all basement floor slabs were in place. The headroom between floors was only three meters high and the diaphragm wall was 1.5 meter thick, constructed by heavily reinforced Grade 50 concrete.
Technocrete proposed a combination of wire cutting and breaking methods to demolish the diaphragm wall. Wire cutting was used whenever both sides of the diaphragm wall could be accessed and there was room to

Two diaphragm walls with steel struts in between for stabilization lift out the cut block by crane. All other remaining parts were demolished using hydraulic breakers.
Technocrete had two units of Brokk 330 and both were mobilized onsite. But the two machines were not enough to meet the schedule. Technocrete mobilized several 5 ton Airman AX45 mini excavators to expediate the demolition. However, after facing a number of problems with the mini excavators, Technocrete decided to purchase two units of B400, Brokk's biggest demolition machine till date, to meet the demanding schedule.

Problems with mini excavator

The main problem with mini excavators was the lack of power and therefore productivity. First of all, mini excavators are designed for digging and therefore not able to carry very big breaker. Also, the two part arm system result in a significant loss of power when breaking forward and the 'knuckle' on the arm system kept hitting the ceiling. This resulted in a very slow demolition rate. In addition, the operator needs to sit unprotected on top of the excavator since the driver's cabin due to the limited headroom. The diesel fumes generated in confined space makes the situation even more unpleasant for the operator.
Brokk 400 is just like all other Brokk machines; electrically powered, radio controlled, and equipped with a three part arm system. But this 5 ton machine is equipped

Brokk 400 breaking roughly 4 cubic meters per hour allowing for total removal of 36 cubic meters in 3 days.

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with a 520 kg breaker with an impact energy of 1048 joule. The difference in result, compared to the mini-excavator, was obvious from the very beginning. The Brokk machine was breaking loose big lumps of concrete at a time compared to the concrete chippings that were broken off by the mini excavator.

Performance test

During initial deployment, Brokk carried out a performance test on the B400. An isolated section of the wall was demolished while measuring the time. The wall section was 6 meter wide, 4 meter tall and 1.5 meter thick, resulting in a total of 36 cubic meters.
In this test, the total time taken solely for breaking was about 9 hours which works out to a productivity of 4 cubic meters per hour. On average, it took Technocrete roughly three days for complete demolition of this type of wall, including cutting the reinforcement bars and remove all the debris. This is estimated to be around five times the performance of the mini excavator of similar weight.

With the incredible power of Brokk 400, Technocrete is now in the advantage position to secure more demolition jobs of similar nature.

Conclusion

Brokk 400, Brokk's biggest demolition robot, proved to be highly effective for breaking heavily reinforced Grade 50 concrete. The performance of the machine was not affected by the three meter head room or the fact that the job took place in the basemet.
The productivity of Brokk 400 proved to have roughly five times the performance of a conventional mini excavator of similar size. Given the tight time frames for the construction of Singapore's latest tourist complex, the performance of B400 proved to be an essential component to meet the overall deadline for the hotel towers.

Brokk cleaning potcells in a Chinese Aluminium plant

Shandong Nanshan Aluminum Plant has a production capacity of 200,000 t/a with 450 units of pot cells. One cell is 160 KA with the size of 16 x 4 m. The Brokk 330 is used for online cleaning. It takes 24 hours for cooling, and then the machine starts to work at about 300 degrees centigrade in the pot cell. It will take two shifts (24 hours) to finish the pot cell cleaning. It saves two days compared with manual cleaning. The customer is very pleased when using the Brokk since it saves a lot of time and money for them. In other words, a success story!

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Brokk 330 being lifted into the pot cell.

Not a problem to clean out the pot cell with the powerful SB 450.

Brokk UK, two first Brokk 400 sold

Brokk UK Ltd have just sold the first of two machines new to the Brokk range of remote controlled demolition machines for this year. The Brokk 400, sold to Mr Sean Siddons of Lenpart group, is to be used on a flood defense project in Glasgow. A Tunneling and Civil engineering company, working for Scottish Water is the main contractor to provide a 2300 cubic meter flood tank in a major flood defense area of the city at Park Avenue in Paisley Glasgow.

Mr Sean Siddon from Lenpart Group and Mr Stuart Morton Brokk U.K.

Current methods on this type of project involve 15 tonne machines to be lowered into the tank to hammer the hard granite rock, with limited production due to the sheer size of these machines. Lenpart Group, incorporating Brokk hire uk, took the decision to purchase the Brokk 400, which replaces the Brokk 330, to increase production, and allow a safer working environment, as the Brokk is fume free.

