IHC IQIP Coastal & Civil

Reliable partner for drilling and piling solutions

The technology innovator.

About IHC IQIP

Intelligent equipment, smart solutions

From harbours and jetties, to bridges and inner-city construction projects. No matter what you're building and where, IHC IQIP is your reliable partner for onshore piling and drilling solutions.

Integrated approach

IHC IQIP is the full service provider for all on- and nearshore drilling and piling equipment and related services. This means less interfaces, one contract, one partner, one crew and ultimately less risks and lower costs.

Continuous investment in R&D

IHC IQIP constantly pushes the boundaries of technology and innovation to make the impossible possible. Our continuous investments in R&D have led to revolutionary products that make onshore installation foundation more efficient, cost-effective and safer.

Tailor-made equipment

Along with our standard range of equipment, our ability to engineer and manufacture tailor-made equipment enables us to help our clients overcome any challenge.

Proven and reliable technology

Many years of experience in on- and offshore projects guarantee that our equipment and solutions are of the highest standard. Clients can rely on our excellent track record and on-time project completion.

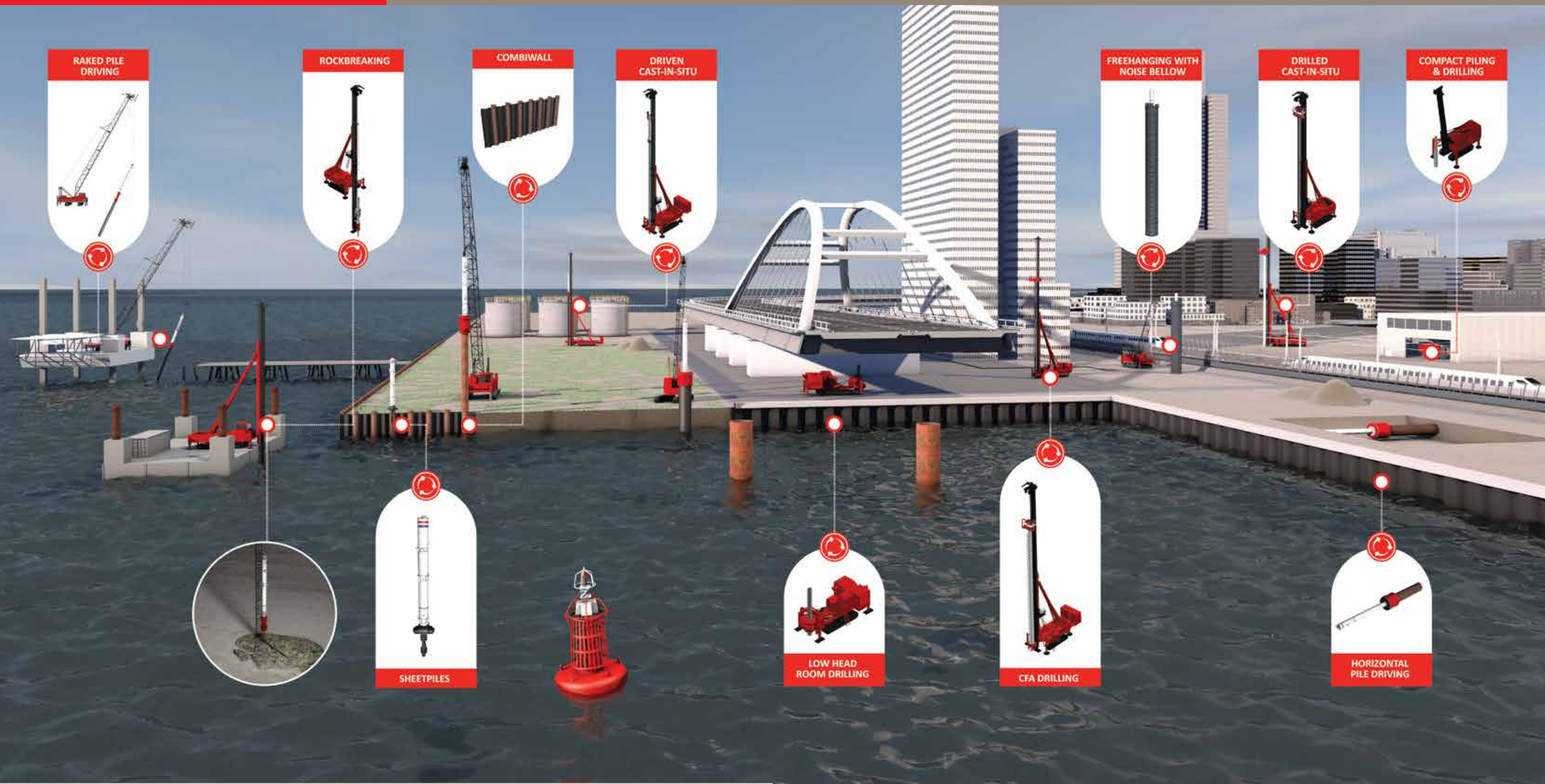
Worldwide presence

Our locations are spread out across the globe, ensuring our customers receive fast access to the service, support and materials they require, wherever they are.

Large and diverse rental fleet

Through continuous investments IHC IQIP currently has the largest and most diverse rental fleet available worldwide. All of our equipment is available for rent, enabling our clients to manage their inventory efficient and flexible. And because of our 'act global, think local' policy, the right equipment is almost always available near your project.

Your challenge, our solution.



Hydrohammers to meet any demand

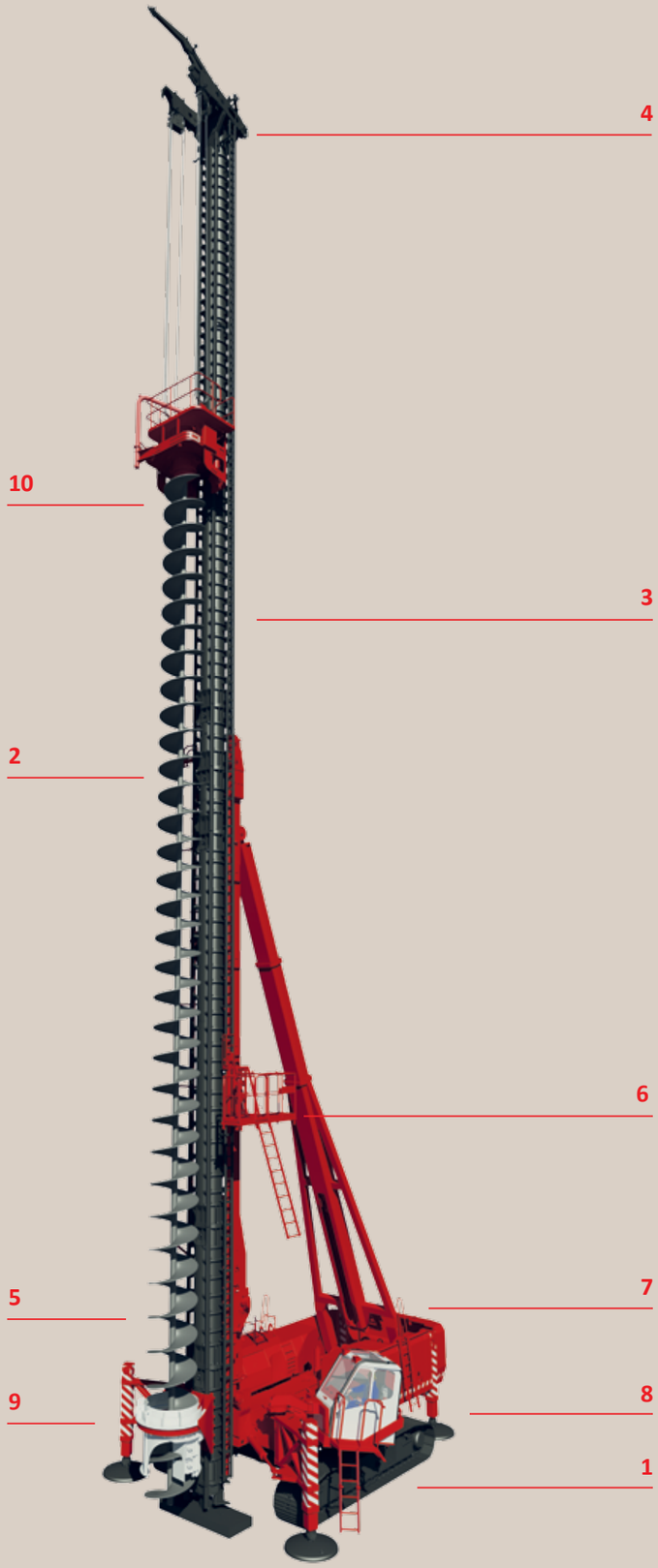
For onshore foundation work, IHC IQIP designs, builds and supplies hydraulic piling hammers – with a focus on innovation. Our approach is not confined to the hammers themselves, but also extends to entirely new piling techniques, foundation equipment and hammer accessories. This is all aimed towards making pile driving technology more efficient, easier to control, quieter and more widely available.

Drilling and piling rigs

IHC IQIP also offers a wide range of foundation rigs for piling and drilling. These machines are available in different leader lengths and come equipped with a variety of auxiliary equipment such as rotary heads, ring vibrators and power packs. Our FUNDEX machines are used on- and nearshore, and range from the F-series (multifunctional foundation rigs in various sizes) and C-series (compact drilling and piling rigs for job sites where space and height are limited), to the T-series – a uniquely designed line of high torque, low headroom rigs.

