

ABI MOBILRAM-System TM and SM Models



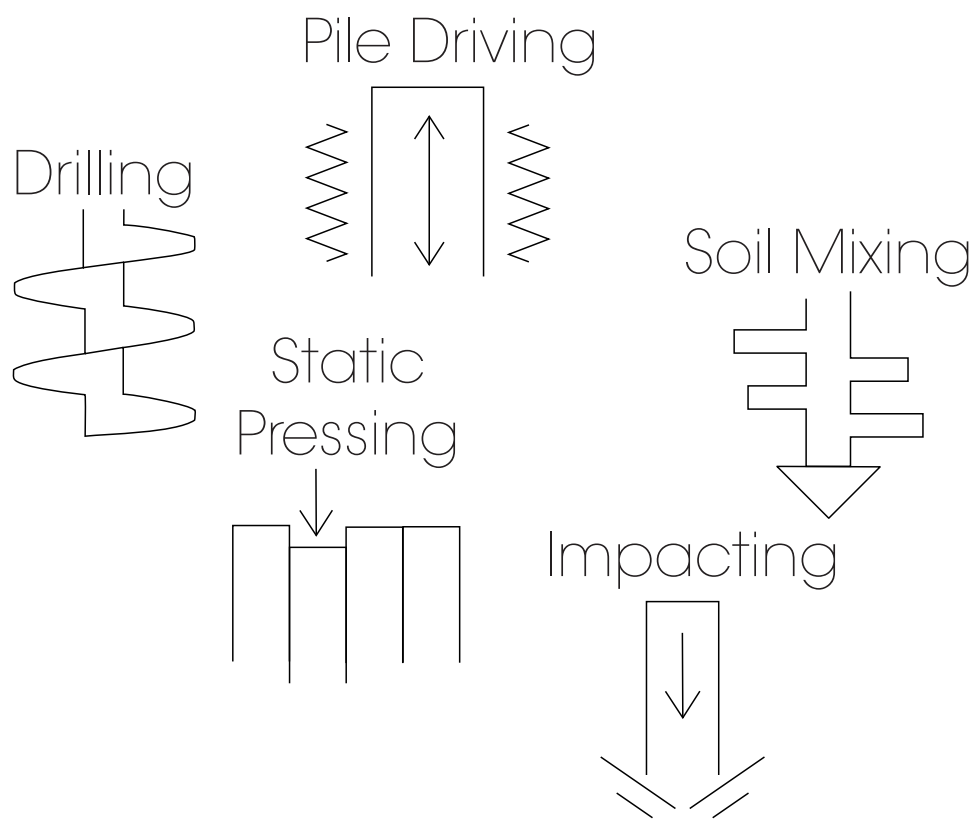
MOBILRAM

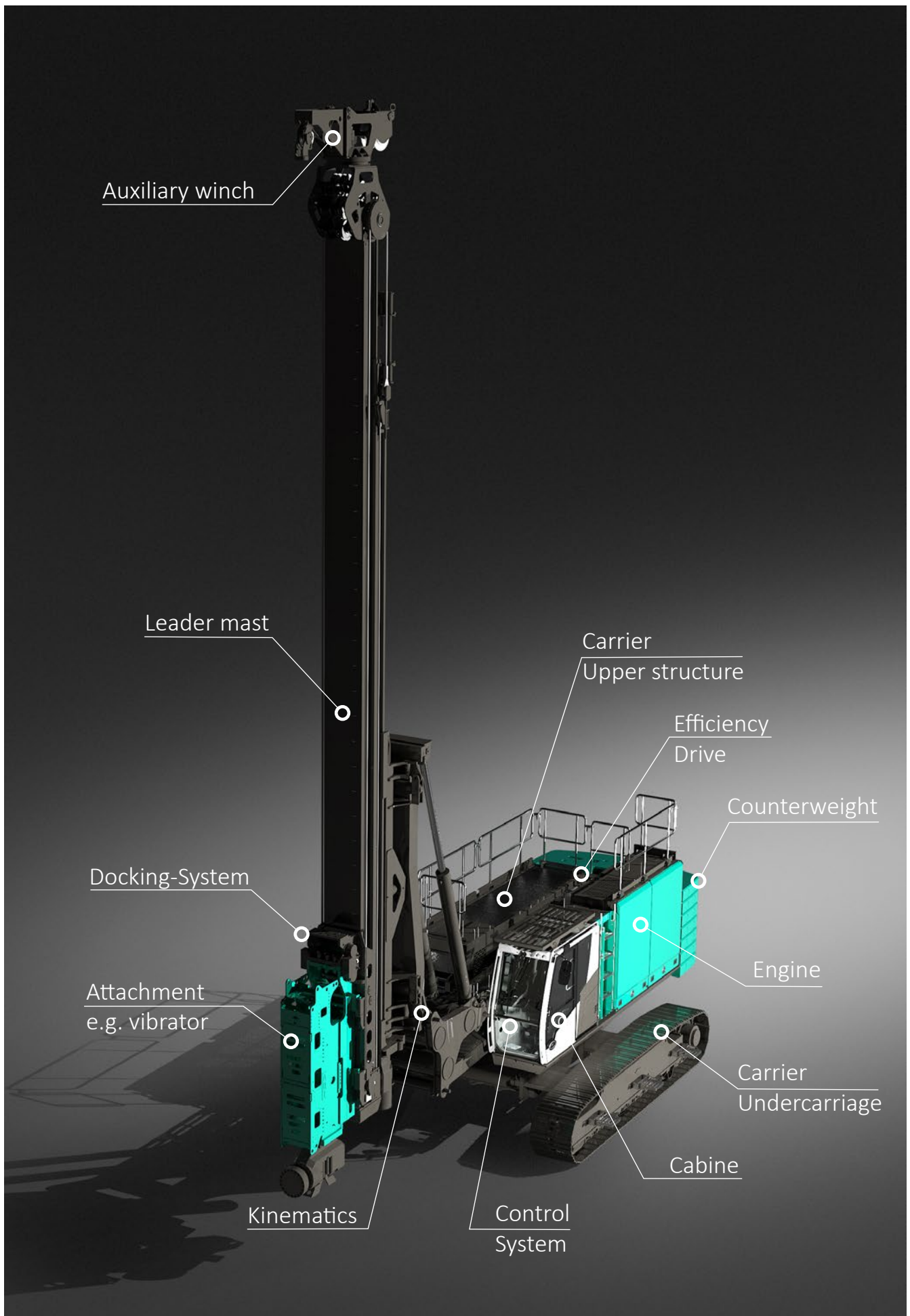
The term MOBILRAM stands for mobile pile driving systems and has for over 45 years. With a large choice of attachments the MOBILRAM-System covers nearly all fields of special civil engineering from pile driving, drilling to pressing and impact pile driving.

The biggest advantages of the ABI MOBILRAM-System are its efficiency and flexibility. The efficient utilization of the available energy has a name at ABI: Efficiency Drive. With