The Brokk 400 is the largest machine in the Brokk range, and the most powerful demolition robot on the market today. The 4800kg machine outbreaks several times heavier conventional excavator, still the Brokk 400 is agile and small enough to work in tight spaces. The Atlas Copco SB 552 breaker, coupled to the Brokk 400 combines an impact rate of up to 1140, and has the power of 1041 joules (773ft 1b) at the tip enabling the machine to tear through the hard rock formation in the 'tank pit' at Park Avenue.

Mr Siddons of Lenpart group said ' this is a very important contract for us,and after speaking to Brokk UK

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Ltd, the latest edition to the Brokk range, with this phenomable power was the only way forward, and with this being the first in the UK, it is good to see that in the current economic climate the continued innovation investment Brokk is doing.

Brokk UK is also pleased to announce the launch of another machine, the Brokk 260, which is a 3050 kg machine to complete the 2009 line up of their six remote controlled demolition machines.

Brokk 400 is cleaing out a flood tank in Paisley, Glasgow.

Brokk brings down hospital in Oslo

One of Scandinavia's largest demolition projects is currently at Ahus University hospital in Oslo. Brokk 400 is an important player when it comes to accurate and silent demolition. This is a very good example of what future demolition is all about since all the demolition masses are sorted, recycled and hazardous waste is treated in own depot. The demolition contractor is the Norwegian company Veolia Miljø, which is part of the large international Veolia group. Veolia Miljø Entreprenør has today become a major player in the Norwegian demolition market through the acquisition of small and well-established companies. The group is also represented on the island of Svalbard. Veolia Miljø Entreprenør has about 120 employees who together form an effective team and through collaboration with other companies within the Veolia takes on assignments from start to finish.

The design of the new Ahus Hopital in Oslo is very modern

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The Ahus University Hospital demolition project involved the demolition of the low and the high blocks, in two separate contracts worth a total of NOK 75 million. Veolia Miljø Entreprenør won both contracts and began work in autumn 2008.

Nine building to come down

The low blocks consisted of six consecutive buildings from two to eight floors, convering a total of 22,000 m2 of floor area for high demolition. The taller blocks consisted of three buildings of 12-13 floors and floor area of 18,000 m2. When Veolia has finished the demolition the service and processing functions are going to be rebuilt next to the new hospital, which opened in spring 2008. "We have demolished 50,000 tonnes of material and recycled 99%. We are very please" says Veolia Miljø site and project manager Rune Andersen.

Quite and most efficient

The second part of the project is the demolition of the 43 m tall blocks, which started in May 2009 and is scheduled for completion in January 2010. The high blocks include a total of about 16,000 tonnes of reinforced concrete. "The high blocks are a bit more demanding since there are three continuous high buildings that have to be removed. Under the floors to be demolished are culverts, laundry and kitchen that is fully operational" says Veolia Miljø manager Bjørn Bjelde.

The Brokk machines are working silence and effective on top of the building.
Below the building you can find culverts, laundry and kitchen still in operation.

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Bjørn Bjelde, manager of the department at Veolia Miljø and Rune Andersen, site- and project manager.

Anders Johnson, a professional swedish Brokk operator who has moved to Oslo to work for Veolia Miljø.

Work has been progressing well and the quietest and most efficient method for the high demolition is the Brokk in combination with concrete crusher and Veolia Miljø bought two new Brokk 400s for the project.

It takes approximately 10-12 days for Veolia Miljø to demolish a 1500 m2 floor, including the façade, corridor walls, elevator and the stair shafts. All demolition debris are picked up with a mini loader and tipped into a chute down an elevator shaft. Counted on days, they discard about 500 tonnes of concrete masses each week. To handle the Brokk floor loading capacity and the demolition debris they have propped two floors below. "It is great to demolish with the Brokk machines, we have a total of three machines in operation, two Brokk 400s and one Brokk 90, which takes brick walls" says Brokk operator Anders Johnson.

The Ahus demolition project will soon be completed and Veolia Miljø Entreprenør can for sure expect more similar projects around the Nordic Countries!

Project clears nuclear waste speedily and under budget

Underground vaults containing miscellaneous radioactive materials have been successfully emptied at Trawsfynydd in the first waste retrieval project of its kind to be completed at a UK nuclear power station.

High levels of radioactive contamination from the miscellaneous activated components meant that the vaults could not be directly accessed by the site's decommissioning teams. Engineers therefore used remotely operated vehicles with an array of tools to pack the waste into 3m3 stainless steel boxes, ready for intermediate storage within a shielded concrete overpack in a specially built on-site facility. Thirty boxes have been filled with more than 35 tonnes of waste during the project which was delivered two months early and with a saving of £473,222.

The waste consists mainly of steel and graphite components from within the nuclear reactors which became highly radioactive during the generating life of the power station. This intermediate-level waste (ILW) was stored in two vaults beneath the reactor buildings which were constructed when the station was built, almost 50 years ago.