FUNDEX F-range unique concepts

1. High levels of stability due to low centre of gravity and four outriggers
2. Unique leader mast construction enables the safe and efficient set-up of the rig
3. Torque of up to 500kNm
4. Impressive pull-up capacity of 200t
5. Engine meets the latest emission regulations
6. Manlift along the full leader for safe servicing and working conditions
7. External power pack fully integrated into rig control system (optional)
8. Swinging and tilting cabin provides operator with optimum view
9. Maximum pull-down capacity of 50t
10. Many piling and drilling installation systems can be attached with minimal modifications

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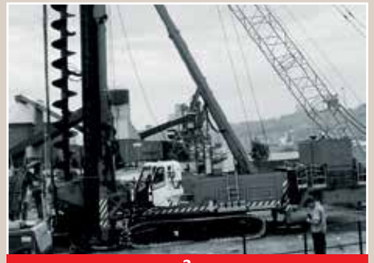
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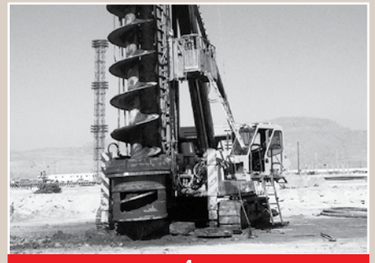
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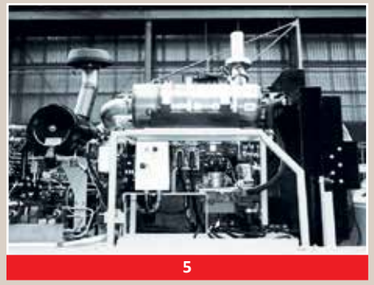
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Powerful solutions for every jobsite

F2500

F3500

F5600

Multifunctional foundation rigs

IHC IQIP designs, produces and supplies multifunctional FUNDEX foundation rigs that can be used for a range of drilling and piling techniques in various sizes and with the accompanying accessories. Half a century of knowledge and experience in the field of different foundation techniques lies behind the development of these products.

Reliability and efficiency through innovation

Continuous product innovation, in collaboration with national and international customers, ensures that these machines meet the highest possible quality standards. The design, production and assembly processes all take place in IHC IQIP's own facilities.

Quick response for service and repair

The service department consists of highly experienced technicians who carry out servicing and repairs to different types of foundation rigs all over the globe.

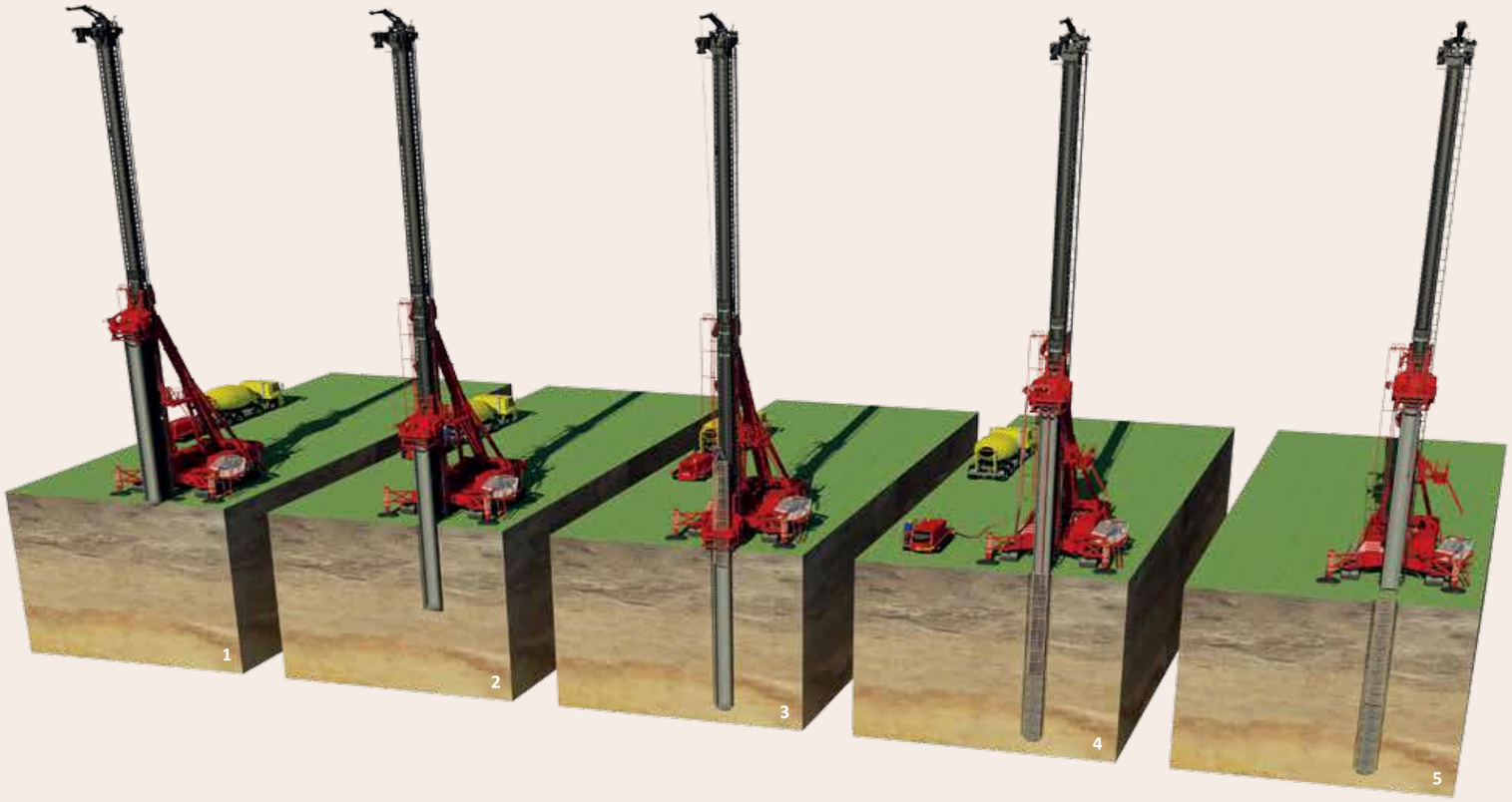
Drilling and piling techniques

FUNDEX multifunctional foundations rigs can be used for several drilling and piling techniques, such as:

- Soil displacement screwpile with lost drilling tip
- Soil displacement screwpile with lost casing
- Cast-in-situ continuous flight auger (CFA) pile
- Cast-in-situ double drilling / cased CFA
- Driven cast-in-situ