the Efficiency Drive increased fuel savings are achieved without losses in performance.

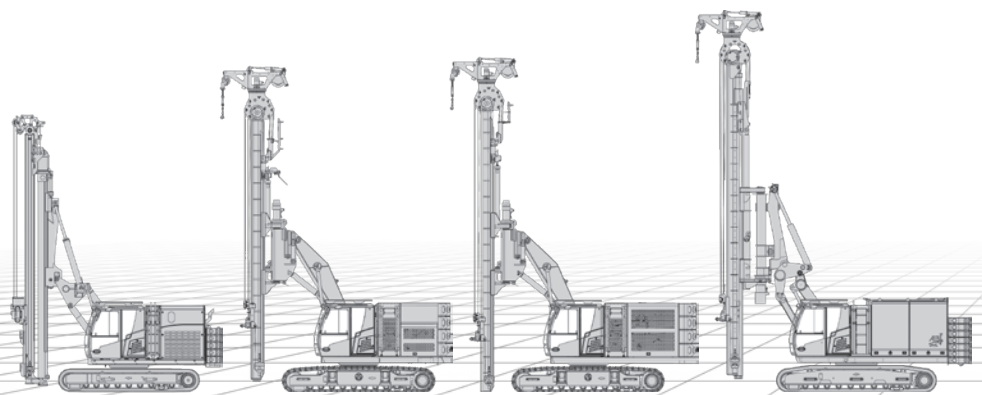
For safe and stable working the machines are configured offering the designated load capacity for the complete 360 degrees slewing range of the upper carriage at minimum reach.

The leader mast guided working method offers advantages for the exact positioning the pile elements in pile driving work or for drilling tools in drilling work, pre-stressing and pulling forces can be introduced selectively and controlled in addition.





