

## DEL MAG Piling Rig G42

At the beginning of the year ABI delivered four DELMAG crawler pile driving units G42 in total.

The compact machines are used in the construction of railway and traffic routes for the construction of impact-driven piles, e.g. in the new construction and modernization of stretches.

The re-launched machine had to meet many specific requirements. In the 1990's already, the company DELMAG built a predecessor of the crawler pile driving unit, so that they could fall back on the experiences made in the use of these machines. The G 42 can be employed on a carrying wagon as well as on land. During construction the so called clearance universal gauge as well as a track banking of up to 180 mm had to be taken into account for example. For road transport on a low-bed trailer the leader can be folded down to the back, or for rail transport on a carrying wagon to the front. With a transport width of 3000 mm the machine fits in the G2 clearance universal gauge of the Deutsche Bahn.

The compact dimensions also play a role in the application of the equipment. On a double track line a short rear radius of 1.75 m only allows for working on one track while the second track remains in service. The leader is height-adjustable, inclinable and slewable. The DELMAG diesel pile hammer D12-42 or the auger drive MDBA 1400 are available as attachments. The machine is also equipped with: auxiliary winch, lighting installation for night work, laser depth measuring device, wind force measuring device, CB radio, camera system to monitor the passenger side and the rear, breakdown unit for emergency operation of the machine, climbing option on the leader with height safeguard as well as load monitoring system.

Two machines were delivered to the DB Bahnbau Gruppe GmbH. One of the first employments was the large-scale project for the electrification of the 73 km long railway line between Reichenbach and Hof, the so called Saxony-Franconia main thoroughfare. The construction project, which is divided into several sections, started in July 2010. Some



Picture: DELMAG G42 with diesel pile hammer D12-42



Picture: DELMAG G42 at the rail track between Plauen and Herlasgrün, the second track remained in service.

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Picture: DELMAG G42 pipe clamp for holding pre-fabricated concrete masts

120 million Euros are estimated for the completion. The work comprises the erection of app. 3000 overhead line masts as well as the spanning of 170 km of track with overhead lines, and the installation of traction power supply facilities in Hof and Plauen.

The DELMAG G 42 machine was first used on the stretch of the 15 km long section between Herlasgrün and Plauen, that is planned to enter into service at the end of 2012 already. Besides the construction of the overhead lines, the existing infrastructure on the stretch has to be adapted as well. Some road and pedestrian bridges do not offer enough space for the electric overhead lines.

The construction section is full of bends with track banking of up to 170 mm. Due to the difficult soil conditions with soil classes 5 to 7 – hard to dig soil to hard to dig rock – rock drilling equipment as well as additional drilling systems need to be used besides the diesel pile hammer.

### Technical data piling rig G 42

Mast height	mm	14900
Reach	mm	3700 - 5600
Mast inclination front/rear max.	deg.	2,8 / 9,5
Mast inclination laterally max.	deg.	2,8 / 2,8
Mast slewing range max.	deg.	-80 / +90
Torque absorption max.	kNm	14
Working pressure	MPa	30

### Winches

Lifting capacity hammer winch max.	kN	50
Lifting capacity pile winch max.	kN	50

### Carrier R 924 Kompakt

Engine power	kW	120
Track gauge	mm	2400
Track shoe width	mm	600
Fuel tank capacity approx.	l	345

### Weights

Transport weight with counter weight	kg	38000
Transport weight diesel pile hammer D12-42	kg	2800
Transport weight auger drive MDBA	kg	620

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The next machine was delivered to Alpine Energie Deutschland GmbH, another specialist for the construction of overhead lines. The team named the machine Hannelore. The scope of delivery includes a diesel pile hammer, an auger drive as well as pipe clamp.

Different procedures are used in the construction of overhead line piles. On the construction site near Wegberg the concrete mast was set in concrete in a pipe as an alternative. First, a 1.25 m deep hole, the so called search pit, was excavated, then Hannelore with diesel pile hammer was used to drive a 7 to 8 meters long pipe with a diameter of 711 mm into the soil. One pile driving operation took 15 minutes in average. About two third of the pipe filled up with soil material and the upper third remained free due to the search pit. Then the concrete mast was lifted up using the auxiliary winch and placed inside the pipe, secured with the holding clamp and aligned. The free space was filled with quick curing concrete. During the curing time of app. five minutes the mast was held by the pipe clamp.

The fourth machine was ordered by the company BALFOUR Beatty Rail GmbH. It is equipped with a diesel pile hammer D12 and is used to drive double-T-beams in particular. So far, it was used on a carrying wagon, e.g. on the stretch Gutenfürst – Hof, in the main stations of Offenbach and Wahren, in Leipzig as well as in Europe's largest marshalling yard Maschen, south of Hamburg. The customer was very satisfied with the machine: "So far, the machine runs trouble-free and makes a solid impression." ■



Picture: DELMAG G42, the pre-fabricated concrete masts are lifted and positioned with the auxiliary winch into the driven pipe

# Two Telescopic Leader Masts for Ivor King

Ivor King (CEC) Ltd, UK - decides to purchase two new ABI MOBILRAMs within twelve months.



