

Scandinavian Pile Driving SPD AB and ABI go forward into a joint future

The ABI Maschinenfabrik und Vertriebsgesellschaft mbH acquires 70 % of the company shares of Scandinavian Pile Driving SPD AB and will be the main shareholder of SPD AB.

SPD AB is one of the leading suppliers of pile driving and drilling equipment as well as special equipment for hydraulic excavators in Sweden.

Magnus Andersson, the co-owner of the company SPD AB, stays with the company in his present role as the chief executive. Andersson started out in the year 1993 as a one-man enterprise and mechanic for agricultural machinery and excavators. In 2002, he built his first leader mast for piling steel sheet piles as an attachment for a hydraulic excavator. One year later, the legal form of the company was changed to an AB (Limited Company).

The booming years in the construction sector in Scandinavia supported the rapid growth of the company. In 2004, SPD moved to the premises in Sala. In the beginning, SPD produced piling leader masts and accessories for hydraulic excavators, in the year 2007 attachment leader masts for drilling procedures were added. Over the years, SPD gained an excellent reputation in the special civil engineering industry and is considered a reliable partner by its clients.

The SPD products are a perfect addition to the existing product portfolio of the ABI Group. ABI gives a warm welcome to the new company in the ABI Group and is looking forward to the common future. ■

Photo: SPD / ABI cake at welcome coffee in Sala after contract signing



Photo: Matthias Heichel, Magnus Andersson and Christian Heichel (from left) hand shake after signing the agreement 2017-09-08 in Stockholm

Content

■ Scandinavian Pile Driving SPD AB and ABI go forward into a joint future	1
■ Efficiency Drive at work	2
■ 10 inch display	3
■ ABI customer portal	3
■ Machine introduction RH 12/140 and TM 13	4
■ Drilling on the water with DT 145-EC300	5
■ On well-known ground	6
■ Flood protection for Werder Bremen	7
■ DELMAG drill rig RH 30 mixing at link road to new Istanbul airport	8
■ DELMAG D100 in Scotland	9
■ BANUT 300	10
■ Drilling in a narrow space with the RH 18/200	11
■ TM 13/16 SL and RH 18/200 now also in miniature size	12
■ Season's Greetings	12

Efficiency Drive at work

For most of the people the installed engine output is the parameter that identifies the efficiency of the machine. However, in the case of special civil engineering machinery where the actual work is performed by the attached equipment, the deciding factor is how much of the installed power reaches the equipment and can be translated into action. In the hydraulic system the transmission losses depend mainly on the flow rate and are increasing disproportionately to it.

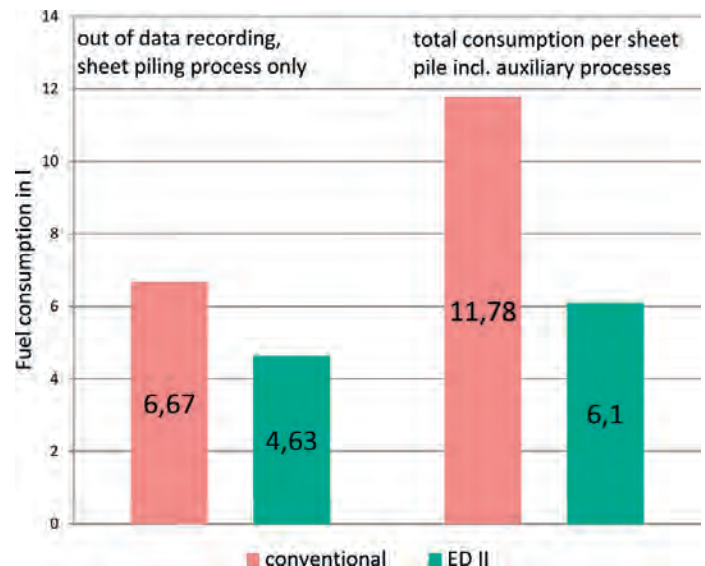
The Efficiency Drive (ED) developed by ABI includes mechanical, hydraulic and control measures in particular, does not only reduce the transmission losses but also increases the power of the machine and reduces the operating costs.