Overview



Model		TM 13	TM 11/14 SL	TM 13/16 SL	TM 14/17 V (VSL)
Engine power	kW	209	280 / 340	340 / 470	470 (340)
Stroke guiding carriage	mm	13500	14500 / 14000	16000	17000
Torque absorption max.	kNm	60	60	45	100 (45)
Max. load capacity ¹	kg	7000	5000 / 9000	9000	10000 (9000)
Carrier		SR 20	SR 25 / SR 30	SR 30 / SR 35	SR 35 (SR 30)
Transport weight ²	ca. t	40	42 / 49	49 / 51	57 (53)
Operating weight with standard vibrator	ca. t	43	45 / 52	53 / 55	62 (58)

¹ 360 degrees operation, reach dependent on ballast

² incl. standard counter weight, reduction of transport weight possible by detaching counter weight



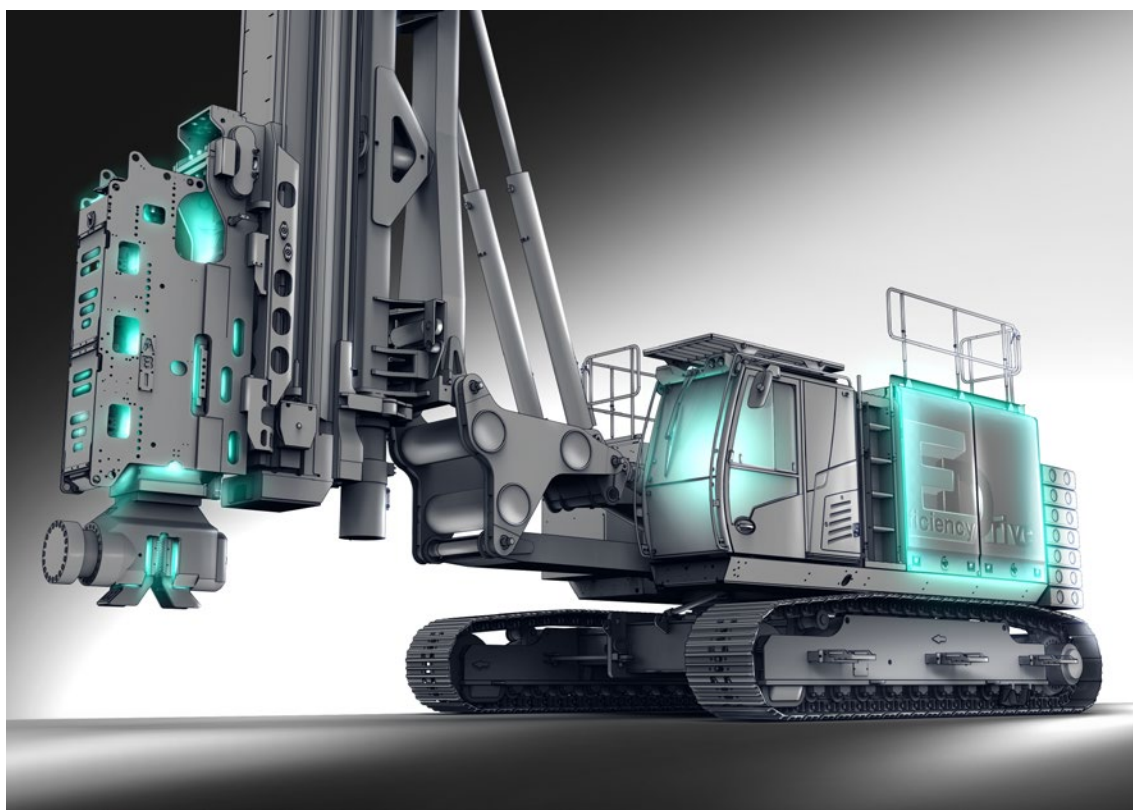
TM 17	TM 20	TM 22	SM 14/18 HD	SM 18/22 HD
470	470	470	470	563
18000	20000	22000	18000	22000
150	150	200	200	200
11000	12000	15000	15000	19000
SR 35	SR 35	SR 35 HD	SR 35 HD	SR 45
63	65	77,5	78	86
67	69	83	84	92

Efficiency Drive

Since the F series carrier model the Efficiency Drive is part of the standard installation. Originally developed to reduce fuel consumption, the Efficiency Drive offers further advantages, that makes the ABI MOBILRAM-System even more efficient and environmentally friendly. Utilisation of Efficiency Drive leads to a reduction of noise and exhaust emissions. The important fact is that the available power at the attachment remains available without any restrictions or is exceeded.