Picture: ABI MOBILRAM-System TM 14/17 B with DELMAG diesel pile hammer back-driving of steel sheet piles in Milton Keynes, England

One of the UK's leading sheet piling specialists continues to demonstrate their long term commitment to ABI Group with significant machine purchases despite the severe downturn in the UK economy. Between March 2010 and March 2011 Ivor King (CEC) Ltd took delivery of new ABI MOBILRAMs TM13/16 SL and TM 14/17 B. Both machines were equipped with the very latest „VV“ Variable Moment/ Variable Frequency Vibrator and both were supplied with the latest generation high torque Auger Drives. Notably, both were also ordered with ABI's new rapid Docking-System - a first for the UK market.

Ivor King (CEC) Ltd has been a long term, loyal customer of ABI, being one of the first in the UK to adopt ABI MOBILRAMs when they first became available to the market. Ivor King commented that „we have always looked for ways to improve productivity and to reduce our operating costs. In the current economic climate this more important than ever if we are to win work and stay ahead. ABI have consistently impressed us with their ongoing commitment to the long term success of their business. In our experience, they have continually improved their products, year on year, and developed new technology that has delivered real commercial

benefits to our business. They have also demonstrated a real commitment to providing first class customer support; and this is very important to us“.

Simon King, Managing Director, says that „at first we were skeptical about the new variable moment, variable frequency technology. Often these things sound great on paper but fail to deliver real benefits on the job site, where it counts. So we dipped our toe in the water by trying an MRZV24VV on an existing ABI MOBILRAM TM 13/16 that had previously been running an MRZV 18V. The difference was immediate and impressive. We found that we were able to install sheet piles to full depth without pre-drilling where we would previously have not hesitated to pre-drill.“ He went on to say that „what was really impressive was, that we were able to do this with the same amount of engine power and the same fuel consumption“.

Simon went on to say, „this made us take a serious look at what ABI next brought to our attention. They proposed a new rig configuration with a 260 kW engine that would enable us to undertake the driven work of an older machine having a 400kW engine! Not only would we see around 20-litres per hour fuel saving but the new machine would be quieter, lighter, less expensive to purchase and cheaper to move around the country.“

In March 2010 Ivor King took delivery of a CAT based TM 13/16 SL with an MRZV 17VV variable moment, variable frequency vibrator complete with Docking-System and an MDBA 3200 auger drive. Simon looks back on that decision „having worked with this machine for a few months it became apparent that all future purchases from ABI would have to include their new rapid docking system. The time saving is just amazing. Whether it be during the initial set-up on site or when we change from vibrator to auger drive, we are saving 30-60 minutes per change. We don't have to worry about hose cleanliness and the front man only has to make one final connection that takes seconds, so we keep his feet safely on the ground.“ Simon goes on to say „the fuel saving has been exactly what we had hoped and the 17VV vibrator does what it says on the tin“.

The company were so impressed by the new technology that in March 2011 they took delivery of their second new ABI MOBILRAM, a TM 14/17 B with MRZV 30VV variable moment, variable frequency vibrator and a new MDBA 4500-2 two-speed auger drive. „The Docking-System was a must have as far as we were concerned“ says Simon. „The B-version kinematics and leader mast give us improved control of the piling process and we feel we deliver a lot more power to the pile, particularly with the new 30VV vibrator. This machine has incredible driving ability and will also permit us to expand our drilling capability.“

A good example of these two new machines at work was the retail development taking place adjacent to Stadium MK in Milton Keynes, UK. At this site location 179 m of Hoesch Larssen 606 (up to 12 m) & 604 (up to 9 m) steel sheet piles were installed to form a permanent cantilever retaining wall to the boundary of the retail park.

Simon noted „the actual ground conditions were far from what had been indicated to us on the site investigation soil reports. We came across exceptionally stiff clays in some areas and this made it very hard going, even with pre-drilling. The „VV“ vibrators running at reduced frequency, but high static moments, ensured we drove the majority of piles to the required levels. However, where the ground was particularly tough, we had to impact drive the piles using our DELMAG D19-52 diesel hammer mounted on the TM 14/17 B.“ He went on to say „our ability to interchange quickly between auger drive, vibrator and impact hammer greatly simplified matters on site and saved us a considerable amount of time. The „VV“ vibrators ensured we pitched and drove the piles productively and efficiently even with the difficult cohesive soils.“

The latest generation equipment was supplied to Ivor King through ABI's UK subsidiary, ABI Equipment Limited, who has been quick to identify the benefits offered by the company's latest technical innovations. Mark Lee, Managing Director of ABI UK, comments „it is a real pleasure to come to work knowing that you have market leading technology that is backed by one of the most respected names in the industry. It is very rewarding to see companies like Ivor King using this technology to gain technical and commercial advantages, and to see this contribute to the growth of their business.“