The Trawsfynydd site in Snowdonia is operated by Magnox North on behalf of the owner the Nuclear Decommissioning Authority. Glenn Vaughan, the authority's site programme manager, said: "Completion of the recovery of the waste from the vaults is a significant event for the site, representing completion of the first bulk ILW waste stream. The safety record during the project has been exemplary.

"This opens the way for recovery and encapsulation of residual dust and safe store preparation and the ongoing progress towards care and maintenance."

Trawsfynydd site director Dr Phil Sprague said: "This is a significant milestone in the journey towards the safe decommissioning of Trawsfynydd site. By pioneering the innovative use of various technologies we have delivered the project safely, ahead of time and under budget."

tional jet fuel, allowing engineers to compare performance between the biofuel blend and traditional fuel.

During the two-hour flight, from Houston's Bush Intercontinental Airport in Texas, test pilots engaged the aircraft

Continental said that the biofuel was a "drop-in" fuel, and that no modifications to the engine were necessary. It said that the biofuel exceeded specifications for jet fuel, including a flash point and a freezing point appropriate for

engine maker CFM International, said: "The second-generation fuel being tested comes closer to simulating the characteristics of traditional jet fuel in terms of engine performance and operability, such as fuel consumption,

significant net decrease in carbon emissions relative to traditional jet fuel, as both jatropha and algae consume carbon during their lives. The algae oil was provided by Sapphire Energy, and the jatropha oil by Terasol Energy.

Steve Hartridge, managing director of GoinGreen, which sells the G-Wiz in the UK, said: "Retailing a vehicle which has a range significantly greater than 97% of all car journeys brings electric vehicles into the mainstream."

Project clears nuclear waste speedily and under budget

Handle with care: Robots used different tools to collect and encapsulate radioactive waste

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Brokk 400 - an important player when the Metro in Paris is extended

ATC, Brokk´s distributor in France, was contacted by BEC (Fayat group) which serves customers in the construction of heavy, complex, steel buildings in France and to the rest of the world. The company needed a small, strong and flexible machine that would be able to do the smaller enlargements inside the Metro 4 in Paris. The purpose of the project was to extend the two main lines and to make a circle at the closing line so that the train easy can return to the centre of Paris. The project also included an extra line in the circle making maintenance of the train possible.

Brokk 400 is being used for widening the existing tunnel and to excavating the ventilation system. Brokk 400 together with the breaker SB 300 and a side angling device is working to enlarge the existing tunnel. Brokk 400 equipped with the scabbler WS30 with 30 kW, is excavating the ventilation system. 1.5 metres excavating takes approximately two working shifts (16 hours).
The customer used Brokk because of a lot of reasons. The machine is electrically driven which is preferable in tunnels since it is no exhaust fumes, it is a powerful machine and the operator can work at a safety distance with good view. Additionally the machine is reliable and has easy maintenance. The customer had tried other machines, but they had problems with a lot of stop so they lost a lot of working hours which was the main reason way they contacted ATC.

The Brokk 260 in short

Brokk 260 benefits

- Long reach of 5,8 meters including the breaker SB 302.
- A powerful machine equipped with a 22 kW electric motor.
- Electric power = no fumes
- Small size despites it high capacity.
- Easy to service and less maintenance.

Power and reach

The Brokk 260 is powered by a 22 kW electric motor and has a reach of 5,8 metres. This great combination provides excellent access to the work area without time consuming repositioning.

Productivity

The design benchmarks of the Brokk machines are the small size, the light weight, the great accessibility, the long reach and the great hitting power. Now you can build your business faster by offering safer and more efficient confined space demolition with the strength of Brokk.

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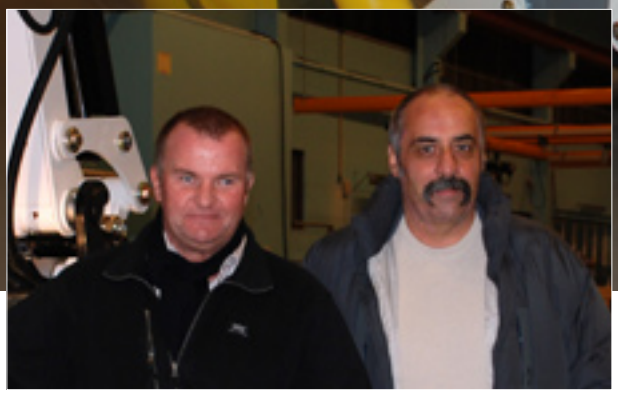
The first Brokk 260 on the European market, painted in white!



Mr Ralph Mössinger and Mr Gino Pagnamenta from the Swiss comany Mössinger came to Brokk AB to collect their new investment, a Brokk 260.

"Our most wanted model is back in a new package"!