Combined with the MRZV-VV vibrators the ED I reduces the flow rate losses without limiting the efficiency of the equipment. The savings can be noticed mainly in part load operation. The Efficiency Drive II operates the diesel engine and the pumps in a particularly efficient way. In combination with ABI attachments like the MRZV-VV vibrators and the MDBA auger drives, the machines are working much quieter and more economical in part load operation.

The theory was confirmed repeatedly in practice by measurements under realistic site conditions. On a construction site in Munich, measurements of comparable working cycles were carried out with and without the Efficiency Drive. The results speak for themselves. On the first series of measurement the pile driving operation was evaluated without any auxiliary processes. The diesel

consumption per steel sheet pile was 4.63 l on average with ED I+II and 6.67 l without ED, which corresponds to a saving of over 30 %. The difference was even more distinct when the auxiliary processes, like e.g. handling and alignment of the steel sheet piles, were taken into account. The diesel consumption was 6.1 l with ED I+II and 11.7 l without ED, which corresponds to savings of over 50 %.

The client was impressed by the amount of the fuel savings which depend, however, also on other parameters, like e.g. the organization on the construction site, the soil conditions and the skills of the operator. On all measurements carried out so far the savings were always in a two-digit percentage range. ■



Job site residential area „Meiller Gärten“ in Munich Moosach

Special civil engineering works:

Company Gebrüder Wöhrl Grundbau GmbH

Used steel sheet piles:

Double steel sheet piles PU 18 sealed interlocks

Piling performance:

approx. 5850 qm sheet pile wall in total

10 inch display

Large displays are trendy, smartphones are already demonstrating that. More information can be shown in better quality.

With construction machinery it is quite the same. The demands regarding control and representation of process data are increasing. Depending on the procedure, the driver has to monitor a vast number of parameters. With a larger screen this is much easier and more comfortable.

Since 2017, ABI uses 10.1 inch touch displays on its MOBILRAM-Systems and DELMAG drill rigs. At the same time, ABI makes use of the enhanced technology to redesign its control system.

The new menu structure is based mainly on the procedures that can be performed with the machine. The operation

is intuitive: On the first level the user can choose from the available procedures, e.g. pile driving, drilling, pressing or impacting. On the next level the user selects the attachment and then makes the settings specific to the procedure. On a restart the last selected procedure is automatically active.

New icons and a new color scheme allow the driver to identify the status of the machine very quickly. If there is only black/white and blue color on the screen the machine works perfectly. The orange color is provided for the state „Limited functionality“ or „Warning“. However, if the red color is shown on the display the operator has to get to the bottom of the issue immediately as red is exclusively used for „Error messages“.

The color scheme in conjunction with the new menu structure helps the driver to concentrate on the essentials. Thanks to the side bar, that is shown by a touch, he can quickly access other help menus to enter or change process parameters for example. A touch screen film protects the display against scratches on the rough day-to-day operation on the construction site. ■



Photos: Display operation mode selector (left) and working mode for driving or extracting in manual operation mode (middle), 10 inch display in the operator's cab (right)

ABI customer portal

The documentation of site data increasingly becomes the focus. For the ABI MOBILRAM-System and the DELMAG drill rigs, ABI offers the ABI customer portal. Authorized persons can retrieve the machine data at any time with a computer, tablet or smartphone. The position of the machine is displayed on a map with the associated GPS data. The operating data can also be exported as a file. In addition, if the machine is equipped with the data acquisition option, the logs recorded and stored on the machine can be retrieved. The high data availability makes the operational planning easier and allows for an efficient management of the machines. ■

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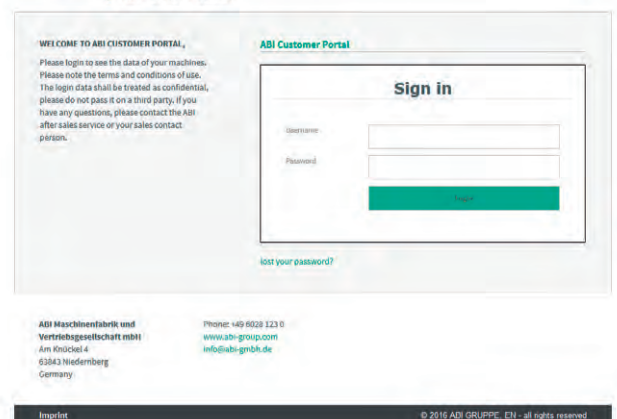


Photo: Sign in for the ABI customer portal

DEL MAG drill rig RH 12/140

The RH 12/140 is installed on the newly developed carrier SR 20. The Cummins engine delivers 201 kW and complies with the current exhaust emission regulations EU Level IV and US EPA Tier 4 final. With a transport width of 2.5 m and a transport length of under 18 m the compact drill rig in the standard version weighs about 44.5 t, including counterweight, rotary head and Kelly bar.

