

IHC Hydrohammer®

Company Profile



Head office

The Netherlands
 Sliedrecht

Regional offices

- EUROPE**
The Netherlands
 Alblasersdam
 Apeldoorn
 Delfgauw
 Dordrecht
 Goes
 Hardinxveld-Giessendam
 Kinderdijk
 Raamsdonksveer
 Sliedrecht
- United Kingdom**
 Blandford Forum
- France**
 Verberie
- ASIA**
P.R. of China
 Beijing
 Shanghai
 Tianjin
- SOUTH EAST ASIA**
Rep. of Singapore
 Singapore
- India**
 Mumbai
- MIDDLE EAST**
United Arab Emirates
 Dubai
- Nigeria**
 Lagos
- NORTH AMERICA**
USA
 Houston, TX
 Lafayette, LA
 Wayne, NJ
- SOUTH AMERICA**
Brazil
 Rio de Janeiro

Engineering & Production

- EUROPE**
The Netherlands
 Hardinxveld-Giessendam
 Heusden
 Kinderdijk
 Krimpen aan den IJssel
 Rotterdam
 Sliedrecht
- United Kingdom**
 Stocksfield
- Croatia**
 Rijeka
- Slovakia**
 Komarno

Addresses

- IHC Hydrohammer B.V.**
 Smitweg 6,
 2961 AW Kinderdijk
 P.O. Box 26,
 2960 AA Kinderdijk
 The Netherlands
 info.hh@ihcmerwede.com
 www.ihchydrohammer.com
 T. +31 78 691 03 02
- IHC Hydrohammer**
 Room 907, Building 1,
 Shennan Road 59 Taihong R&D
 Park, Minhang District
 201108 Shanghai
 People's Republic of China
 info.hh@ihcmerwede.com
 T. +86 215 296 78 86
- IHC Equipements et Services**
 16 Route de St. Sauveur – ZA
 60410 Verberie
 France
 info@ihc.fr
 T. +33 34 438 50 50
- IHC Deutschland GMBH**
 ErmlandstraBe 57
 28777 Bremen
 Germany
 info.hh@ihcmerwede.com
 T. +49 421 62 10 38
- RIO South East Asia**
 IHC Hydrohammer B.V.
 6 Chin Bee Avenue 01-03
 Singapore 619930
 Singapore
 info.hh@ihcmerwede.com
 T. +65 626 484 33
- Hydro-Ram Inc.**
 206 Cummings Road
 Broussard, LA 70518
 United States
 info@hydro-ram.com
 www.hydro-ram.com
 T. +1 337 83 792 24



Piling Equipment | Worldwide

an IHC Merwede company

A close-up, low-angle shot of a person's legs and feet walking on a sandy beach. The person is wearing dark blue jeans with the cuffs rolled up. They are walking barefoot, and their feet are sinking into the sand. In the background, white foam from a wave is washing onto the shore. The overall mood is serene and contemplative.

With bare feet in the sand

In front of you; a future full of energy, behind you; the certainty of your warm home, the safe haven. Step-by-step initially, you go in search of a strong base that gives you confidence and helps you keep going. The combination of keeping going and growth helps broaden your horizons. The world gradually becomes bigger and more challenging. This requires curiosity, enterprise and guts. You increasingly examine your options and test the boundaries. This goes a lot better if you can count on the tried & tested knowledge and experience of your home base. That confidence makes you take extra steps earlier. Where is your horizon anyway? Does it even exist? Those not satisfied with the crutch of the familiar, always go in search of the new. That makes the future boundless.

IHC Hydrohammer®
Boundary breaking. Any time. Any how. Anywhere.

Our markets

IHC Hydrohammer® designs, manufactures and supplies hydraulic piling hammers, for on- and offshore use and is known throughout the world for its *innovative* approach.

Coastal & Civil

Hurricanes, rising sea levels, earthquakes, extreme temperatures and land reclamation result in foundations facing increasingly stringent requirements.

Renewable Energy

The demand for alternative energy sources has increased rapidly. Centuries-old wind energy in its modern incarnation is a promising growth market.

Construction

Due to urbanisation there are more buildings, less space and there is more environmental legislation. Larger, higher and unconventional structures require more complex foundations.

Natural Oil & Gas

Since the inception of IHC Hydrohammer® technology, the IHC Hydrohammer® has found application in the offshore industry.

Success comes with our values

Services

Extensive service guaranteed by a global network, training, technical services & parts and aftersales support. Any time. Any how. Anywhere.