The final comment comes from Simon King. „The team at ABI Equipment has helped us to develop a better understanding of how to get the very best out of our equipment and assisted us in making sound decisions about future equipment investments. A strong ABI presence in the UK with factory trained, experienced personnel gives us the confidence to develop our business with ABI's kit at the centre of what we do“. ■



Picture: Working hand in hand Hand ABI MOBILRAM-System TM 14/17 B with DELMAG diesel pile hammer and TM 13/16 SL with vibrator MRZV 17VV

## Farrans Construstion Ltd. Decided to ABI UK

Farrans Construction selected ABI Equipment Ltd to provide piling equipment solutions for their high profile civil engineering project in Northern Ireland.

The project involved the construction of a 480m long new quay structure and deep water berth located in the Port of Belfast. The quay wall is to be constructed using a combi-wall of Ø 1620 mm x 32 m long tubes and 22 m long PU22 sheet piles tied back to an anchor beam supported on 367 no. 30 m long Ø 660/762 mm raking tubes. The 17,000 sqm quay slab is supported on 780 no. Ø 750 mm CFA piles.

The works also include dredging of the new berth and approaches. This involves the disposal of 500,000 cbm of material to sea with treatment and disposal of some contaminated material to land. Behind the new quay there is 50-acres of hinterland to receive heavy duty unbound pavement involving the placement of 900,000 sqm of geotextile and the import of circa 1,000,000 tonnes of aggregate.



Picture: DELMAG diesel pile hammer D100 with rope suspended leader driving casings for the new quay in Belfast



Picture: DELMAG diesel pile hammer D46 driving raking anchor beam piles for the new quay

The time for completion of the whole project was programmed at 60-weeks but some of the major driven piling works had to be completed in just 11-weeks during the winter months of 2011/12, spanning the Christmas holiday period. It was clear that the piling works would have to be undertaken in a very productive manner and the client was looking for a high quality of installation with accurate pile positioning and alignment control.

ABI Equipment Limited proposed the use of two crane suspended DELMAG D100-13 diesel hammers mounted in rope suspended lead systems for the impact driving of the Ø 1620 mm combi-wall tubes. „We liked the look of the simple, robust design of the DELMAG diesel hammers and our project required us to select equipment with proven reliability if we were to meet the tight programme“ said Farrans site agent, Tony Mulholland. „We could also see operational benefits from using large impact hammers that did not require the use of separate hydraulic power packs and associated, cumbersome hose bundles“. All large diameter piles were successfully driven to level using the proven DELMAG hammers.

ABI Equipment Limited also proposed the use of a purpose built piling rig 683TP - a combination of telescopic crane and leader from ThyssenKrupp - for the rapid handling and installation of the raking anchor beam piles. Mulholland comments „our programme required that the 367 no. 30 m plus long tubular raking piles be accurately installed in an exceptionally tight time frame. We needed to implement a mechanised approach and the rig identified by ABI Equipment Ltd enabled us to comfortably achieve our deadline with excellent installation quality.“ The raking piling rig was equipped with another DELMAG diesel hammer, a D46 unit set-up for driving both the Ø 660 mm and Ø 762 mm tubular piles in one 30 m length raking at 1:3 from vertical. „We had hoped to achieve around 6 no. piles per day but using the rig set-up we were easily able to exceed this. The overall performance of the system permitted us to accommodate some lost production days when bad weather hit us“ says Mulholland.

Mulholland went on to say „we received first class advice and support from the team at ABI Equipment Limited and their input made a significant contribution to the on-time completion of our piling works for this project“. ■

## Fixed Leader Mast SM 14/18 HD at Work

ABI's customer Carl van Rooy from Belgium uses the ABI MOBILRAM-System SM 14/18 HD in the construction of full displacement piles.

Two years ago ABI delivered a fixed leader SM 14/18 HD with numerous attachments. The fixed leader with parallelogram kinematics is mounted on a HD-type carrier SR 35 T. The machine can take up torques of up to 200 kNm and provides extraction forces of up to 400 kN. Thus the fixed leader is well-suited for different drilling procedures.

The scope of delivery included a rotary head BT 200, among others. The customer uses it for the construction of full displacement piles. The method offers several advantages. No soil material is extracted, the associated expenditure and costs, e.g. removal, are eliminated. The

existing soil is compacted further through the displacement. In addition, the procedure generates very low vibrations. High production rates can be achieved on suited soils.