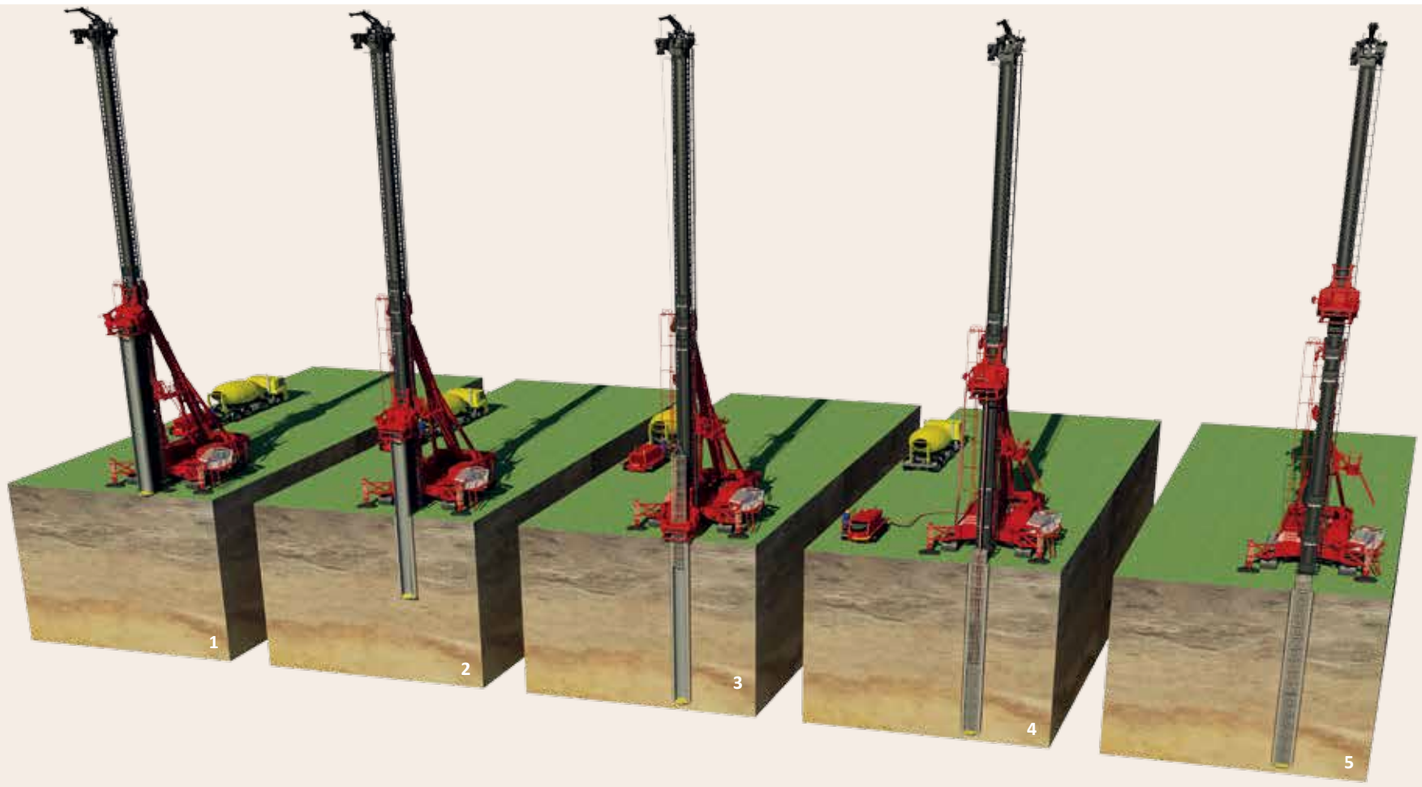
F2800

FUNDEX multifunctional F-series drilling techniques



Soil displacement screwpile with lost drilling tip

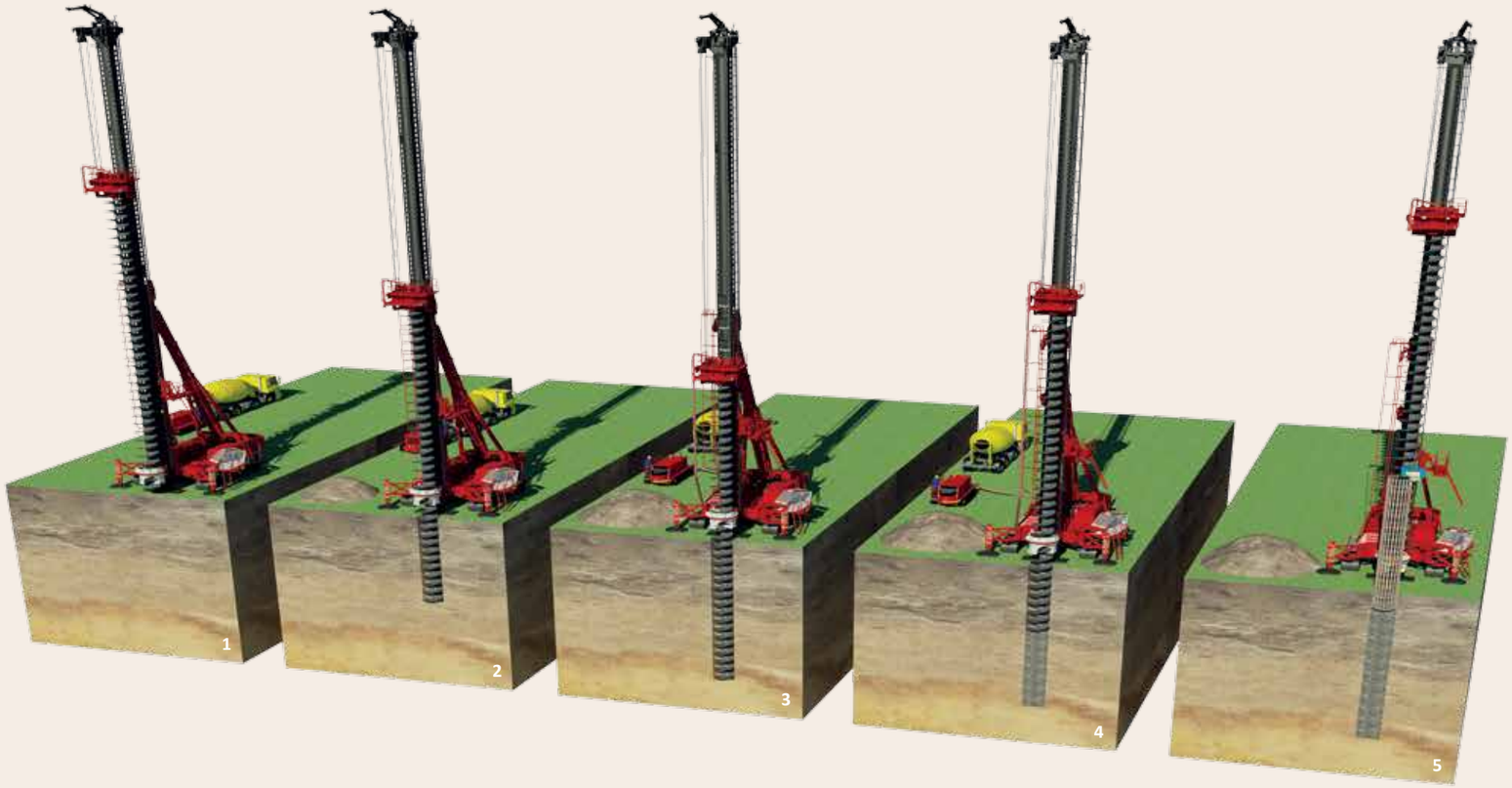
1. The drill casing is positioned with special watertight coupling on the drill tip
2. The casing is screwed into the ground with the help of a high torque rotary head and axial (pull-down) force, with or without grout injection
3. At the required depth, the reinforcement cage (or bar) is lowered into the casing
4. The casing is filled with concrete using a skip or a concrete pump
5. Steel casing is extracted with the help of the rotary head and a high pull-up force. The head of the pile adds the finishing touches, and the drilling procedure is complete



Soil displacement screwpile with lost casing

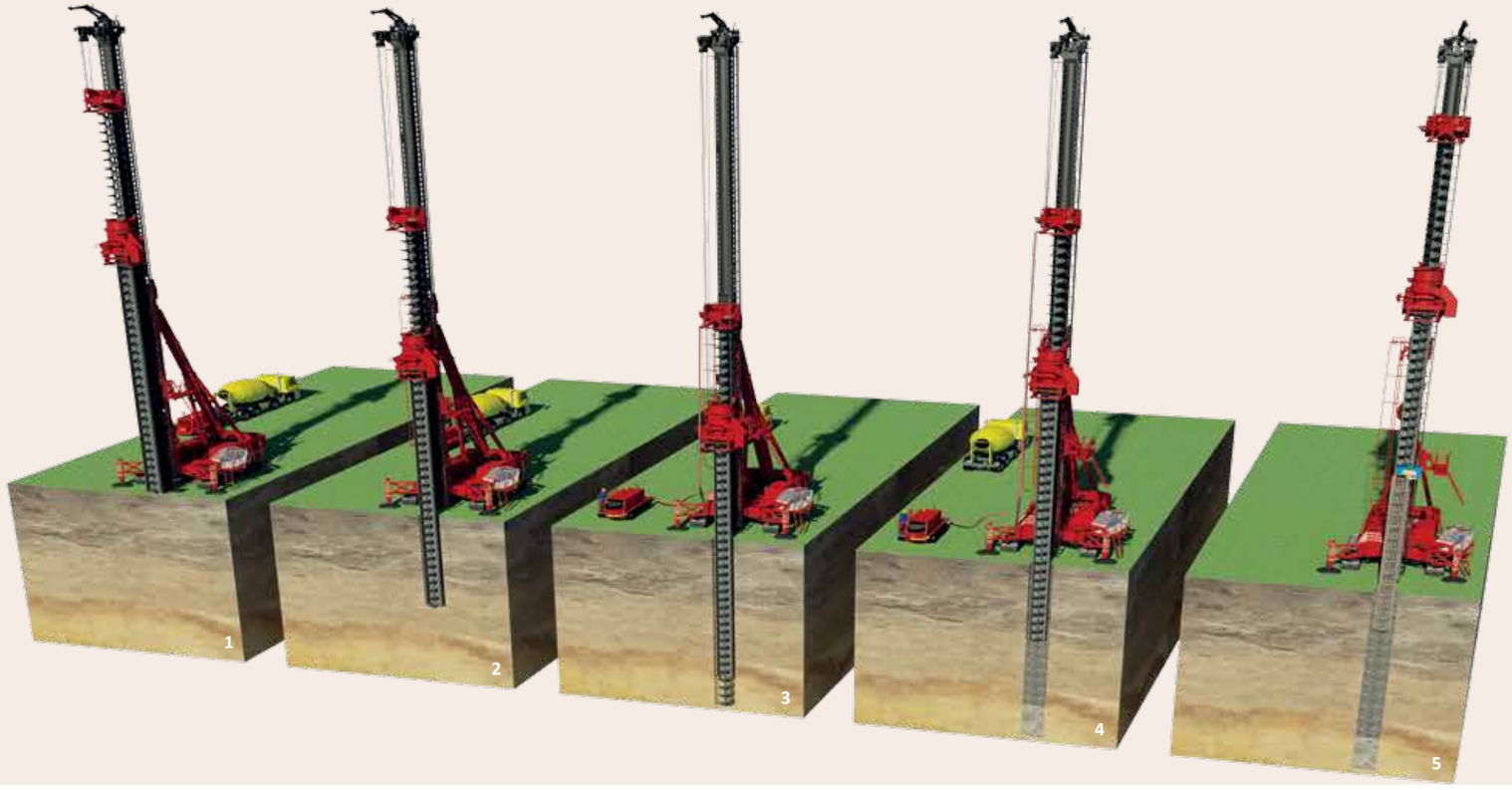
1. Steel casing with drill tip attached is positioned on the required pile point
2. The casing is screwed into the ground with a rotary head and axial pull-down force until it reaches the required depth
3. Reinforcement can be installed in the casing (any grout injection hoses can be removed first)
4. The casing is filled with concrete using a skip or a concrete pump
5. The steel casing remains in the ground, and functions as the pile foundation

FUNDEX multifunctional F-series drilling techniques



Cast-in-situ continuous flight auger (CFA) pile

1. Steel auger with bottom hatch is positioned as required
2. Auger is screwed into the ground (clockwise) with a rotary head
3. Concrete is pumped under pressure in a closed system through the hollow stem towards the tip
4. The hatch of the auger opens. During further extraction, more concrete is pumped through the hollow stem of the auger
5. Reinforcement cage (or bar) is lowered into the fresh concrete



Cast-in-situ double drilling / cased CFA

1. Steel auger is positioned as required. At the same time, open-ended casing is installed, ‘covering’ the auger
2. Auger is screwed into the ground (clockwise) with a rotary head. The casing is screwed into the ground counterclockwise using a second rotary head
3. Concrete is pumped under pressure in a closed system through the hollow stem towards the tip
4. The hatch of the auger opens. During further extraction, more concrete is pumped through the hollow stem of the auger
5. Reinforcement cage (or bar) is lowered into the fresh concrete

FUNDEX compact rigs

FUNDEX CP25D

Compact piling rig

For sites with restricted access and indoor use, IHC IQIP supplies a full range of FUNDEX compact piling rigs with drop weights of 400kg to 2,500kg. These compact piling rigs are mainly used for bottom- and top-driven piling. Depending on the type, these machines are equipped with either an onboard power pack or a separate power pack on tracks.

Highlights:

- driven by an electric or diesel motor
- PLC-controlled with extensive diagnostic options.
- automatic piling winch
- can be equipped with remote control for both the rig and the separate power pack
- equipped with winch featuring adjustable drop heights
- can handle drop weights from 400kg to 2,500kg
- leader-guided drop weight suitable for driving open casings, concrete and wooden piles
- bottom-driven drop weight suitable for driving closed casings
- compatible with a rotary head (max 65kNm) or CPE hydraulic impact hammer.

FUNDEX CP25D

FUNDEX CD20D

Compact drilling rig

Suitable for job sites where space and height are limited, IHC IQIP also supplies a full range of compact drilling rigs for drill torques ranging from 65kNm to 300kNm. These rigs are mainly used for grout injection screw displacement piles, but drilled cast in-situ and leader-guided drilling are also possible. Similar to the compact piling rigs, these machines are equipped with either an onboard power pack or a separate power pack on tracks.