While working with the vibrators MRZV-VV the Efficiency Drive regulates the hydraulic oil delivery. Only as much oil is delivered as is required to transfer the required power into the vibrator. The adaptation of the hydraulic flow rate has no negative effects on the available power. The full power is always available at the vibrator.

The diesel engine speed is controlled load-dependent and optimal parameters for the engine and hydraulic pumps are set. This reduces wear and tear on the diesel engine, pumps and hydraulic system allowing more power to be available at the attachment. In addition, an automatic throttle function of the Efficiency Drive controls the speed of the diesel engine in such way that it always runs at idle as long as no load, e.g. for undercarriage, leader mast, etc. is required.



Docking-System



For the MOBILRAM-System, flexibility is a synonym for the variety of fields of application on the one hand, and the fast change between attachments on the other. This makes the ABI MOBILRAM-System a „Swiss army knife“ for special civil engineering.

The attachments are attached using a Docking-System. The Docking-System allows the attachments to be changed within a few minutes. Thus, the vibrator can be swapped quickly with an auger drive for pre-drilling and then swapped back to the vibrator.

Besides its speed and ease of use, the Docking-System also contributes largely to an increase in working safety. The electric and hydraulic supply of the attachment are made automatically by closing the Docking-System.

Control System

Including hard- and software, the control system is the link between man and machine, and in modern construction machinery it is one of the most important components, as it decisively influences the efficiency of the machine.

In its products ABI relies on a decentralised control system as well as on integrated systems. The decentralised control system with short signal paths enables precise control

of the numerous functions, and also offers the necessary flexibility in the realisation of customer-specific requirements.

The operating concept of the ABI and DELMAG machines supports the driver in his daily work with helpful functions and options. Special emphasis was taken on ergonomic controls and a procedure-based menu structure.



Automatics and working modes

The Vibromode 1 is used for driving classic pile elements, such as steel sheet piles or beams. The Vibromode 2 is specially designed for procedures where the vibrators are exposed to higher loads than in standard applications, e.g. stone columns, vibrated cast-in-situ concrete piles and soil compaction.

For the installation of stone columns, the driver can use the stone column automatic function. In order to achieve consistent quality in the installation of the column, the step sequences can be defined in relation to the pre-stressing pressure and other parameters.

When working with aggregates, various automatic functions are available for the concreting process. In the automatic function speed mode, a constant speed for the withdrawal is set. In the automatic function pressure and flow rate modes, the withdrawing speed is controlled according to the concrete pressure or quantity in order to achieve the desired pile quality.

Data recording

The data acquisition is integrated in the ABI control system. The process data, e.g. working pressure, pre-stressing pressure, etc., are shown and stored on the main display. With the optional data collecting and recording, the data can be transferred via USB stick or the customer portal and evaluated and archived on a computer with the corresponding software.

Fleet management

Fleet management is carried out via the ABI customer portal. With a personalised login, machine parameters such as machine location, operating hours, fuel consumption etc. can be viewed online at any time. If the machine is equipped with data recording, the stored process data can also be downloaded.

Start-Stop button

Environmentally aware control of the machine is facilitated by a start-stop button. Using the start-stop button the diesel engine can be stopped for longer periods without the control system being switched off. On restart the system is immediately returned of the same settings as before. This reduces noise emissions and saves fuel.

Battery management and side lighting

The battery management system ensures high availability of the battery and makes the battery disconnecter easier to use. The exhaust emissions after-treatment does not allow the battery to be disconnected directly after the diesel engine has been switched off. The battery management automatically takes over this function. In addition, the battery management system can be coupled with the side lighting and enables the driver to enter and leave the machine safely in the dark.

Remote control

New machines are equipped with the radio remote control „loading mode“ as standard. The driver can carry out and control the loading process from outside. As an option, the machine can be equipped with the more comprehensive radio remote control „set-up mode“. This allows all functions necessary for the set-up process to be operated from outside. Both radio remote controls also serve as emergency operating units.