Carl van Rooy used this machine combination also on a construction site in Antwerp. The soil consisted of sands, alluvial settings of sands with loam and clay lentils. A bearing soil, the so called Antwerp sand, was found from a depth of app. 13 m only. The pile diameter was 420 mm and the length varied between 7 and 17 m. As the piles are only pressure loaded a short reinforcement of a length of 4 m was sufficient. Due to the optimum conditions daily outputs of up to 40 piles could be achieved. ■



Picture: Fixed leader mast SM 14/18 HD with rotary head BT 200

# 90<sup>th</sup> Anniversary of DELMAG

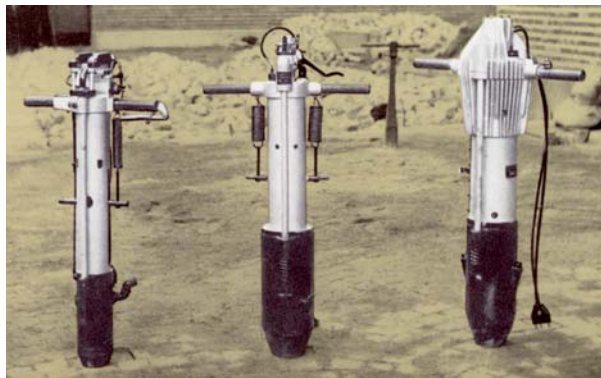
The history of DELMAG is inseparably tied to the name Dornfeld. Mister Reinhold Dornfeld (1887 - 1961) was a man of much spirit of enterprise and optimism. As a 24-year-old he went to the former German colonies in the South Seas as a trader and freelance coconut planter. There he built a life for himself with inexhaustible energy, which he lost due to the implications of World War I. In 1922 he returned to Germany and dared a new beginning as partner of the Elektromotorenwerk Fischer & Co. that was in need of rehabilitation. In the same year he pushed through the merger with the Esslinger Holzbearbeitungsmaschinenfabrik (wood-processing machines factory) "Pflüger und Steinert". Thus, on August 17 the "DELMAG" – Deutsche Elektromaschinen

und Motoren-Bau-Aktiengesellschaft (German electric machine and motor construction plc) – was born.

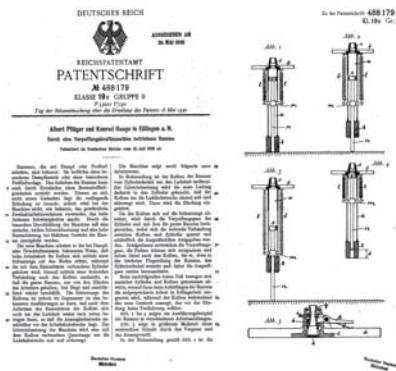
Shortly after its foundation, Reinhold Dornfeld had to manoeuvre the company through the inflation. But he had a fine sense for new markets and technologies and placed the future of DELMAG on an invention: "the combustion powered impact hammer", invented by the graduated engineer Konrad Haage and the engineer Albert Pflüger, the founder of the Esslinger Holzbearbeitungsmaschinenfabrik. The frog rammer in 1926 was followed by numerous further patents and DELMAG specialized in the manufacturing of road construction and civil engineering equipment.



Picture: Reinhold Dornfeld 1915 in the South Sea (Bismarck archipelago)



The oldest DELMAG hammers and the printed patent specification 30 kg hammer 1926, 50 kg hammer 1927, 90 kg hammer 1929



1952 - Reinhold Dornfeld appoints his son Eberhard Dornfeld personally liable partner having equal rights.



1922

1934



Konrad Haage takes a relaxing holiday in the Swabian Jura. Supposedly inspired by nature he returns with a complete draft of a 500 kg compactor. The DELMAG frog was born and will be the sensation at the 1934 spring fair in Leipzig.

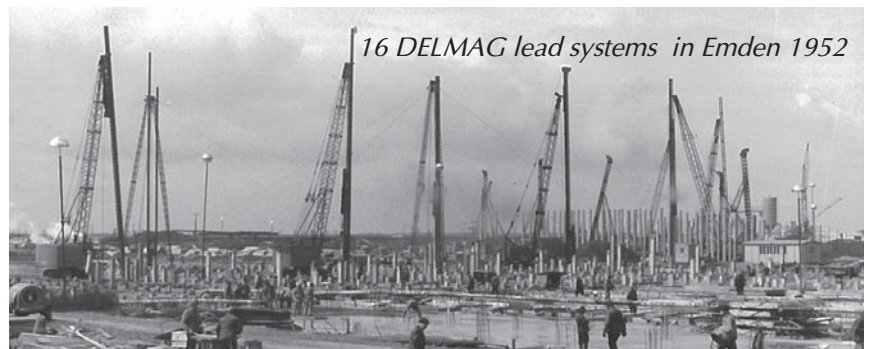


1940

In 1939 Konrad Haage invents the principle of the impact atomization, he demonstrates his invention in a memorable way to his colleagues. He poured water on his desk and hit hard in the puddle with the palm of his hand. Impact atomization! In 1940 the first diesel pile hammer D5 was delivered.



1950



16 DELMAG lead systems in Emden 1952



Stand in Hanover 1962 - diesel pile hammers, compactors, pile extractors and lead systems were presented in blue

Today, DELMAG Esslingen focuses entirely on the pile driving business. New diesel pile hammer models are manufactured and complete solutions for different pile driving tasks are offered. The drilling rig business has advanced to an important division within the ABI Group. The production in Esslingen delivers turntables and Kelly bars.