Highlights:

- driven by an electric or diesel motor
- PLC-controlled, with extensive diagnostic options
- stable concept with support on each corner
- raked positions achievable
- can be equipped with remote control for both the rig and the separate power pack
- can be used with rotary heads with torque ranging from 13kNm to 300kNm
- compatible with CPE hydraulic impact hammer.

FUNDEX CD30DS

High torque low headroom rigs

FUNDEX TBX45

The IHC FUNDEX TBX/TTD is a range of unique drill rigs, with impressive torques, speeds and rakes all combined in a low headroom sized machine. The rigs are mainly used for grout injection screw piles and screw displacement piles.

Highlights:

- suitable for sites with restricted access
- impressive maximum torque of up to 450kNm
- PLC-controlled, with extensive diagnostic options
- remote controlled
- stable design with support on each corner of the machine
- forward, backward and sideward rake positions achievable
- power pack and optional cabin can be easily removed
- TTD features short leader with modular set-up to enable different lengths and bigger strokes of the rotary head.

FUNDEX TTD35/45

FUNDEX FPD5000 piling rig

FUNDEX CD20D

The IHC FUNDEX FPD5000 is the largest piling rig in our range and can easily operate in unique rake positions. This custom-built piling rig can also be deployed as a 275t crawler crane. Together with the SC-150 Hydrohammer®, the FUNDEX FPD5000 can be used to drive prefab concrete piles – both free-riding and leader-guided. As a result of its short length, this hammer is the perfect tool for installing concrete piles.

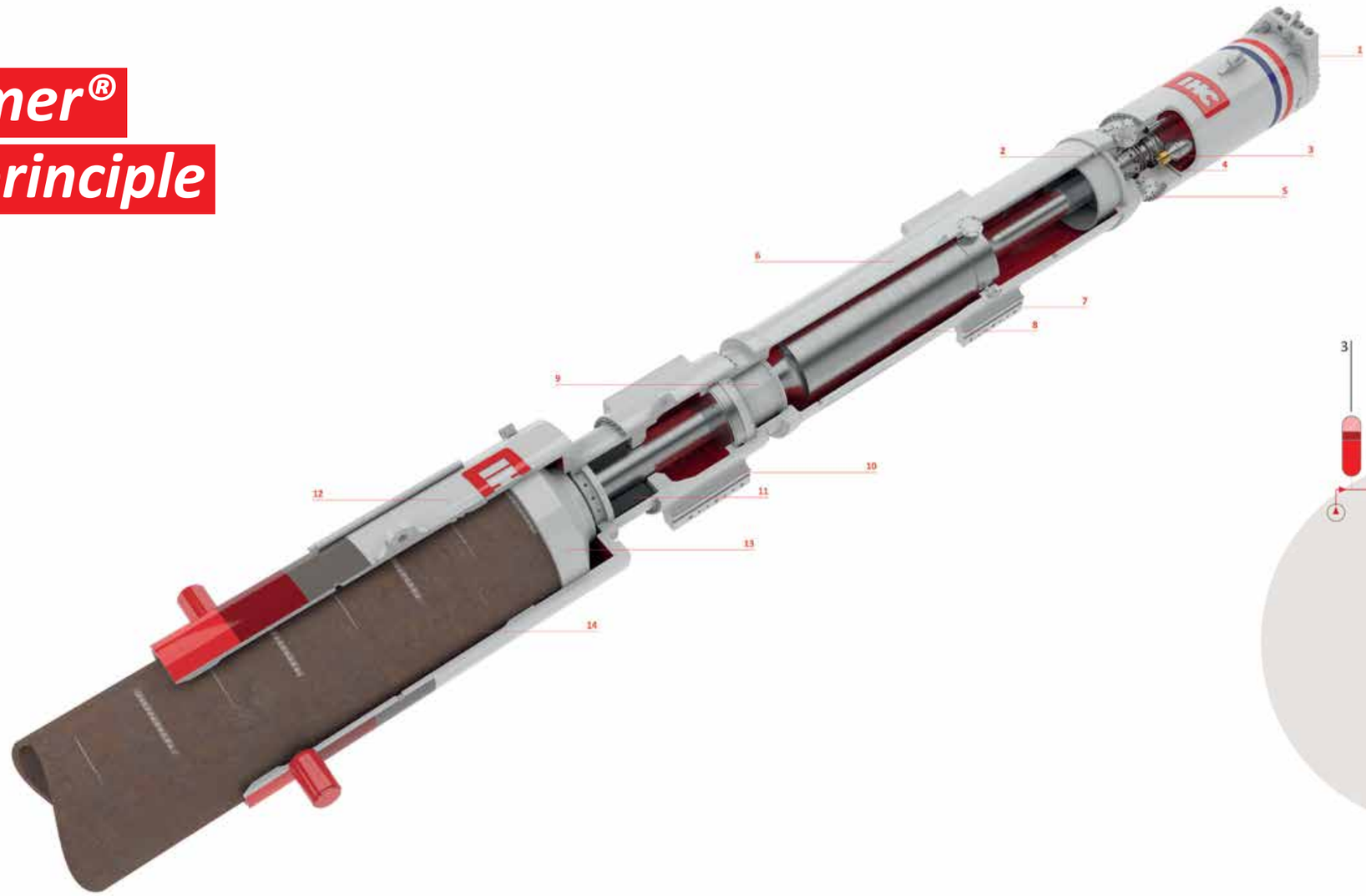
Highlights:

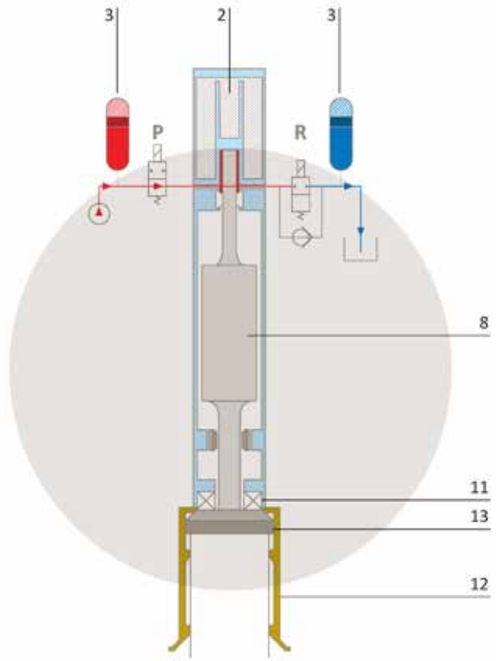
- capable of working with a maximum hammer and pile load of 65t
- installation of raked piles up to a ration of 3:1 is possible
- can be used as a 275t crawler crane
- able to erect itself without the help of a service crane
- the pile can be hoisted into a piling position by the rig itself
- strong tubular-type lightweight leader
- easy to transport despite its size
- can be operated nearshore from a pontoon.

SC-hammer driving freehanging spun piles

Hydrohammer® operating principle

1. Connection plate
2. Piston
3. Accumulator
4. Upper bearing
5. Valve ring
6. Hammer housing
7. Upper leader attachment
8. Ram
9. Lower bearing
10. Lower leader attachment
11. Shock absorber
12. Pile sleeve
13. Anvil
14. Pile





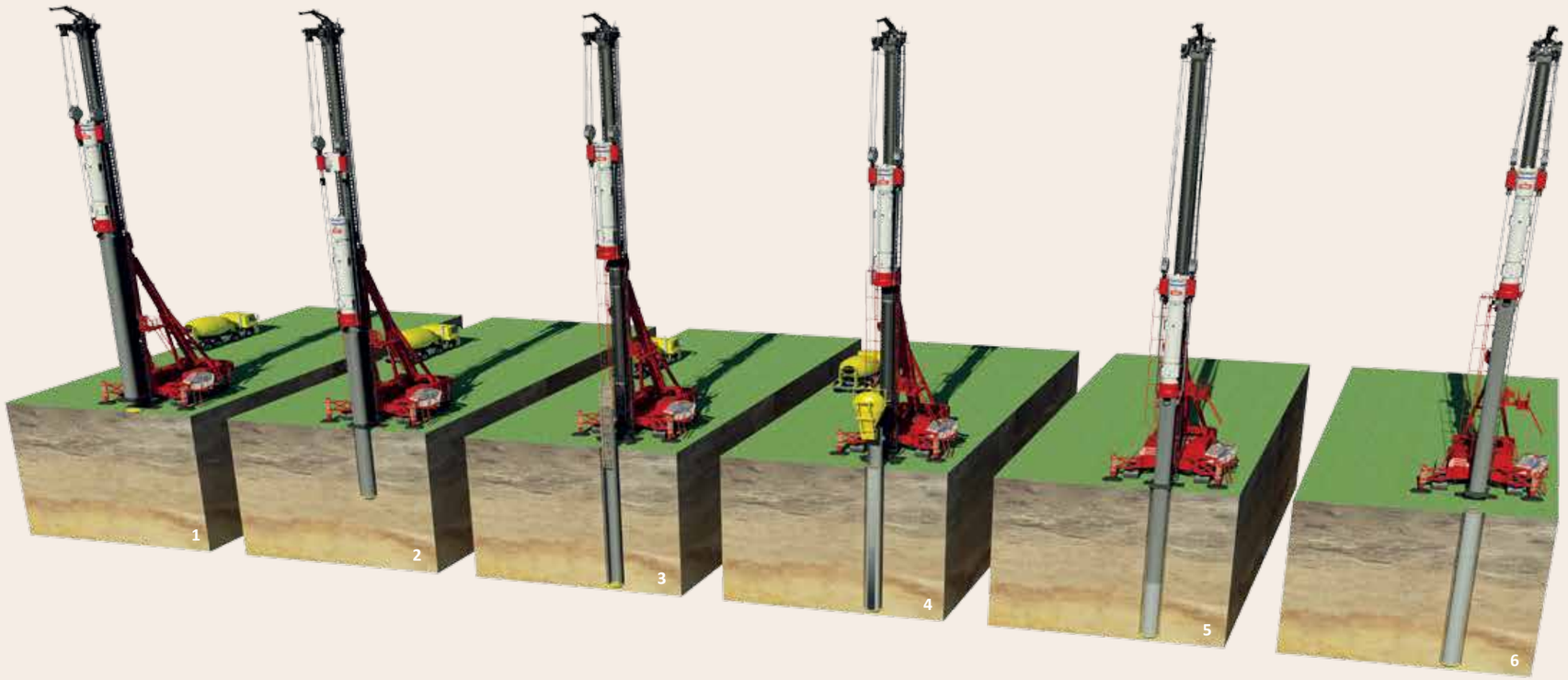
Operating principle

The operating cycle begins with the lifting phase of the ram (the ram weight, ram pin and piston rod are forged into one piece). Here, valve P in the pressure line is opened and valve R in the return line is closed. When the preset stroke position is reached, the valves are automatically reversed, which allows the ram to start its downward stroke. The ram is accelerated by gravity and by the pressure of the gas above the piston and reaches a maximum acceleration of 2g. This reduces the maximum stroke that is required, and at the same time increases the blow rate of the hammer. After impact, the cycle is repeated automatically. Due to the independently set acceleration force, the IHC Hydrohammer® can operate at any inclination – even horizontally. The hammer can operate either leader-guided or free-hanging.