Possibilities

IHC Hydrohammer® is the global standard in the field of pile driving hammers. Why? Because we think in solutions. After all, in practice, every problem on the market demands its own, innovative solution. It is in our nature to think in opportunities.

Synergy

Alongside our product specific expertise, there is a great deal of synergy between complementary IHC Merwede units. The IHC Hydrohammer® is attuned to use in combination with equipment from IHC Sea Steel, IHC Fundex Equipment, IHC Handling Systems and IHC Offshore Systems.

Technique

The design of the hydraulic IHC Hydrohammer® does not compromise, reliability, efficiency, options and safety are of primary importance. It is the result of billions of strikes worth of experience both on and offshore.



Coastal & Civil

Hurricanes, rising sea levels, earthquakes, extreme temperatures and land reclamation result in foundations facing increasingly stringent requirements. More complex problems demand a great deal from pile driving equipment. That is why we continually adapt our Hydrohammers® to changing demands. This keeps them one

step ahead. Hydrohammers® from IHC Hydrohammer® are often used for foundation building activities for container terminals, bridges, viaducts and jetty and mooring posts. Recently, interest has primarily increased with regard to the hammer rock breaker combination for the dredging industry.

*In front of you, a future full of energy, behind you; the certainty of your warm home, the **safe haven**.*



Bridges



Jetties



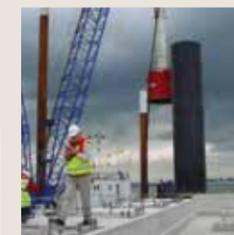
Port construction



Viaducts



Rock breaker



Coastal defences

Renewable Energy

The demand for alternative sources of energy is increasing rapidly. Centuries-old wind energy in its modern incarnation is a promising growth market. Wind turbines are technically very interesting meetings of elements and structures. They are exposed to adverse weather conditions, often

with their bases submerged in water. The principal development being their increasing size. On land, out to sea and in the air. This requires larger diameter piles. IHC Hydrohammer® develops equipment to meet any demand. Major players should think big. The sky is the limit.

*In front of you, a future full of **energy**, behind you; the certainty of your warm home, the safe haven.*