On its anniversary, DELMAG together with its employees, business partners and customers can look back on a turbulent history and a journey that was not always easy but successful. The markets have become more complex and the competition harder. The DELMAG motto from the 1970's "Who stands still goes backward" is not outdated. Development is pushed and experience is implemented. Modern, solid and operator-friendly machines for the pile driving and drilling sector are carrying the name DELMAG into the whole world.



At the end of the 1960's the trend to large-scale units shows, the first hydraulic drilling rig RH 155 is put on the market and the diesel pile hammer D55 in 1971.



bauma 1998 The dual rotary head system was awarded the innovation prize of the German construction machinery day, but dark clouds do not only gather over the exhibition site, one month later DELMAG files an insolvency petition. In 2000 the ABI GmbH takes over the branches pile driving and drilling technology.



1960

The first 18 m long lead system on crawler track GR 181 was delivered in 1964.



1970 Diesel pile hammer D55



1990

In the 1990's bigger and bigger equipment is built. The diesel pile hammer D200 and the drilling rig RH 4037 come on the market.



2000



2010

The future of DELMAG drilling technology is now written in Niedernberg, RH 34 on an ABI carrier.

### The DELMAG Logo through the ages



1920s



1950s



1960s



2000



Today

## Anna-M. Presses Sheet-Piles in Oldenburg

The company Ponel Bau GmbH carried out foundation work in its home town for the district association Oldenburg.

In April 2012 the ABI MOBILRAM-System TM 13/16 SL was handed over to the construction enterprise Ponel Bau from Oldenburg. One of the core services of the medium-sized company is the installation of sheet piles and beam sheet piling (soldier pile wall), among others. With the new machine Ponel is well prepared for these tasks. The TM 13/16 SL on the carrier SR 35T D series with a CAT engine complies with the current emissions directive for mobile machines that was tightened in 2011, and meets level IIIB. The CAT solution uses diesel particulate filters in order to meet the required emission levels.



The new "team member" was given the loving name Anna-M. One of the first employments was a home game: the foundation work for the enlargement of the administrative building of the district association Oldenburg. The district association operates nursing homes, facilities for handicapped people, and manages foundations. In April 2009 only, the association moved into a new domicile in the Nadorster Strasse. However, the space required increased considerably during the

*Picture: Foundation works in the Nadorster street in Oldenburg for the enlargement of the administrative building in Oldenburg*



*Picture: ABI MOBILRAM-System TM 13/16 SL with Hydro-Press-System in Oldenburg*

last years so that an enlargement of the premises will be realized.

To secure the construction pit a total of 165 running meters of sheet piles with lengths of 6.0 to 9.0 m were installed using the pressing method. About half of the U-sections is used as a temporary protection only and will be extracted later. A part of the sheet piles is fixed with straps in addition and stiffened against the bottom. Due to the present soil conditions, the entire distance was pre-drilled to release the soil for pressing the steel sheet piles. The first soil layer consisted of sand, and from a depth of app. 3 m there was loam.

The machine convinced on the employment. The sheet piles were finished in due time so that the actual building activities could be started. The new building is planned to be ready for occupation at the end of 2013. ■

## The Ferry Terminal at Ouistreham Will Be Enlarged

EMCC relies on the manoeuvrable ABI machine for the enlargement work at the ferry terminals in Ouistreham.

The terminal in Ouistreham checks in about 1 million passengers and 120,000 lorries per year. The harbour is considered to be the entrance gate between England and Normandy. The passage from Portsmouth to Ouistreham takes about six hours and is a welcome rest for the lorry drivers. In order to be able to offer more comfort and to make sure things run smoothly the terminal will be enlarged by 4.2 ha. Part of the new area will be recovered from the sea.

Besides the difficult geology EMCC who is part of the VINCI group, had to overcome other challenges. There was only a tight window of time of four to max. five hours per day to carry out the pile driving work. The terrain lies 4 m above sea level. However, during high tide the water rises to up to 7.6 m. So



*Picture: ABI MOBILRAM-System TM 11/14 at work in Ouistreham, the working times were determined by tides*



the pile driving work could be carried out during low tide only.

But the element of water is a well-known factor for EMCC as dredging work and maritime special civil engineering is part of its core business. Using the ABI telescopic leader mast TM 11/14 equipped with a vibrator and a combi clamp assembly MZK 800 148 running meters of sheet piles were driven in total. The wall consisting of six meter long AZ 28-700 double sheet piles serves as a cofferdam and retaining wall.

The advantages of the machine combination took total effect on the construction site. Positioning the sections using GPS and mason's line rendered a template unnecessary. The compact dimensions and the manoeuvrability of the machine proved successful as the TM 11/14 had to be brought out of reach of the mass of water at the end of each short shift.