Highlights

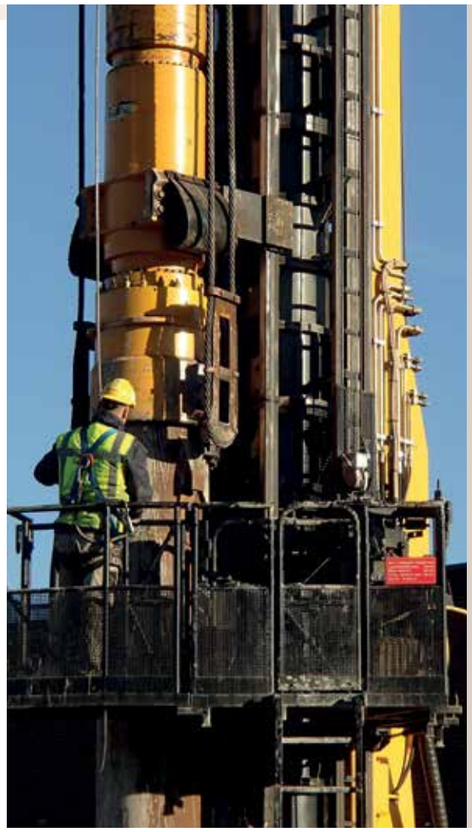
Energy transfer	-	Steel-to-steel energy transfer ensures extremely high peak force in the pile.
Solid piece ram	-	Ram weight, ram pin and piston rod are forged into one piece, eliminating the risk of the parts separating.
Material	-	Forged alloy steel guarantees durability.
Shock absorber	-	The robust and tested construction sustainably resists the reaction forces from the pile.
Auxiliary equipment	-	Can be equipped with rock breaker chisels, noise reduction bellows, and sheet piling and pile guides in all sizes.
Hammer control	-	Adjustable blow count per minute and impact energy.
Real time monitoring	-	Piling data is directly printed on site and/or stored to allow detailed analysis.
Environmentally friendly	-	Biodegradable oil can be used, and noise reduction is optimised with noise reduction packages.
Weight	-	10-35% lighter than other hammer types due to accelerated ram weight.
Multifunctional	-	Suitable for operation above and below the water.
Modular structure	-	Any parts that may require attention in between major services are easily accessible.
Inclination	-	Easy to operate at full power at any inclination.

Driven cast-in-situ piles



Cast-in-situ technique

1. The steel casing is placed on the steel cover plate
2. The steel casing is driven to final penetration level
3. A reinforcement cage is placed inside the (empty) steel casing
4. Concrete is poured inside the steel casing
5. The steel casing is extracted by force, in combination with small blows downwards – or even upwards
6. A concrete pile with a high bearing capacity is in place



Advantages cast-in-situ

One of the unique features of the Hydrohammer® design – besides its sturdiness and high level of controllability – is its ability to facilitate the extraction of casings that have already been driven. This means that only one hammer is needed for both driving and extracting, making the Hydrohammer® ideal for handling cast in-situ (vibro) piles.

High blow rate with minimal energy

During extraction, the Hydrohammer® can achieve a blow rate of 280bpm with minimal energy. These small vibrations in the casing create the tractive force required to pull the casing out of the ground. In case of extremely high friction, the Hydrohammer® can even give upward blows to overcome the soil friction.

Very economical and high bearing capacity

This technique is very economical compared to precast piles, since reinforcement is installed after tube installation instead of being designed with respect to transport and handling. On request, concrete can be delivered within a few hours by a concrete mixer truck, which prevents the storage of precast piles and makes it easier to reach the job site. The reinforcement of pile shaft can be increased at the top of the pile. Due to an increased end bearing and optimal friction along the shaft, a high bearing capacity is usually achieved. Allowable pile loads can be extremely high. Another advantage is that the adjustable pile length can be determined at the job site.

Driving raked piles free hanging at full force

S-120 Hydrohammer®

S-150 Hydrohammer®

Jetties

Whether they are unloading LNG, oil carriers or berthing vessels, in order to provide an invaluable service, jetties must be able to withstand the full force of nature. Therefore, choosing and installing the foundation in an optimum way is critical. Using the Hydrohammer® can prove to be a perfect solution for installing either steel or concrete foundation piles.

Raked pile driving

The majority of jetties consist of a series of bents of raked steel piles, driven into the ground. Traditional methods for raked pile driving are inefficient due to their inability to compensate for the loss of gravitational energy. This is not the case with the Hydrohammer®. By adjusting the gas pressure above the ram's piston head, the ratio between the energy delivered by gravity and by gas energy can be adjusted. When driving raked piles, the gas pressure is increased to compensate for the loss of gravitational energy. Battered piles up to a rake of 1:1 (45 degrees) can therefore be driven at full force. It is even possible to drive horizontally.

Lightweight hammer

The ram weight of the Hydrohammer® S-series is relatively light in comparison to its competitors, and the hammer receives a substantial part of its power from acceleration due to the gas pressure on top of the piston. This greatly increases its handling and makes it ideal for constructing jetties.

Well equipped for all harbour-related piling works

Clutch sleeve

Combi wall

Harbours

When it comes to installing foundations and quay walls for complex maritime projects, steel structures are the best solution. As a result of its unique design, the Hydrohammer® is perfectly suited to driving steel piles and essential for a successful installation. To handle these hammers, specialised piling rigs are required, for which IHC IQIP is the supplier of the world's largest piling cranes.

Driving sheet piles

For driving sheet piles, the Hydrohammer® can be equipped with sheet legs. These provide the required stability when driving sheet piles in a free hanging mode, eliminating the need for a leader.

Special solutions

Driving clutched piles is possible with a specially designed clutch sleeve. With this sleeve, the use of a follower or dolly to drive clutched piles is no longer required, making pile driving more cost-effective and efficient. The clutch sleeve also reduces the weight by up to 10t, depending on the follower length.

To prevent additional costs incurred as a result of damage to the coating of piles during pile driving, IHC IQIP can equip the inside of the sleeve with synthetic material.

Supplying the largest hammer range in the market

Bridges

The foundations of a bridge are of critical importance. Not only must they support the entire weight of the bridge, they are also required to withstand dynamic loads, and be resistant to earthquakes. Over the past few decades, upscaling the sizes of bridges and their foundations has become necessary due to heavier traffic and increasing traffic flow.

Large diameter piles

For IHC IQIP, large diameter piles are common practice. Offshore, we have vast experience driving the biggest monopiles with a diameter of up to eight metres. We've taken this experience onto dry land, and are capable of driving any pile size required with our wide range of hammers and sleeves.

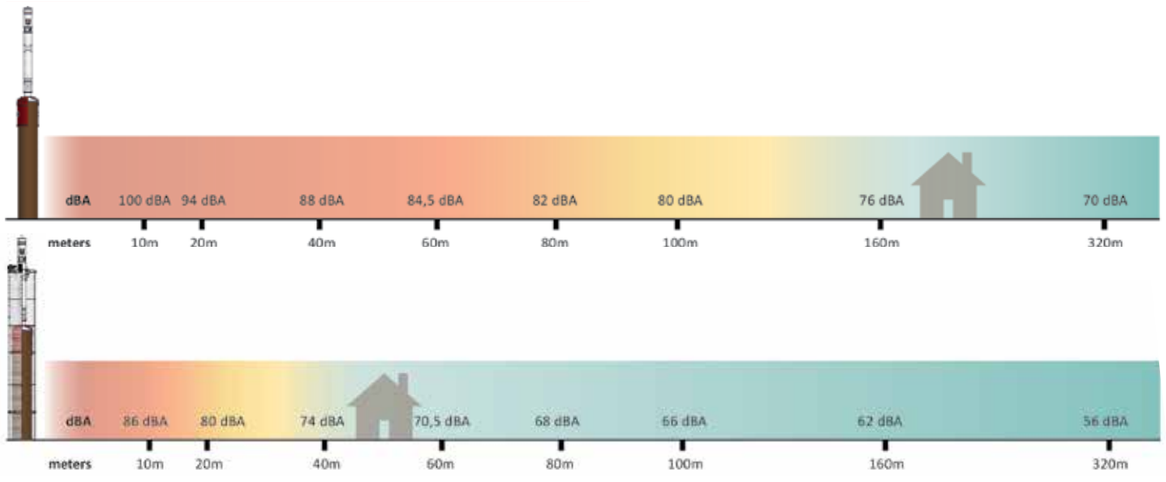
Our S-800 Hydrohammer® is used frequently for bridge foundation works all over the world. One of the biggest hammers ever supplied for a bridge foundation project is the S-2000 Hydrohammer®.

Noise Mitigation

S-800 driving 72" piles

Noise reduction system

Noise levels with and without noise reduction system



To ensure a safe working environment and minimalise damage due to noise pollution when piling with the Hydrohammer®, IHC IQIP offers an optional noise reduction system. This consists of an enclosure at the point of impact, and bellow sections around the pile. The design was developed in collaboration with the Dutch research institute TNO. Noise levels can be reduced by 15dB(A), which is a great improvement for noise emission levels on today's construction sites. Our noise reduction system is available for free-hanging and leader-guided pile driving.