Main and auxiliary display and function controller

The main display serves as a display for process and motor values as well as for process selection. The auxiliary display and the function controller are used to control the working process and to enter the target or limit values. The selection of buttons is dynamic, always related to the selected working process. The driver can adjust the position of the two displays individually, so that the important values are always in sight but do not obstruct the view to the working area.

Joysticks

The sensitivity of the joysticks is individually adjustable. In addition, the driver is informed of important machine messages via a vibration feedback. For example, a vibration alarm alerts the driver that a limit stop has been reached.

Cabin with comfort seat

The air-conditioned cabin offers the driver a lot of comfort. The seat has air suspension as standard and is equipped with a lumbar support, headrest and seat heating.



Service

A high availability of machines is decisive for economic efficiency, which can be maintained by regular inspections and efficient troubleshooting.

The ABI mechanics and technicians regularly perform prescribed checks and inspections, eliminate errors or repair damages that can occur due to the rough work environment and demanding methods of the machine.

Due to the fast availability of spare parts and reliable support downtimes are minimized and a smooth and profitable operation of the machines is ensured.



Transport

Besides the functionality and performance, the transport dimensions and weights are important specifics of construction machinery. Telescopic leader masts have more favorable transport dimensions compared with fixed leader masts, as the leader mast is retracted in the transport position during transportation.

For transport the attachments are removed and secured in their proper transport fixtures.

The counterweight can also be removed to reduce the transport weight. Depending on the machine model and ballast requirements, various ballasting systems are available for the MOBILRAM-System.



Engines

The EU Emission regulation for mobile machines (EU 2016/1628) regulates the engine limit values for construction machines in Europe. The engines installed in most of the ABI and DELMAG machines belong in the power category between 130 and 560 kW. Only a few models are offered with higher engine power.

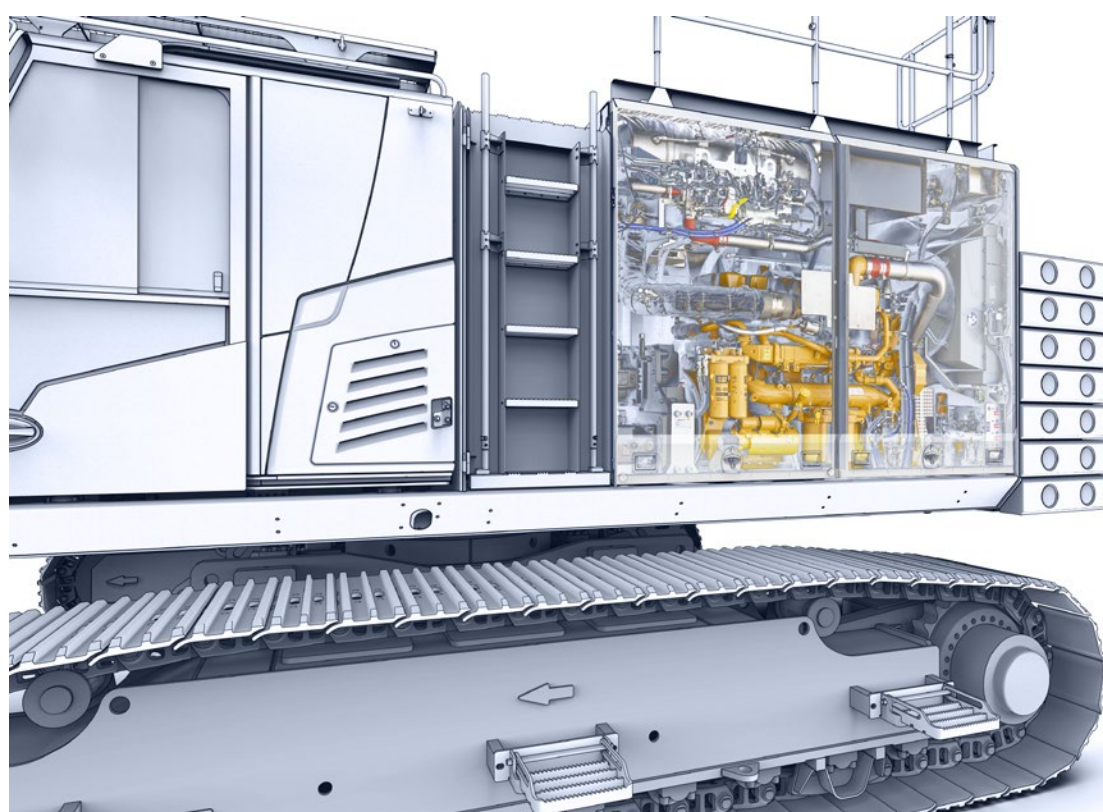
To achieve a compliance with the limit values a comprehensive exhaust after treatment system has to be installed. The essential components usually comprise of Diesel Particulate Filter (DPF), the Diesel Oxidation Catalytic converter (DOC), and Selective Catalytic Reduction (SCR) with urea injection.