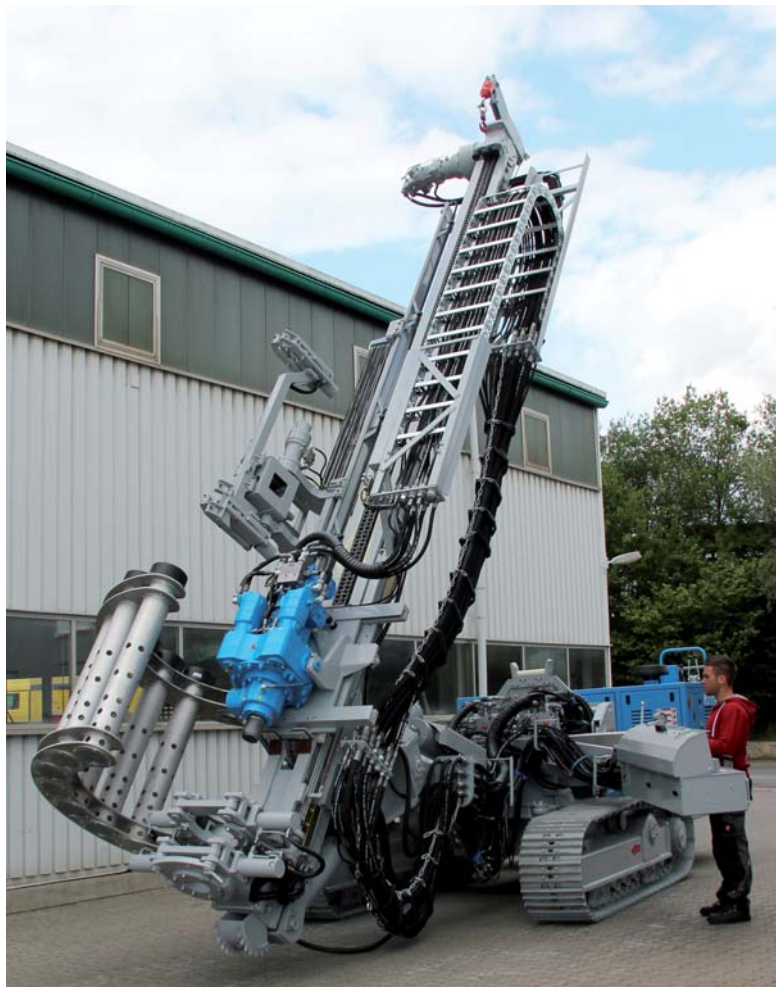
Large blocks of stone in the sandy soil sometimes brought the pile driving operation to a standstill and had to be removed. The average daily output was 12 double sheet piles and the maximum output that could be reached were 16 elements. Despite all difficulties work was completed one week earlier than planned. ■



Picture: TM 11/14 equipped with vibrator and double clamp assembly for better guiding of the double sheet piles

## INTEROC Anchor Drill Rigs à la ABI

Since the takeover in 2009 quite a few things happened at INTEROC. The construction of the machines was placed under close scrutiny and redesigned.



Picture: INTEROC anchor drill rig AN 150 with hydraulic drifter BE 2400, rod changer KBM 150 and auxiliary winch

In this process the INTEROC team was supported by competent and constructive feedback from the daily routine on our customer's construction sites. Many modifications are in the details and the utilization of high-quality components. The result are effective, robust and operator-friendly anchor drill rigs.

INTEROC offers three models of anchor drill rigs AN 120, AN 150 and AN 200. The designation refers to the approximate engine power of the incorporated Cummins common rail diesel engine which distinguishes itself by extreme smooth running. The engine module is covered with a high-quality insulation and thus also contributes to a low noise emission of the machine.

The hydraulic circuit was optimized. A double hydraulic pump as well as a large-scale hydraulic oil filter with prolonged maintenance intervals were integrated. The cooling cycle for the hydraulic system can be regulated with a thermostat.

The operation of the machine and the reading in the display were designed operator- und maintenance-friendly. All models can be fitted with an optional radio control.

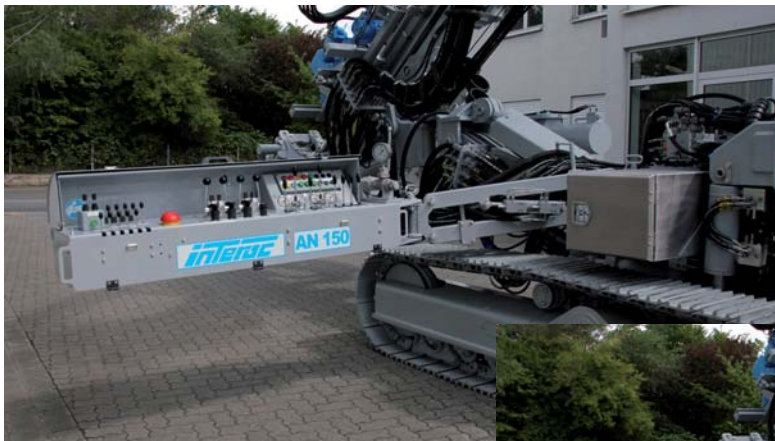
Depending on model and type the usable length varies between four and seven meters. The hydraulic lines for the slide are guided inside a very robust and low-wear energy chain made of steel.