Reduction in dB(A)	Reduction in sound power	Reduction experience by human ear
1,25	25%	Not audible
3	50%	Just audible
10	90%	Half as much sound compared to the original sound
15	97%	Even less than half the sound compared to the original sound

Horizontal pile driving

Pipes and piles are usually driven vertically, but in some instances horizontal piling is the only way to go. Horizontal piling requires powerful tools to deliver the amount of driving power or cutting capacity needed. As a result of two unique features in the design of the hydraulically driven, double-acting Hydrohammer®, it is possible to operate under every inclination – even horizontally.

The Hydrohammer® is not only capable of installing piles and pipes horizontally, but it can also be used to remove disused piles and pipes from the ground.

HYDROHAMMER® ADVANTAGES OF HORIZONTAL DRIVING

- requires only a relatively small excavation
- used extensively for driving piles up to three metres in diameter
- faster tube installation progress
- ability to remove disused service lines and tubes
- no modifications to the Hydrohammer® are required
- safer operation – working tool is outside the tube, not inside.

Rockbreaking

Rockbreaking under water

Rockbreaking above water

Equipped with a chisel set, the Hydrohammer® becomes a highly effective and powerful rock breaker. It is able to produce the high impact force necessary for breaking rock, cemented layers, concrete floors and slabs.

Chisel with housing

The Hydrohammer® can be used as a rock breaker both on land and underwater. It is fitted with a special sleeve that features an internal anvil and a chisel. After being driven into the rock, the hammer and chisel are lifted and moved to the next spot. Delivering upward blows and lifting the hammer at the same time strongly facilitates the retraction of jammed chisels.

The System

To withstand heavy resistance, the Hydrohammer® must be properly guided in a leader-guide profile. This operating criterion secures the central alignment of the chisel and hammer for optimum energy transfer between ram/anvil and chisel. The position of this leader profile should be fixed during breaking and extracting.

Operating Methods

Different types of handling equipment can be used to lift and position the rock breaker and leader profile, including a piling rig, excavator or backhoe, or a cutter dredger. The choice depends predominantly on the equipment available for/on the project, and on water depth.

Rock Hardness

The average compressive strength that a normal cutter dredger can handle is 40 MPa. To date, rocks with a hardness up to 180 MPa have been successfully broken using an S-70 Hydrohammer® to punch vertical holes in a relatively level surface.

Sheet piles

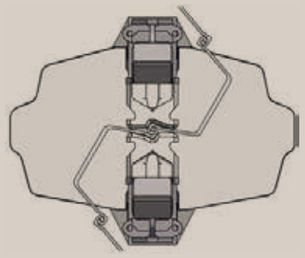

Free hanging

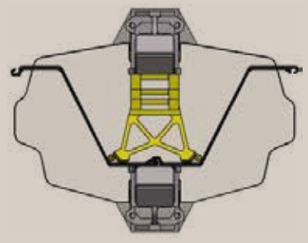
Leader guided

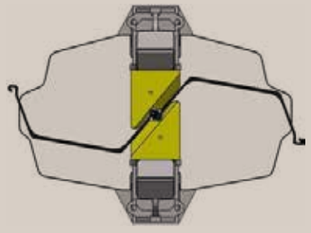
When equipped with sheet legs, the Hydrohammer® is the perfect tool for driving sheet piles. The legs provide the required stability when driving sheet piles in a free-riding mode and eliminate the need for a leader. Many different types of profile can be driven this way, from single and double sheet piles to single and double H-beams, combi walls, and more.

Polygonal anvil

Another new development is the polygonal anvil. Its special shape enables it to drive a wide range of sheet piles with maximum coverage. This ranges from the small profiles, with a width of 500mm (for example, Hoesch L25) to the big profiles, measuring 700mm in width or 750mm. Our latest development is a new type of sheet leg for our S-30 and S-40 Hydrohammer® models. The solid one-piece upper section has a high rigidity. These sheet legs can be used with the polygonal anvil for double sheet piles, and with an anvil for single sheet piles.


Coverage with the polygonal anvil at the profile L25


Coverage with the polygonal anvil at the profile AZ 40-700


Coverage with the polygonal anvil at the profile AU 26

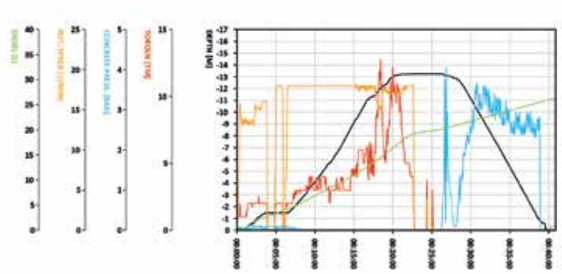
Quick response worldwide

Any delay due to issues with equipment has an enormous impact on your company. Thanks to short internal lines of communication within IHC IQIP, we are able to react quickly and appropriately to service requests – anywhere in the world. An experienced and motivated service team is involved with each delivery, and is also equipped to carry out any necessary maintenance and repair work to the various foundation rigs.

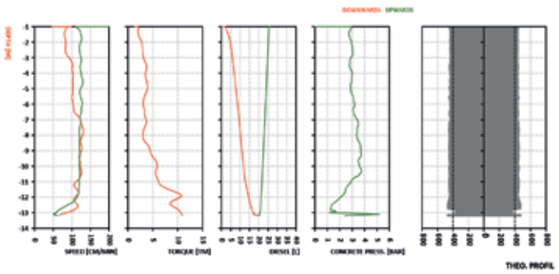
Highlights:

- worldwide support and services by experienced service team
- fast response time for servicing and delivery of spare parts
- training for operators and technical employees, either locally or at the factory
- ability to generate diagnostics quickly and enable shorter waiting times by equipping each machine with a modem.

Time Diagram



Depth Diagram



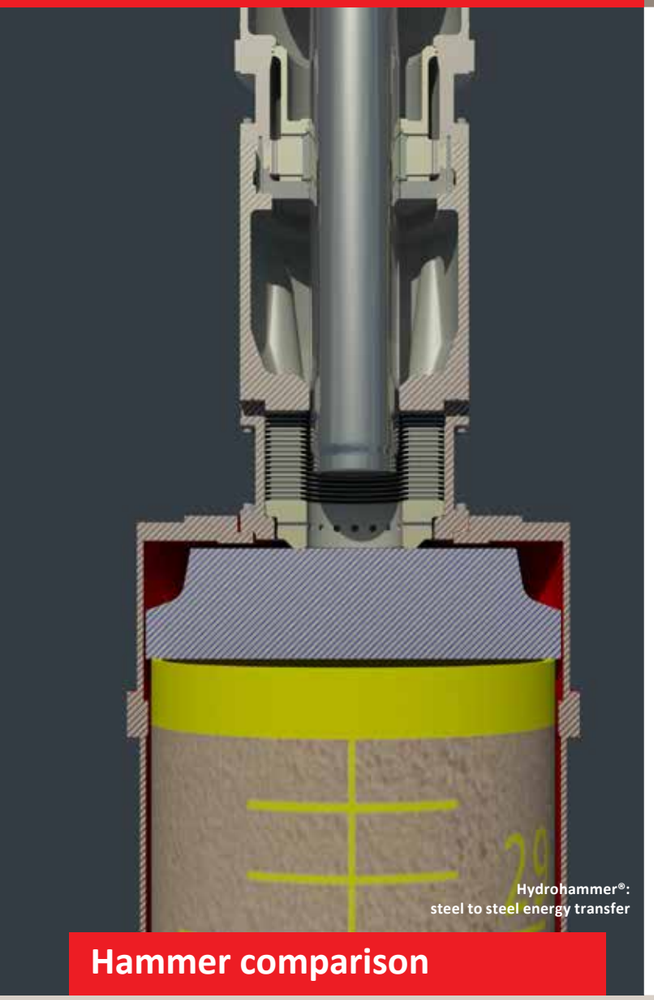
Digital installation monitoring

Controlling and storing drilling and piling data is extremely important. That's why virtually every machine leaving our factory is fitted with a data acquisition system for drilling, piling and vibrating. The system can be fully integrated in FUNDEX equipment, and it is also possible to install it on other machines.

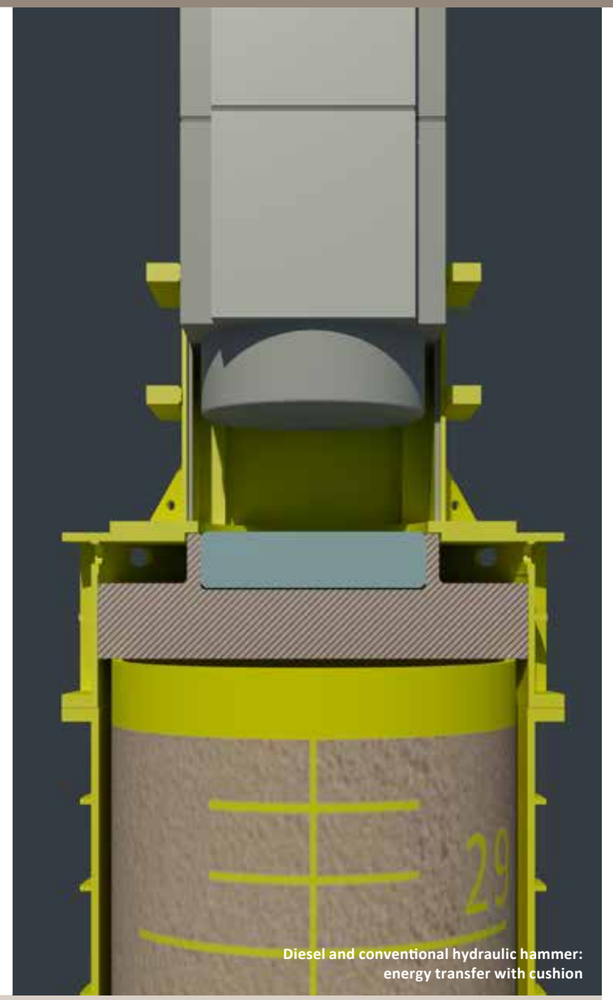
Highlights FDA data acquisitioning:

- accurate and detailed recording of the most important parameters and information for pile installation
- simple and clear display and controls
- many options and special adjustments available
- optional GPS with pile position and directions for maneuvring the machine
- all data can be downloaded using USB or sent directly to an email address
- using special software, stored data can easily be displayed as a graph or in an Excel file.