A particular feature of the new carrier is the stackable counterweight. Up to five segments weighing 1.5 t each can be attached in total. The standard ballast of the RH 12/140 are four segments that can be detached separately e.g. for transport. The telescopic undercarriage provides a good stability for drilling operations.

The drill rig is equipped with powerful winches for crowd and Kelly operation. The crowd winch provides an effective pulling force of 200 kN in upward and 100 kN in downward direction. The Kelly winch used provides an effective pulling force of

100 kN at a rope speed of 70 m/min and thus allows for dynamic operating sequences. The free diameter in front of the rope pulleys is 1400 mm.

Due to the new drive concept the rotary head is particularly quiet. The BT 140 with a torque of 137 kNm is suitable for Kelly bars with a diameter of 298 mm. The drive keys of the rotary head can be replaced from outside. All Kelly bars available for the BT 140 are equipped with a sound attenuation what also contributes to a noticeable reduction of the sound level on the construction site. The Kelly bars with lengths of 12, 15 and 18 m as well as the rotary head can stay on the machine for transport. Thus, the set-up times on the construction sites are significantly reduced.

The powerful, maneuverable and compact machine is predestined for application in urban areas. And for very low construction sites, the standard leader mast can be converted to a short leader mast version so that the overall height of the machine is under 11 m. ■



ABI MOBILRAM TM 13

The new TM 13 machine is the next model out of the new leader mast range. The completion of the first machine is scheduled for 2018.

The leader mast design patented in the EU and the US was first presented at the bauma 2010 as new MOBILRAM generation TM 22. The present TM 17, TM 20 and TM 22 models prove their advantages, like higher pulling and pre-stressing forces as

well as a higher torque absorption, compared to conventional telescopic leader mast systems, daily on the construction sites.

The new carrier SR 20 with telescopic undercarriage serves as a basis for the new TM 13 as well. Besides its performance and efficiency, the small machine is to convince with its transport dimensions and operating weight. In the standard version the TM 13 is planned with a weight of under 40 t. The transport width will be 2.5 m only and the transport length app. 9.0 m. For the standard version the stackable counterweight is planned with five ballast segments of 1.5 t each.



The telescopic leader mast connected through a new kinematics will have a stroke of app. 13.5 m. The new parallelogram kinematics was designed especially for small machines. It allows side inclinations as well as a large slewing range in typical ABI manner, so that the leader mast can be aligned accurately.

The variable vibrator MRZV 12VV and the auger drive MDBA 4500 are provided as standard attachments. These attachments are installed using a Docking-System. The Docking-System facilitates the installati-

on and removal of attachments immensely and also contributes to the working safety.

The new telescopic leader mast TM 13 is configured as a compact and lightweight machine that will show its strengths on construction sites in executing light and medium pile driving tasks. ■

■ Drilling on the water with DT 145-EC300

The Swedish special civil engineering company Foundation Drilling Sweden AB installed bore holes on the island of Lidingö, Sweden, using a down-the-hole hammer.

A new residential area called Dalénum is built on Lidingö. Lidingö is a community on the island of the same name which is at the same time the largest island of the Stockholm Archipelago. The island is very popular amongst the inhabitants of Stockholm as it offers a high quality of life and as it is very near to a big city. The housing association JM wants to build about 1000 new residential units and the accompanying infrastructure until 2020. Promenades and walkways for the pedestrians will be built on the shore.

For the foundation work for the walkways, Foundation Drilling Sweden AB relied on its SPD drill rig DT 145-EC300. The telescopic mast has a stroke of 13 m and a weight of app. 6.5 t. It is installed on a Volvo hydraulic excavator so that the operating weight is app. 42 t (including the mast). For the construction of the cased bore holes, the machine was equipped with an auger drive and a down-the-hole hammer.