The rough conditions on the construction side demand a lot of the machines in service. A good stability on uneven construction site ground is demanded in particular. The kinematics that is decisive for a good stability, was redesigned

as well so that drilling positions at right angles to the driving direction can also be approached with ease.

The ease of operation was enhanced through the height-adjustable control panel. Other comfortable details for the operator can be ordered as options, like e.g. a tool box and rack, that can be mounted left or right, as desired. As more and more machines parked on construction sites are mindlessly destroyed or damaged the control panel and the electric box can be fitted with a lockable vandalism protection.

Typical of the INTEROC anchor drill rigs is the patented rod changer made of aluminium. The magazine is available in four sizes, the biggest being able to hold five double rods with a diameter of up to 220 mm and a length of 3 m. The magazine considerably facilitates handling of the rods and reduces the risk of accidents. The double rods can be



Picture: AN 150, height-adjustable control panel with open and closed vandalism protection and spacious tool box



Picture: INTEROC - the unique rod changer

grabbed with the manipulator and coupled to the hydraulic drifter or rotary head in one move. Depending on the anchor type the removal of the rods is normally done separately. First the inner rods are extracted and put back into the magazine using the manipulator. After completion of the anchor the outer casings are also removed and put back over the inner rods in the magazine so that the double rods are available to drill the next anchor.

An INTEROC anchor drill rig can be equipped with water pump, compressor, pressure washer, central lubrication system, laterally displaceable auger drives and many more extras. ■

## Premiere for AN 150 with Rod Changer in the USA

Subsurface Constructors Inc. rented an INTEROC anchor drill rig AN 150 as a reinforcement.

Subsurface Constructors Inc., a customer of the ABI sales and service partner Hammer & Steel in the USA, needed an additional anchor drill rig for a large-scale project and decided in favour of the AN 150 from INTEROC. Subsurface Constructors Inc. is a long-established firm in the middle West of the USA and offers complete special civil engineering work.

The renowned company obtained a contract in St. Charles, one of the oldest cities west of the Mississippi, in direct vicinity to its home town St. Louis. There, a modern, multifunctional centre „Streets of St. Charles“ will be built with offices, living areas and recreational facilities. Since mid-July the AN 150 is employed in the foundation work for a multi-storey car park.

Due to the tight schedule, the machine was rent at short notice. Hammer & Steel provided the AN 150 equipped with a double head drilling unit DKB 2013 that consisted of the rotary heads DK 2000 and DK 1300. The patented rod changer was part of the equipment as well. This was the first time that the customer worked with the magazine, and he is very enthusiastic about the [www.abi-group.com](http://www.abi-group.com)



Picture: AN 150 with double head drilling unit DKB 2013 on the job site in St. Charles

functionality and the options the magazine offers. On their own anchor drill rigs the rods are handled with an auxiliary crane.

The 17.7 m long anchors are drilled in an angle of 30 degrees. The diameter of the outer casing is 133 mm, that of the inner rod is 88.9 mm. The drill cuttings are flushed with air. ■

# BANUT and DELMAG Working Hand in Hand in Russia

In December 2010 and March 2011 the company Stroygazconsulting Autostrada put into service two machines in wintery Russia, one DELMAG drilling rig and one BANUT fixed leader mast, for the construction of foundation piles.

Stroygazconsulting and its subsidiaries are the construction industry branch of the world-famous Gazprom group, that operates plants and infrastructure of the energy giant.

The subsidiary enterprise Stroygazconsulting Autostrada that was established in 2009 only, needed new pile driving and drilling equipment for the construction of foundations for numerous bridges in sandy clay soil with high groundwater level for a large-scale road construction project in the southwest of Moscow.

The new construction of the 35 km long three-lane motorway section Ophod Odintsovo started already in 2010. App. 10,000 impact-driven piles with cross-sections of 350 and 400 mm and lengths of 12 to 18 m were to be placed within the scope of this construction measure. They serve as a floating foundation as they do not reach the firm gravel layer. Another app. 2,500 drilled piles with a diameter of 1500 mm and a length of up to 32 m will be founded in a firm gravel layer.

The new three-lane high-speed motorway will connect Moscow and its suburbs in the southwest. The project is a logistic challenge. Large stretches of the new road pass in parallel to the existing and congested road that remains in service during the construction work. In some sections the distance between the drilling equipment and the flowing traffic is two meters only.

The restrictions during transport through the flowing traffic as well as the use of pile driving and drilling procedures at the same bridge section were the deciding criteria for the choice of the pile driving and drilling equipment.

ABI submitted an offer for two machines, one fixed leader mast BANUT 655 and one DELMAG drilling rig RH 34 in the special type SRH. After profound technical consultations and examinations of the equipment design by the customer, they gave the order for delivery.