Our most wanted model is back in a new package, updated to a new high level to cope with even greater demands within the demolition industry. The Brokk 260 is the perfect all-round machine and the basic concept was developed in the mid 1970s. A powerful combination of reliable technology and continuous development are the basis of the precursor Brokk 250´s success around the world!

The Brokk 260 covers up the gap between Brokk 180 and Brokk 400 since it has great capacity and remarkable hitting power. The machine is however small enough to work in tight spaces.

The Brokk 260 is designed for different kinds of demolition work in the construction industry but can be used equally well in the cement- or process industry.

In the construction industry the robot can be used for different kinds of demolition work both indoors and outdoors. The machine is 1,8 ton lighter than the bigger Brokk 400 and enables strong attachments for example the Atlas Copco hydraulic breaker SB 302 and the Darda crusher CC520. The combination of light weight and the capacity to carry heavy tools makes the machine very efficient. The Brokk 260 also suits the cement industry very well and is perfect for kilns from 3,5 meters up to 5,5 meters in diameter. This is very efficient for plants that have different size of kilns.

The machine can of course also be used for most applications where the unique Brokk characteristics such as low weight, high capacity, and outstanding accessibility are top priorities. In the process industry the machine can be used to break slag and brick linings in furnaces, ladles etc. Other uses are being developed all the time, the only limits for this strong machine are those set by the imagination!

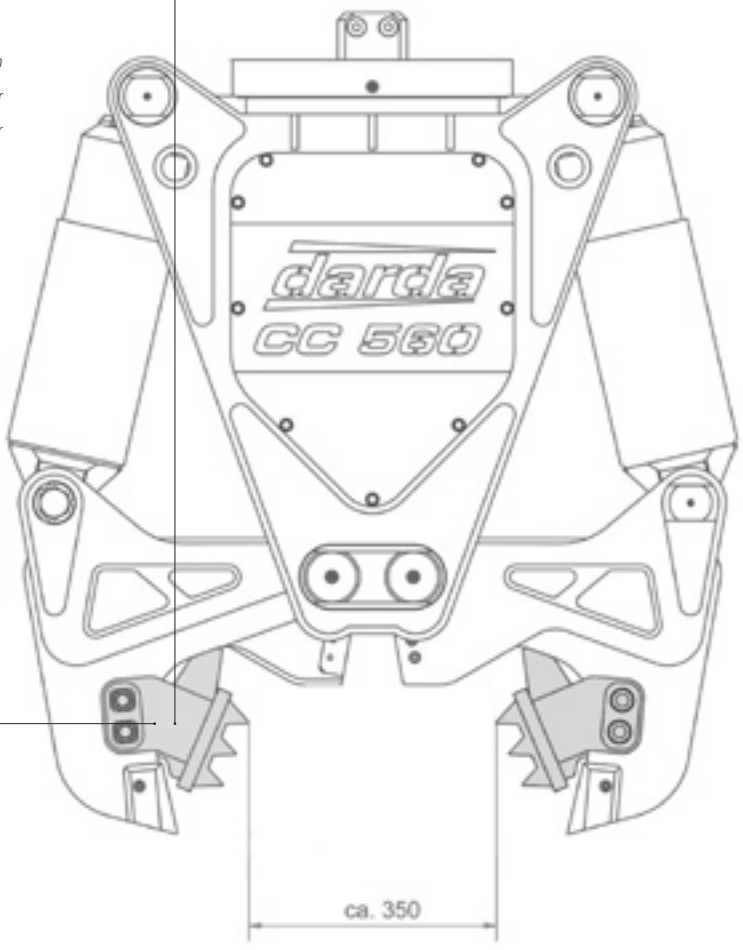
New pulverizer for the CC560 Concrete Crusher as a retrofit option

Product Information

Art.No. 6560 0415 80
(2 pieces are required per crusher)

- Pulverized concrete as a fine debris for simple evacuation
- Separates steel and concrete for clean recycling
- Breaks and cuts concrete up to 25 cm in one step
- Wear resistent because of high-quality steel and specially welded pulverizing teeth
- Quick and easy to install*

**To attach the pulverizing plates it is necessary to first drill mounting holes in the crusher jaws. (holes are pre-drilled on crushers with serial numbers greater than 259) Crushers, which were previously delivered, can be re-tooled at our company. The re-tooling price is dependent on the amount of work required.*



Coming exhibitions 2009

Visit us at...

World of Concrete, Las Vegas, USA	February 2 - 5
CSDA Convention & Tech Fair, San Diego, USA	March 4 - 6
National Demolition Association Convention, Las Vegas, USA	March 21 - 23
Nuclear Industry China, Beijing	March 23 - 26
Bauma, Munich, Germany	April 19 - 25
AFCM 2010, Danang, Vietnam	April 27 - 29
World tunnel Congress, Vancouver, Canada	May 14 - 20
Maskin-Expo, Barkarby, Sweden	May 27 - 29

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