The new walkway is founded on piles with a length of 18 m. The single pile sections were 12 m long and were extended by welding 6 meters directly on the site next to the shore. The pile diameter was 406 mm. A tower crane was used to handle the piles and to place them in front of the machine.

The ground conditions were quite demanding for the machine. The bore holes were drilled through a clay layer, then through rocks and were finally embedded in a granite layer. The powerful DT145 needed about 20 minutes for one bore hole. The drilling work was performed from a pontoon. The situation was aggravated by the handling of the 18 m long piles, lifting from the shore to the pontoon as well as placing the piles in



Photo: Telescopic drilling mast DT 145-EC300 with DTH hammer while drilling on the island of Lidingö, Sweden, Photo: SPD AB

front of the machine. Despite the power of the machine the daily output was limited to two to six piles per day only as the handling of the piles on the construction site was quite time consuming. ■

On well-known ground



Photo: Exhibition grounds in Munich Riem at the beginning of the construction works

The contractor Gebrüder Wöhl was assigned with the shoring of a building pit for the extension of the exhibition halls on the Riem exhibition grounds in Munich.

Three ABI machines could show their capabilities on the exact same spot where the ABI booth was located in the outdoor area during the bauma 2010 and where ABI and DELMAG machines were presented to the professional audience. Two new exhibition halls as well as the Conference Center North will be built in the northeastern part of the exhibition ground for app. 105 million Euros. The construction work started in mid-2016 and the completion is scheduled for end of 2018. After that, a total of 200,000 square meters of covered exhibition area will be available on the exhibition grounds, distributed over 18 halls.

For the realization the company Gebrüder Wöhl Grundbau GmbH from Schrobenhausen relied on three ABI machines: one TM 17, one TM 14/17 SL and one TM 11/14 SL. App. 9000 square meters of steel sheet pile wall were installed to shore the building pit. Further shoring measures took place by installing 69 concrete piles. This was done using the VDW "in front of the wall" drilling procedure. The pile diameter was 620 mm. Another 100 piles were produced using the CFA procedure (continuous flight auger). The further the excavation progressed, the steel sheet pile walls were secured with tie back whalers and anchors.

Due to the proven ABI technology the company Gebrüder Wöhl was able to finish their work as scheduled. The entire steel sheet pile wall was pre-drilled and the sheet piles installed within three weeks. ■



Photo: ABI MOBILRAM TM 17 and TM 14/17 SL while driving sheet piles for excavation support



Photo: ABI MOBILRAM TM 17 was also used for the installation of concrete piles with VDW auger drive

Flood protection for Werder Bremen sports club

The company Joachim Tiesler Hoch- und Tiefbau GmbH & Co. KG from Elsfleth carried out civil engineering works for flood control at the Weser stadium.

In 2008 and 2011, the stadium had already been reconstructed and modernized. But when storm „Xaver“ passed over Germany in autumn 2013 it turned out that the flood control is not sufficient. The flood level of the river Weser was only about 6 cm below the dike top.

The new flood control concept should minimize the risks of a flooding. So the dike at the stadium was elevated by one meter and provides protection against a water level of up to 6.5 m. In addition, a construction project for a mobile protective wall was realized which can be erected within three to four hours in case of a flooding threat and offers additional protection. The raise of the water table is also a threat in case of flooding. To prevent water from entering the stadium a pipeline network with high-performance pumps was installed.

Construction works near the water are one of the main field activities of the company Tiesler, this includes foundations, installation of steel sheet pile walls, bank enclosures, etc.

The contractor relied on an ABI MOBILRAM TM 11/14 SL with vibrator MRZV 17VV for the comprehensive civil engineering work at the Weser stadium. The small and maneuverable machine drove about 520 t of steel sheet piles into the ground. The overall length of the steel sheet pile wall was 750 m. On the west side steel sheet piles PAL 3260 with a length of 4.75 to 9 m were used, and on the east side steel sheet piles AZ 12-700 with lengths of up to 12 m were installed.