The BANUT 655 is equipped with the hydraulic impact hammer SuperRAM 8000XL and is used in classic pile driving work for inserting pre-fabricated concrete piles. The drilling rig RH 34 SRH was delivered with Kelly drilling equipment as well as a connection for a casing oscillator and a hydraulic impact hammer SuperRAM 10000XL, and will be used for drilling and pile driving work.

In order for the drilling equipment to be used as pile driving equipment fundamental adaptations were made in the area of the mast head and mast foot. In addition, a guide for the impact-driven piles is required. A pile driving mode was added to the drilling rig, which can be selected using the touch screen in the driver's cab.

The chosen technical solution allows for a conversion from a drilling to a pile driving unit within eight hours. With that, we remained under the requirements of the customer.

The comments of the customer on the machine were all positive: "The convincing and very solid design of the drilling rig made this option possible and was a deciding factor for the acquisition. Besides the fast installation of the equipment on the construction site, the good off-road mobility is an advantage. Due to the restricted available space steep ramps were needed in some cases to approach the drilling place, which the RH 34 SRH managed without problems."

The hydraulic impact hammers SuperRAM 8000XL and 10000XL demonstrate here again that they are absolutely suited for the installation of impact-driven concrete piles. As with all machines delivered to Russia a "winter package" was installed and ester-based hydraulic oil was used so that the equipment can be operated down to -20 °C. During the hand over the personnel was extensively trained on the construction site. Besides the robust and reliable technology this is the basis for a continuous operation. ■



Picture: DELMAG drilling rig RH 34 SRH with SuperRAM 10000XL driving pre-fabricated concrete piles

# Camera Systems for Construction Machines

Under the motto "see and be seen" the professional association for the construction industry (BG Bau) launched a campaign for retrofitting construction machinery and construction-site lorries with camera-monitor-systems.

At ABI safety plays an important role as well. Depending on the machine type several versions of camera systems are offered for new machines. They make hardly visible areas visible for the machine driver and thus enhance the safety on the construction site when moving the machine. A standard solution is to equip the machine with a rearview camera as well as to install a camera on the right side that is not visible for the driver.

On ABI carriers a camera-monitor-system is part of the standard features. The data is transmitted to a monitor (with a 7" screen diagonal) inside the driver's cab. Depending on the number of cameras installed up to four views can be displayed simultaneously. For example, two cameras can be installed on the right side of the carrier, on demand of the customer. On machines with removable counterweight the rearview camera is installed on a magnetic foot so that it can be removed quickly. The installation with magnetic foot is also a good antitheft protection as the cameras can be stored in a safe place after work.

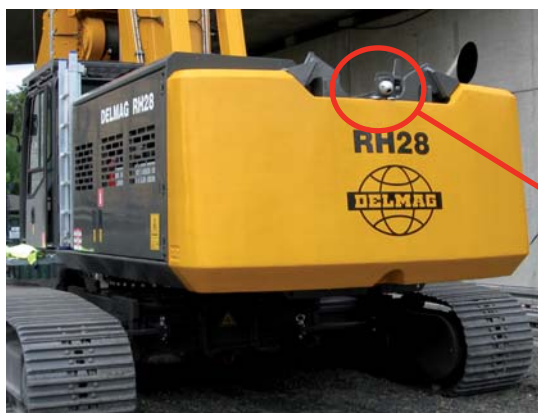
On pile driving work with long sheet piles a clamp assembly camera has proven in practice. This facilitates taking up the sheet piles with the clamp assembly. For a better view of the winch inlet, drilling rigs can be equipped with a winch camera.

All of the described applications demand a lot of the installed cameras. Things get rough on the construction site. The camera systems used by ABI are particularly robust, so that they withstand the hard conditions, like percussions, dust and humidity. The cameras are heated and waterproof (IP69K). They can even be cleaned with a pressure washer when cleaning the machine. The camera system also features an automatic brightness control. This guarantees a clear view at bright sunlight as well as in dull and cloudy weather.

At the moment, the BG Bau promotes retrofitting for construction machinery built before 2009. The premium is 50% of the purchasing cost, max. 500 Euros per camera-monitor-system, with a system consisting of one monitor and two cameras. The promotion applies to two camera-monitor-systems per year. In total, a maximum of four camera-monitor-systems per company are subsidized. For more information as well as the application for promotion please visit the web site of BG Bau at [www.bgbau.de/praev/anreizsysteme/nachrustung-altmaschinen](http://www.bgbau.de/praev/anreizsysteme/nachrustung-altmaschinen) (German only). ■



Picture: Monitor image of a clamp camera, depending on the number of installed cameras up to four views can be displayed at once.



Picture: Robust camera with magnetic foot for quick removal at the counter weight of DELMAG drilling rig RH 28

Picture (right): Position of the camera at the right side of the carrier of ABI telescopic leader mast

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