Service Hydrohammer®



Hydrohammer®:
steel to steel energy transfer



Diesel and conventional hydraulic hammer:
energy transfer with cushion

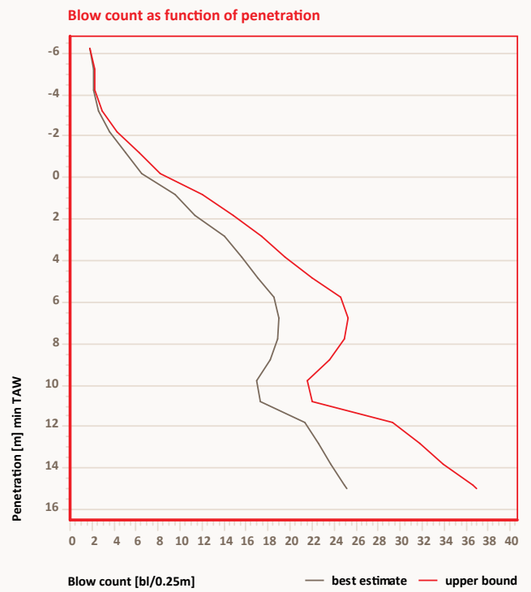
Hammer comparison

Most piling hammers are rated by their potential energy. However, the Hydrohammer® is rated by its kinetic energy. Furthermore, steel-to-steel energy transfer ensures an extremely high peak force in the pile. Therefore, it is incorrect to only compare hammers on (potential) energy. In order to make an accurate comparison between the different hammer types, the actual ability of a hammer to overcome soil resistance is far more important than its rated energy. The below table compares energy between the different hammer types based on the driveability.

Comparison on energy needed

Hammer type	S-30	S-40	S-70	S-90	S-120	S-150	S-200	S-280	S-500
	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)	kNm (KJ)
Steel to steel (Hydrohammer®)	30	40	70	90	120	150	200	280	500
Diesel hammers	72	98	170	220	290	366	488	785	1220
Conventional hydraulic hammer	40	57	100	130	170	216	289	400	675

Hammer type	S-30	S-40	S-70	S-90	S-120	S-150	S-200	S-280	S-500
	Kip.ft	Kip.ft	Kip.ft	Kip.ft	Kip.ft	Kip.ft	Kip.ft	Kip.ft	Kip.ft
Steel to steel (Hydrohammer®)	22	30	52	66	89	111	148	207	369
Diesel hammers	53	72	125	162	214	270	260	579	900
Conventional hydraulic hammer	30	42	74	96	125	159	213	295	498



Driveability

The correct choice of hammer can only be made after careful interpretation and assessment of the properties of the soil. To support clients, IHC IQIP employs a team of experienced engineers to assist them with pre- and post-pile driving analyses. These driveability studies are carried out using the most sophisticated computer programs (GeoWave). Driveability studies are performed for a best estimate but also take into account an upper bound situation. In the upper bound situation, a 30% higher soil resistance is taken into account. This gives a good indication of the expected driveability.

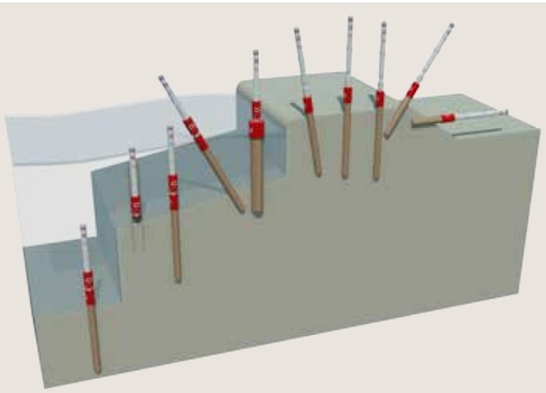
C-36 control unit

Hammer Control & Monitoring

All hydraulic hammer functions are electronically controlled and monitored by our new generation control and monitoring system. This system focuses on automatic pile driving based on the desired pile velocity, blow rate and blow energy, making the system flexible and easy to use.

Highlights:

- maximisation of equipment utilisation and efficiency
- wireless digital communication and control
- increasing equipment reliability and lifespan through comprehensive diagnostics
- data registration and reporting system for project data, settings, configuration and important measurements
- integration of documentation in the control system.



The Hydrohammer® can be driven at full energy in every thinkable position above and under water

FUNDEX rigs technical data

Imperial

Multifunctional foundation rigs		F2500	F2800	F3500	F5600
Standard leader length	ft	82	92	115	164
Max. leader length	ft	89	102	131	184
Max. drill torque	ft.lbs	199,000	368,000	368,000	368,000
Horizontal stroke leader	in	69	47	59	79
Max. vertical stroke leader approx.	in	83	591	650	94
Working weight approx.	ton us	78	123	140-151	313
Transport weight	ton us	78	70.5-76	83-88	90
Engine	hp	442	590	304	462
Total counter weights	ton us	11	22.5	17 (excl. power pack)	67 (incl. power pack)
Rake positions (forward, backward)		4:1 / 3:1	4:1 / 3:1	4:1 / 3:1	4:1 / 3:1
Max. hammer weight	ton us	14.5	13.5	15	22
Max. pile length when drilling	ft	ca. 62	ca. 75	ca. 105	ca. 161

Compact drill rigs		CD20D	CD20D	CD20D	CD30DS
Min. width	in	79	79	79	83
Working dimensions (L x W)	in	242 x 102	248 x 102	148 x 102	257 x 102
Min. working height	in	114	114	114	101
Operational weight	ton us	24.5	26	26	27
Max. torque rotary head	ft.lbs	88,000	118,000	170,000	221,000
Clamp for casing	in	Ø 8.5 - 12.76	Ø 10.75 - 16	Ø 10.75 - 16	Ø 10.75 - 18
Rake positions (forward, backward, sideward)		7:1 / 3:1 / -	7:1 / 3:1 / -	7:1 / 3:1 / -	14:01 / 1:1 / 5:1
Engine power (integrated)	hp	215	215	215	-

Compact piling rigs		CP12DS	CP12D	CP18D	CP25D
Min. width	in	22.50	33.50	43	59
Working dimensions (L x W)	in	91.75 x 39	122 x 49	155.5 x 55	177 x 78
Min. working height	in	77.75	94.5	106	118
Operational weight (excl. drop weight)	lbs	4,200	9,900	18,740	22,000
Max. drop weight	lbs	2,650	2,650	3,970	5,500
Engine power (integrated)	hp	-	24	55	80

High torque low headroom rigs		TBX35	TBX45	TTD35	TTD45
Min. width	in	118	118	118	118
Working dimensions (L x W)	in	315 x 274	315 x 274	340 x 274	340 x 274
Min. working height	in	115	115	122	122
Max. working height	in	123	123	289	289
Operational weight	ton us	42.5	42.5	50.5	50.5
Max. torque rotary head	ft.lbs	25,800	33,200	25,800	33,200
Max. speed rotary head (560 L/min)	rpm	13	9.25	13	9.25
Max. speed rotary head (700 L/min)	rpm	17	10	17	10
Clamp for casing	in	Ø 12.75 - 22	Ø 12.75 - 22	Ø 12.75 - 22	Ø 12.75 - 22
Max. pull-down capacity	ton us	28	28	22.5	22.5
Max. pull-up capacity	ton us	28	28	22.5	22.5
Rake positions (forward, backward, sideward)		15° 45° 45°	30° 7.5° 45°	7.5° 45° 7°	7.5° 45° 7°

Metric

Multifunctional foundation rigs		F2500	F2800	F3500	F5600
Standard leader length	m	25	28	35	50
Max. leader length	m	27	31	40	56
Max. drill torque	kNm	270	500	500	500
Horizontal stroke leader	mm	1,750	1,200	1,500	2,000
Max. vertical stroke leader approx.	mm	2,100	15,000	16,500	2,400
Working weight approx.	ton	70	110	125-135	280
Transport weight	ton	70	63-68	74-79	80
Engine	kW	330	440	227	345
Total counter weights	ton	10	20	15 (excl. power pack)	60 (incl. power pack)
Rake positions (forward, backward)		4:1 / 3:1	4:1 / 3:1	4:1 / 3:1	4:1 / 3:1
Max. hammer weight	ton	13	12	13.5	20
Max. pile length when drilling	m	ca. 19	ca. 23	ca. 32	ca. 49

Compact drill rigs		CD20D	CD20D	CD20D	CD30DS
Min. width	mm	2,000	2,000	2,000	2,100
Working dimensions (L x W)	mm	6,160 x 2,600	6,305 x 2,600	6,305 x 2,600	6,532 x 2,600
Min. working height	mm	2,890	2,890	2,890	2,562
Operational weight	ton	22	23	23	24
Max. torque rotary head	kNm	120	160	200	300
Clamp for casing	mm	Ø 219 - 324	Ø 273 – 406	Ø 273 – 406	Ø 273 – 457
Rake positions (forward, backward, sideward)		7:1 / 3:1 / -	7:1 / 3:1 / -	7:1 / 3:1 / -	14:01 / 1:1 / 5:1
Engine power (integrated)	kW	160	160	160	-

Compact piling rigs		CP12DS	CP12D	CP18D	CP25D
Min. width	mm	700	850	1,100	1,500
Working dimensions (L x W)	mm	2,330 x 1,000	3,100 x 1,250	3,950 x 1,400	4,500 x 2,000
Min. working height	mm	1,975	2,400	2,700	3,000
Operational weight (excl. drop weight)	kg	1,900	4,500	8,500	10,000
Max. drop weight	kg	1,200	1,200	1,800	2,500
Engine power (integrated)	kW	-	24	55	80

High torque low headroom rigs		TBX35	TBX45	TTD35	TTD45
Min. width	mm	3,000	3,000	3,000	3,000
Working dimensions (L x W)	mm	8,009 x 3,500	8,009 x 3,500	8,640 x 3,500	8,640 x 3,500
Min. working height	mm	2,920	2,920	3,100	3,100
Max. working height	mm	3,125	3,125	7,350	7,350
Operational weight	T	38	38	45	45
Max. torque rotary head	kNm	350	450	350	450
Max. speed rotary head (560 L/min)	rpm	13	9.25	13	9.25
Max. speed rotary head (700 L/min)	rpm	17	10	17	10
Clamp for casing	mm	Ø 323 – 558	Ø 323 – 558	Ø 323 – 558	Ø 323 – 558
Max. pull-down capacity	kN	250	250	200	200
Max. pull-up capacity	kN	250	250	200	200
Rake positions (forward, backward, sideward)		15° 45° 45°	30° 7.5° 45°	7.5° 45° 7°	7.5° 45° 7°

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Hydrohammer® technical data

Imperial

Hammer S Series		S-30	S-40	S-70	S-90	S-120	S-150	S-200	S-280	S-500	S-600
Max. blow energy	lb.ft	22,127	29,503	51,630	66,381	88,508	110,635	147,513	206,518	368,783	442,539
Min. blow energy*	lb.ft	2,213	2,950	5,163	6,638	8,885	11,063	14,751	20,652	36,848	44,254
Blowrate	bl/min	65	65	50	46	44	44	45	45	45	44
Ram weight	lb	3,527	4,850	7,716	9,921	13,668	16,534	22,046	29,982	55,115	66,138
Hammer weight	lb	8,599	10,362	18,298	21,348	31,526	35,714	56,878	67,240	126,764	141,093
Length of hammer	ft	20.00	22.47	24.28	26.43	26.79	29.2	29.84	34.09	39.18	41.72
Oil flow	g/min	46	46	66	66	122	122	211	211	423	476
Power pack type		P 175	P 175	P 250	P 250	P 460	P 460	P 800	P 800	O.R.	O.R.