The DPF filters a large part of the particulate matter from the exhaust gas flow. The DOC catalytic converter removes carbon monoxide (CO) and hydrocarbons (HC) from the exhaust gas by oxidation with the residual oxygen. In the SCR catalytic converter, the nitrogen oxides are reduced by a chemical reaction with injected urea and converted into non-toxic nitrogen and water. In Europe, urea is known under the brand name

AdBlue and in North America as DEF. In the power category above 560 kW, the limit values in the current regulations are higher and the machines can work without DPF and SCR.

The installed machine technology results in higher requirements for the operating companies for maintenance and operation of the machines as well as in the purchase of operating materials, which are generally readily available in the EU and the USA. For example, the use of low-sulphur diesel, low-sulphur and low-ash engine oil and taking care in filling the urea/AdBlue for trouble-free operation of the machine is essential.

The current ABI and DELMAG carriers comply with the latest emission regulations EU Stage V as well as US EPA Tier 4f and can therefore be used flexibly on construction sites within Europe and the USA. Together with the ABI Efficiency Drive, that minimises transmission losses and increases the efficiency of the machines, the result is an ideal combination, especially if high demands are placed on environmental protection and cost-effectiveness.



MOBILRAM at Work

The ABI MOBILRAM is most commonly used for pile driving and extracting.

In addition to the classic Z or U shaped steel sheet pile elements also lightweight sections, trench sheeting, beams, steel plates, etc. can be driven using vibration. Furthermore the vibrators can be utilised for several applications like the installation of thin diaphragm walls, geotextil piles, stone columns, horizontal sealing slabs as well as for compaction.



A classical application for the ABI MOBILRAM-System with vibrator: The installation of a sheet pile wall.



With a double clamp assembly MZK the force can be transferred optimally to double steel sheet piles or pipes.



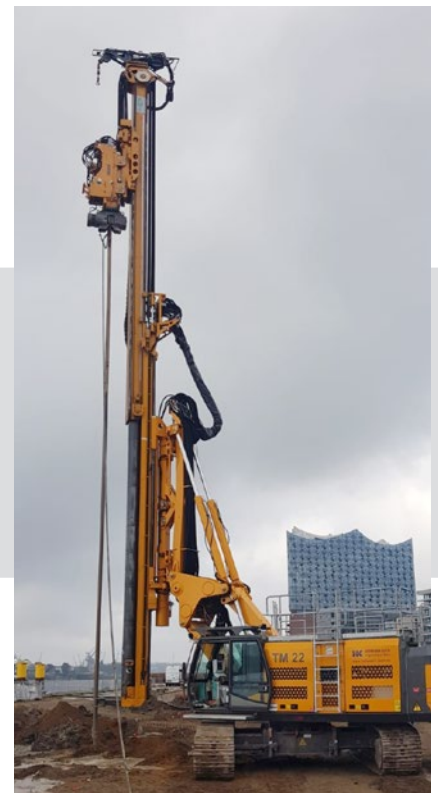
H-beam as a pile element are often used to improve the load bearing capacity of the ground.



Increasing the load bearing capacity of the ground installing gravel piles.



Displaceable soils are suitable for the installation of cast-in-situ full displacement piles.



Sealing of subsoils by injection installing horizontal sealing slabs.

Auger drives can be used to perform numerous and also very different procedures. In most cases, they are used to install concrete piles or pile walls for foundation and shoring.



Installation of secant pile wall with a minimum distance to the existing structure using a VDW auger drive. The drilling and concreting is carried out in one continuous step, after drilling down concrete is pumped during withdrawal.



The auger drive MDBA can be used for several applications: e. g. for pre-drilling, CFA drilling as well as for soil mixing.



For soil mixing, productivity can be increased by using multiple auger drives.