Photo: ABI MOBILRAM TM 11/14 SL with adjustable vibrator MRZV 17VV at Weser-Stadion

The building activities were completed at the end of 2016 and the design of the surroundings with a promenade were finished in August 2017. ■



Photo: Steel sheet piles are driven into the ground using a guiding for exact positioning and accurate sheet pile wall alignment



Photo: Finished sheet pile wall with top profile

DELMAG drill rig RH 30 mixing at link road to new Istanbul airport

In mid-2017 ABI delivered two tailor-made DELMAG drill rigs RH 30 to the company IKSA in Turkey.

The contractor IKSA relies on new foundation and soil improvement methods and ordered two identical DELMAG drill rigs RH 30 from ABI especially modified for soil mixing methods. Both machines have no Kelly winch. The auxiliary winch is located on the leader head and originates from the proven ABI MOBILRAM-System. The slewable winch facilitates the installation of drilling rods to achieve mixing depths of up to 30 m.



Photo: RH 30 at the job site on the link road to Istanbul's new airport installing mixed piles



The machine was configured especially for soil mixing but can also be converted into a classic drill rig at relatively low expenditure.

The attachment used is the auger drive RHP 150S which can achieve mixing speeds of up to 80 rotations per minute. For the supply of aggregates, fixed lines were mounted on the machine which support a regular feeding. This is captured and logged with the installed data recording and the associated hardware like e.g. the flow meter.

One of the machines was used in the development of the infrastructure for the new Istanbul airport. For the soil improvement measures, mixed piles of different lengths with a diameter of 1000 mm were installed. The longest piles were mixed to a depth of up to 30 m. Since its delivery in May 2017 until mid-October, the RH 30 already installed 4000 piles. The piles were produced in a filled ground down to the natural clay ground layer.

The new airport in the northwest of Istanbul is planned to be one of the largest in the world some day. The opening is scheduled for 2018 with an initial capacity of 80 million passengers per year. Further development phases until 2028 are already scheduled in order to achieve a capacity of up to 200 million passengers per year. Just for a comparison: the Frankfurt airport has a capacity of about 65 million passengers per year. ■

Photo: DELMAG drill rig RH 30 while soil mixing

DELMAG D100 in Scotland

ABI Equipment Ltd. rented its DELMAG diesel pile hammer D100 to the contractor GRAHAM Construction for an offshore installation.

Energy Park Five is one of the leading engineering and research zone within the energy sector in the world located on the Scottish east coast in the town of Methil,



Photos: DELMAG diesel pile hammer D100-13 with rope suspended lead while driving (above). The diesel pile hammer is positioned with a crane on the ponton. (below)



app. 65 km north of Edinburgh. In the first place, the industrial estate offers easy access to the offshore energy market in the North Sea. The 55 hectares large area comprises an industrial zone, docks, an area for research companies and an industrial area without access to the sea. Offshore and maritime companies in particular as well as companies dealing with renewable energies are based in Methil.

The extension included the construction of two marine structures – dolphins that allow the loading of wind turbines. Both dolphins consist of 3 tubular piles, each pile had a diameter of 1524 mm, a wall thickness of 55 mm, a length of 27.5 m and a weight of 55 tons.

First, the pipes were lifted into a pile guide and then driven app. 7 m into the bearing layer to the refusal using a DELMAG diesel pile hammer D100-13 with a rope suspended leader mast. Then, the pile top drilling rig was used. The drilling rig drilled out the already driven pipes and predrilled another 10 m. Finally, the piles were re-driven 10 m down to the finish level of 17 m into the bed layer. The ground conditions changed from silt, sandstone and mudstone to hard sand.

Steve Dickson of GRAHAM Construction was satisfied with the chosen construction equipment: „We are pleased that we chose the DELMAG D100 diesel hammer. Its excellent performance gave us cost benefits and in addition its simple robust design made it straight forward for the site crew to use and maintain. In addition, we received a very attentive service from ABI Equipment Ltd.“ ■

BANUT 300

In November 2017, Aarsleff UK received its third BANUT 300.

One year ago already, the first two BANUT 300 fixed leader masts were delivered to Aarsleff Ground Engineering Ltd in Newark, England. Aarsleff was looking for a machine manufacturer who could deliver machines according to their specifications and that comply with the current standards and regulations at the same time. The contract was awarded to the subsidiary ABI Equipment Ltd.