Hammer S Series		S-800	S-1200	S-1400	S-1800	S-2000	S-2500	S-3000	S-4000
Max. blow energy	lb.ft	590,056	885,079	1032,952	1327,618	1475,131	1843,905	2212,686	2950,248
Min. blow energy*	lb.ft	59,005	88,508	103,259	132,762	147,513	199,141	281,748	292,812
Blowrate	bl/min	45	40	35	35	35	32	35	36
Ram weight	lb	88,183	132,275	152,116	198,413	220,459	275,577	330,693	440,924
Hammer weight	lb	182,981	308,642	326,279	454,145	487,213	573,201	639,340	947,987
Length of hammer	ft	47.93	46.91	52,79	54.17	56.87	62.42	68.09	66.96
Oil flow	g/min	581	581	871	871	1.162	1.162	1.347	1.744
Power pack type		O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.

Hammer SC Series		SC-110	SC-150	SC-200	SC-250
Max. blow energie	lb.ft	81,132	110,635	147,513	184,390
Min. blow energy*	lb.ft	8,113	11,063	14,751	18,439
Blowrate	bl/min	45	45	45	45
Ram weight	lb	17,416	24,250	29,982	37,478
Hammer weight	lb	31,085	41,226	58,422	70,547
Length of hammer	ft	18.88	21.75	18.8	21.03
Oil flow	g/min	122	122	211	198
Power pack type		P 460	P 460	P 800	O.R.

Power pack type		P-175	P-250	P-460	P-800
Max. pressure	psi	4,351	5,076	4,786	4,641
Max. oil flow	g/min	46	66	122	211
Power	hp	150	228	526	768
Length	ft	8.57	11.48	13.22	14.76
Width	ft	3.94	5.05	5.07	5.91
Height	ft	5.82	6.71	7.30	8.27
Net. Weight	lb	5,291	7,716	11,905	17,196
Weight incl. fuel and oil	lb	8,378	9,921	16,314	21,385

**The standard minimal energy setting is about 10% of the hammer's maximum energy.*
When using the high frequency/low energy mode, the energy can be reduced to a minimum of 2% to 5%.

Metric

Hammer S Series		S-30	S-40	S-70	S-90	S-120	S-150	S-200	S-280	S-500	S-600
Max. blow energy	kNm (KJ)	30	40	70	90	120	150	200	280	500	600
Min. blow energy*	kNm (KJ)	3	4	7	9	12	15	20	31	55	66
Blowrate	bl/min	65	65	50	46	44	44	45	45	45	44
Ram weight	ton	1.5	2.2	3.5	4.5	6	7.5	10	14	25	30
Hammer weight	ton	4	4.7	8.5	10	14.5	16.5	27	31	60	65
Length of hammer	mm	6,100	6,762	7,418	8,168	8,296	8,986	9,130	10,390	11,943	12,745
Oil flow	l/min	175	175	250	250	460	460	800	800	1600	1800
Power pack type		P 175	P 175	P 250	P 250	P 460	P 460	P 800	P 800	O.R.	O.R.

Hammer S Series		S-800	S-1200	S-1400	S-1800	S-2000	S-2500	S-3000	S-4000
Max. blow energy	kNm (KJ)	800	1,200	1,400	1,800	2,000	2,500	3,000	4,000
Min. blow energy*	kNm (KJ)	88	132	154	198	220	270	382	397
Blowrate	bl/min	45	40	35	35	35	32	35	36
Ram weight	ton	40	60	70	90	100	125	150	200
Hammer weight	ton	85	145	150	215	230	260	290	430
Length of hammer	mm	14,535	14,300	14,945	16,630	17,370	19,025	20,755	20,410
Oil flow	l/min	2,200	2,200	3,300	3,300	4,400	4,400	5,100	6,600
Power pack type		O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.

Hammer SC Series		SC-110	SC-150	SC-200	SC-250
Max. blow energie	kNm (KJ)	110	150	200	250
Min. blow energy*	kNm (KJ)	11	15	20	25
Blowrate	bl/min	45	45	45	45
Ram weight	ton	8	11	14	17
Hammer weight	ton	16	19,5	29	32
Length of hammer	mm	5,660	6,445	5,975	6,410
Oil flow	l/min	460	460	800	750
Power pack type		P 460	P 460	P 800	O.R.

Power pack type		P-175	P-250	P-460	P-800
Max. pressure	bar	300	350	330	320
Max. oil flow	l/min	175	250	460	800
Power	kW	110	168	328	515
Length	mm	2,613	3,500	4,015	4,500
Width	mm	1,200	1,540	1,689	1,800
Height	mm	1,783	2,044	2,225	2,535
Net. Weight	ton	2.5	3.4	5.4	7.7
Weight incl. fuel and oil	ton	3.8	4.5	6.8	10.5

**The standard minimal energy setting is about 10% of the hammer's maximum energy.*
When using the high frequency/low energy mode, the energy can be reduced to a minimum of 2% to 5%.

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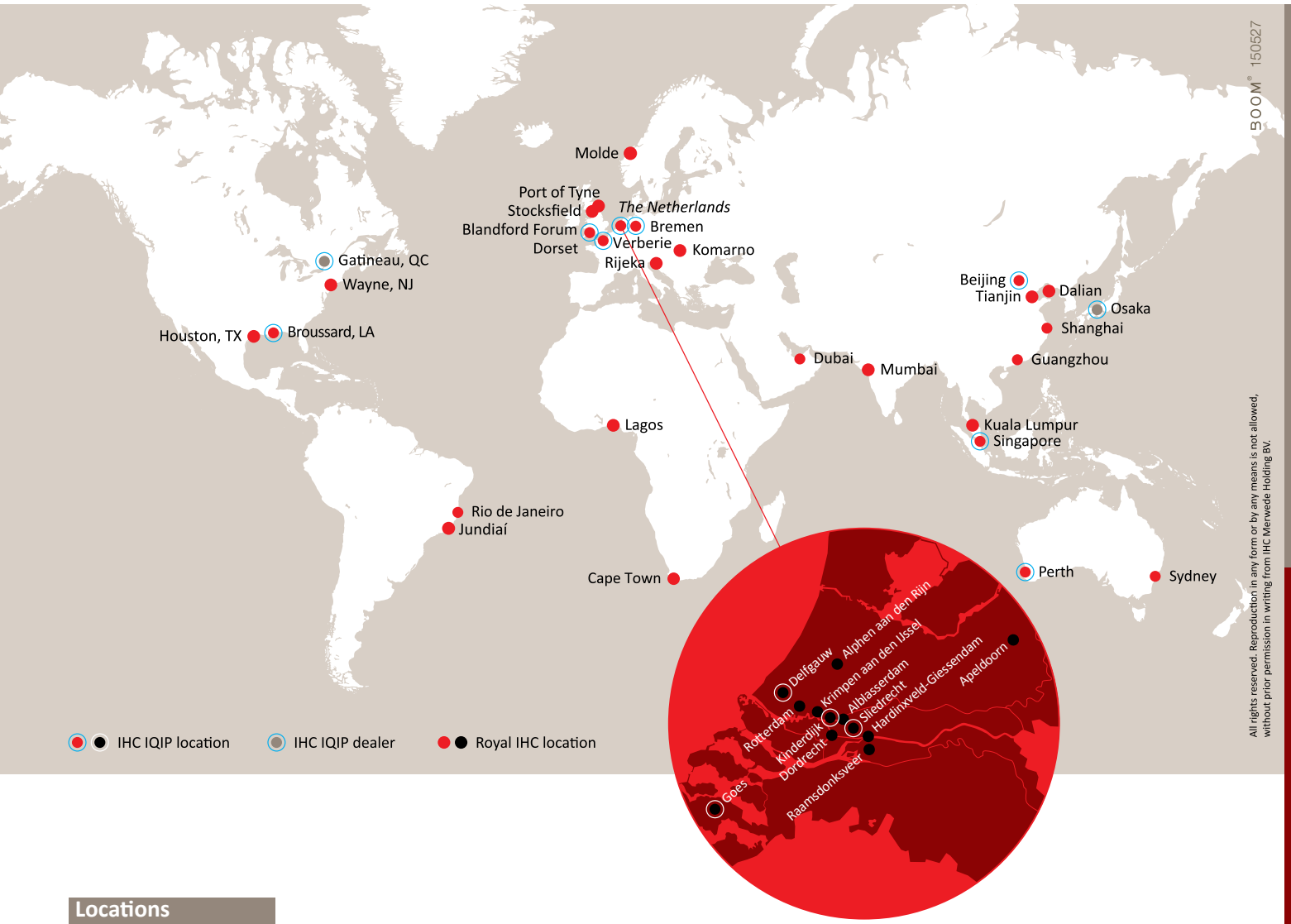

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