Installation of continuous flight auger piles: after reaching the desired depth during extraction concrete is pumped through the hollow stem of the auger.



In hard, rocky soils down-the-hole hammers (DTH) are used for drilling.



Increasing the load bearing capacity of the soil with mixed piles. Existing soil is mixed with aggregates while drilling and extracting.



Soil mixing with the Triplemix auger drive. In one step three overlapped mixed piles are installed.

On sensitive sites regarding vibration, noise and settlement the steel sheet piles can be pressed in the ground using the Hydro-Press-System.

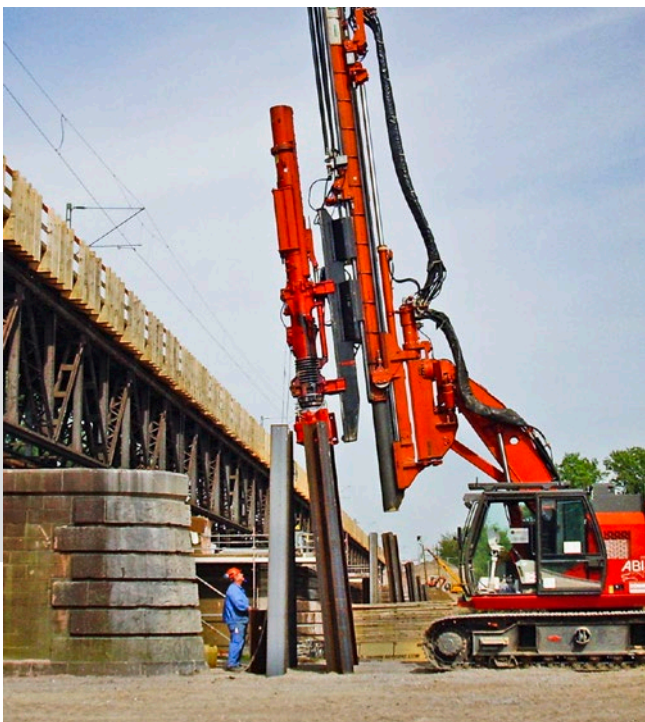


Using the Hydro-Press-System HPZ four steel sheet piles are pressed in a step sequence into the ground.



Static pressing directly in front of existing buildings. In some cases the soil must be loosened by pre-drilling before pressing.

For impacting DELMAG diesel pile hammers can be mounted on the ABI MOBILRAM-System.



Impacting H-beams with DELMAG diesel pile hammer. With the DELMAG formula the load bearing capacity of the element can be calculated.



Driving steel sheet piles. DELMAG diesel pile hammer is often used for back driving or for embedding piles in a load bearing layer.

Custom-designed Machines

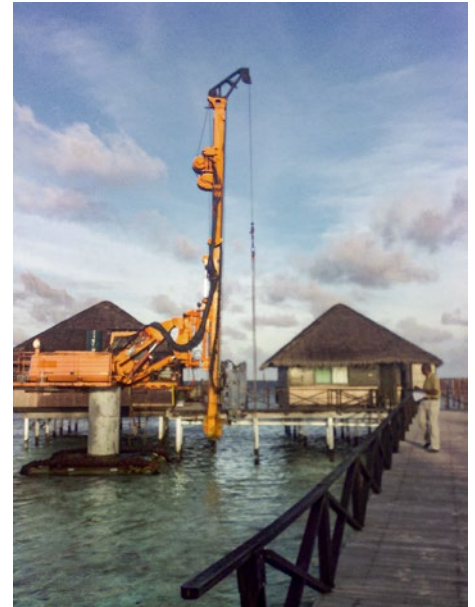
The ABI machines are manufactured in small batches. This provides a high flexibility and short response time when realizing customer-specific modifications. As far as technically possible, specific customer requirements are taken into consideration

and implemented. However, there are applications that are unique and require a special machine or a specific configuration.

ABI is always prepared to take up these challenges.



ABI MOBILRAM TM 17 with micro pile equipment, the auger drive can be moved laterally out of the drilling axis, the clamping and breaking device is used for handling the single micro pile elements.



ABI groyne piling machine - between the crawler and upper carriage an intermediate piece (pylon) is mounted, so that the machine can be used for pile driving in shallow waters.



ABI MOBILRAM TM 20 LR- one machine with longer reach, primarily designed for working below or above the work platform, e. g. for pile driving elements on embankments, near roads or motorways.



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