The essential key features defined for the machine were an operating weight of under 30 t and the fast assembly and disassembly using on-board tools. In addition, the machine had to be appropriate for pile lengths of up to 9 m and the operation of a hydraulic impact hammer with a drop weight of 2.5 t.

With the BANUT 300 fixed leader mast ABI was able to meet all of these requirements. The compact machine was especially designed for a low ground pressure. Due to the low ground load, there are less

requirements for the working platform at the construction site so that the machine can be used for residential building projects as well. Under optimum conditions, the BANUT 300 can start working within 30 minutes after its arrival on the construction site. During transport, the hydraulic hammer stays attached to the machine, only the upper leader section must be folded into working position.

For example, a BANUT 300 was used for soil improvement measures in Reading, England. There, the infrastructure for public transport is being developed. The existing road A33 is widened for a new bus lane so the road embankment had to be stabilised accordingly.

Aarsleff installed 300 precast concrete piles in total for the stabilisation. The piles had a cross-section of 300 x 300 mm and a length of 4 m. Work progressed rapidly and could be completed within eight days only using a BANUT 300. This was saving a whole week as compared to the provided schedule.



Photos: The first two BANUT 300 before delivery in Niedernberg (above) Arrival of the third BANUT in Balderton, Newark (below)



Photos: BANUT 300 at the job site in Reading (left), View in the rear mirror - finished piles (right)

Since their delivery, the first two machines have been well utilized for different foundation works. With the third machine Aarsleff Ground Engineering will increase its capacity in order to be prepared for further projects. ■

Drilling in a narrow space with the RH 18/200

The relatively young company D&K Spezialtiefbau GmbH & Co. KG from Bad Grönenbach is continuously investing in its machinery park and received its first DELMAG drill rig RH 18/200 in 2016.

The compact machine was used on a spectacular construction site in the Allgäu where it could prove its strengths. The link road in the Wolfegg community between Wolfegg and Höll was heavily damaged during a storm in spring 2016 by a landslide and had to be refurbished.

From now on the road will be secured with a back-anchored, contiguous pile wall. For this, D&K Spezialtiefbau installed 65 concrete piles with a diameter of 750 mm and a length of up to 9 m. The wall was anchored using 36 permanent soil anchors with a length of 15.5 m.

The challenge on the construction site was not the size or length of the piles but the restricted space and the steep hillside. Particular attention was turned to the safety of the staff working on the hillside and a secure position of the machine. ■



Photos: DELMAG drill rig RH 18/200 of the company D&K Spezialtiefbau at the job site in the municipality of Wolfegg (above), Photo: D&K Spezialtiefbau



RH 18/200 Short Mast Version

The DELMAG drill rig can not only work in restricted spaces but also at restricted headroom.

To do so, the upper leader section with the rope sheave head is removed and replaced by a rope sheave head for short leader mast. This conversion reduces the overall height of the machine by app. 7.5 m to only 12.1 m so that it can be used on construction sites with restricted height, e.g. under overhead power lines or in industrial halls.

Photo: DELMAG drill rig RH 18/200 as a short mast version in Niedernberg

■ TM 13/16 SL and RH 18/200 now also in miniature size

Good news for collectors of models and all ABI and DELMAG machine fans: The current machine models ABI MOBILRAM TM 13/16 SL and the DELMAG drill rig RH 18/200 are now available as models in scale 1:50.

ABI ordered a new edition of the model TM 13/16 SL on the new carrier SR 30 from the model manufacturer Conrad. The model is equipped with a MRZV 20VV vibrator and painted in ABI standard colors.

The DELMAG drill rig RH 18/200 is totally new. The model is available with basic equipment as a typical Kelly drill rig with BT 200 rotary head, Kelly bar and starter. The flame red paintwork makes the model an eyecatcher in every showcase.

Both models can be purchased from ABI as of now. If you are interested please write an e-mail to modelle@abi-gmbh.de or call us at +49 6028 123 0. ■



As this current year comes to an end we would like to thank you for your kind cooperation throughout the year and for placing your confidence in us.

We look forward to working together on many joint projects and would like to wish you every success for the coming New Year.

ABI GmbH and DELMAG GmbH & Co. KG

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