Monopiles wind turbines

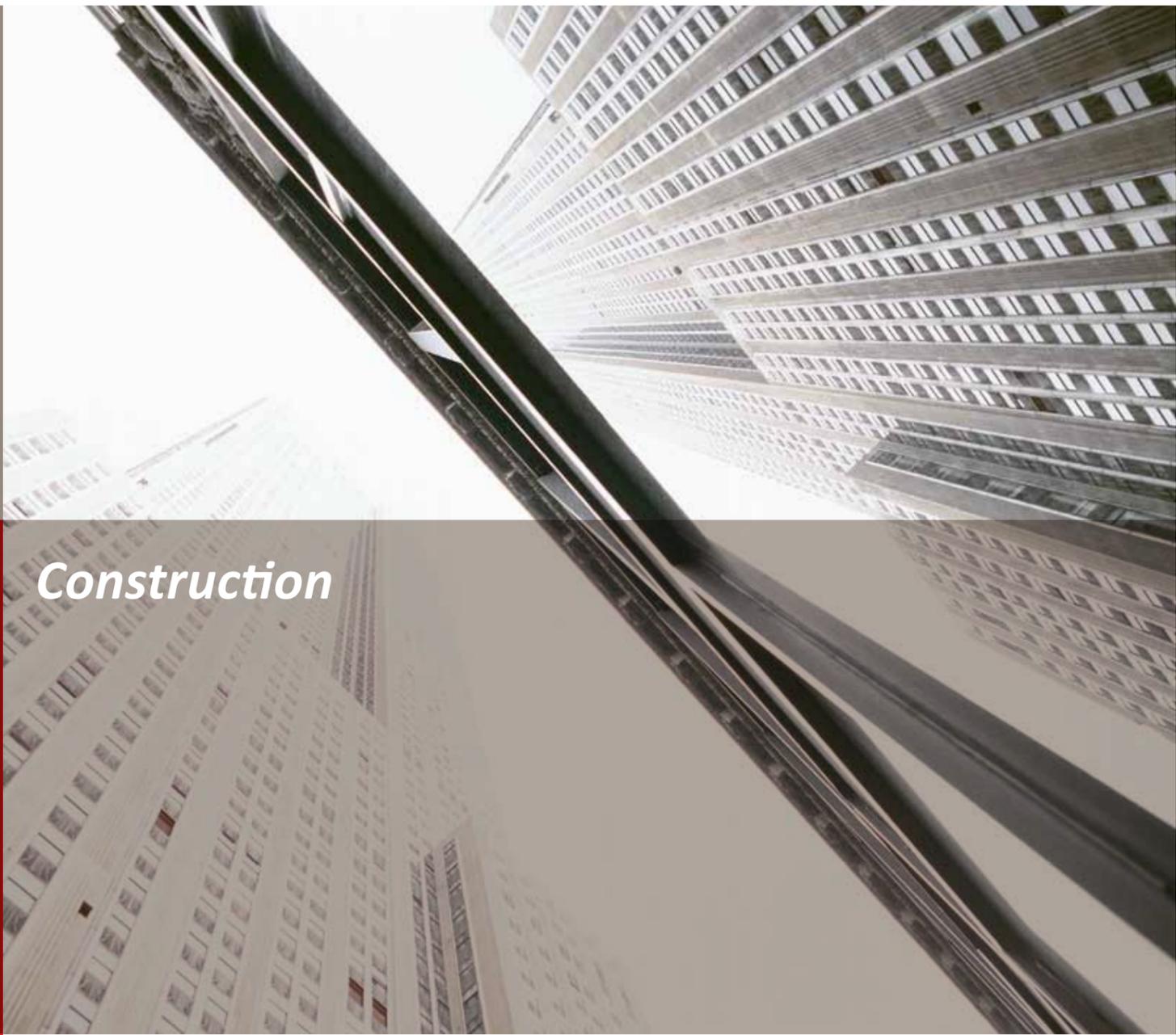


Tripods/Jackets wind turbines



Anchor systems wind turbines





Construction

Due to urbanisation there are more buildings, less space and there is more environmental legislation. Larger, higher and unconventional structures require more complex foundations. Pile driving locations are often hard to reach in inner city areas. Tunnelling is used more often, even tunnels running underneath tunnels,

in order to lessen the burden on the aboveground environment. Noise pollution guidelines have been tightened. There are an increasing number of challenges. It is in IHC Hydrohammer®'s nature to test the limits. That is what makes the impossible possible. You can build on that!



Sheetlegs



Steel



Concrete



Noise reduction



*In front of you, a future full of energy, behind you; the certainty of your **warm home**, the safe haven.*



Cast-in-situ



Raked piles



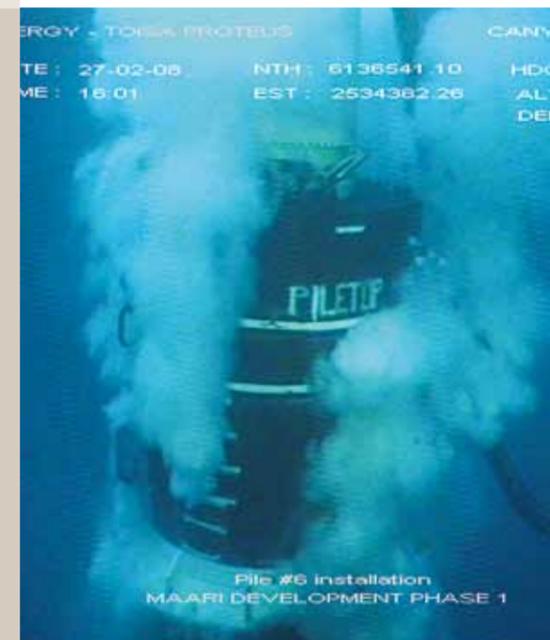
Horizontal pile driving



Natural Oil & Gas

Since the inception of IHC Hydrohammer® technology, the IHC Hydrohammer® has found application in the offshore industry. The closed hammer housing, the excellent control options and reliability makes the hydraulic hammer eminently suitable for driving conductors, anchor piles,

jackets, monopiles and start-up piles for pipe layers at sea. Nowadays, oil and gas have to be drilled for at ever increasing depths. Our solution: equipment that can operate deeper underwater. That future is within our grasp!



Anchor Piles



Pile Toe Drive

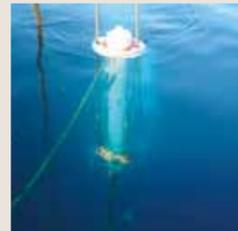


Templates

*In front of you, a future full of **energy**, behind you; the certainty of your warm home, the safe haven.*



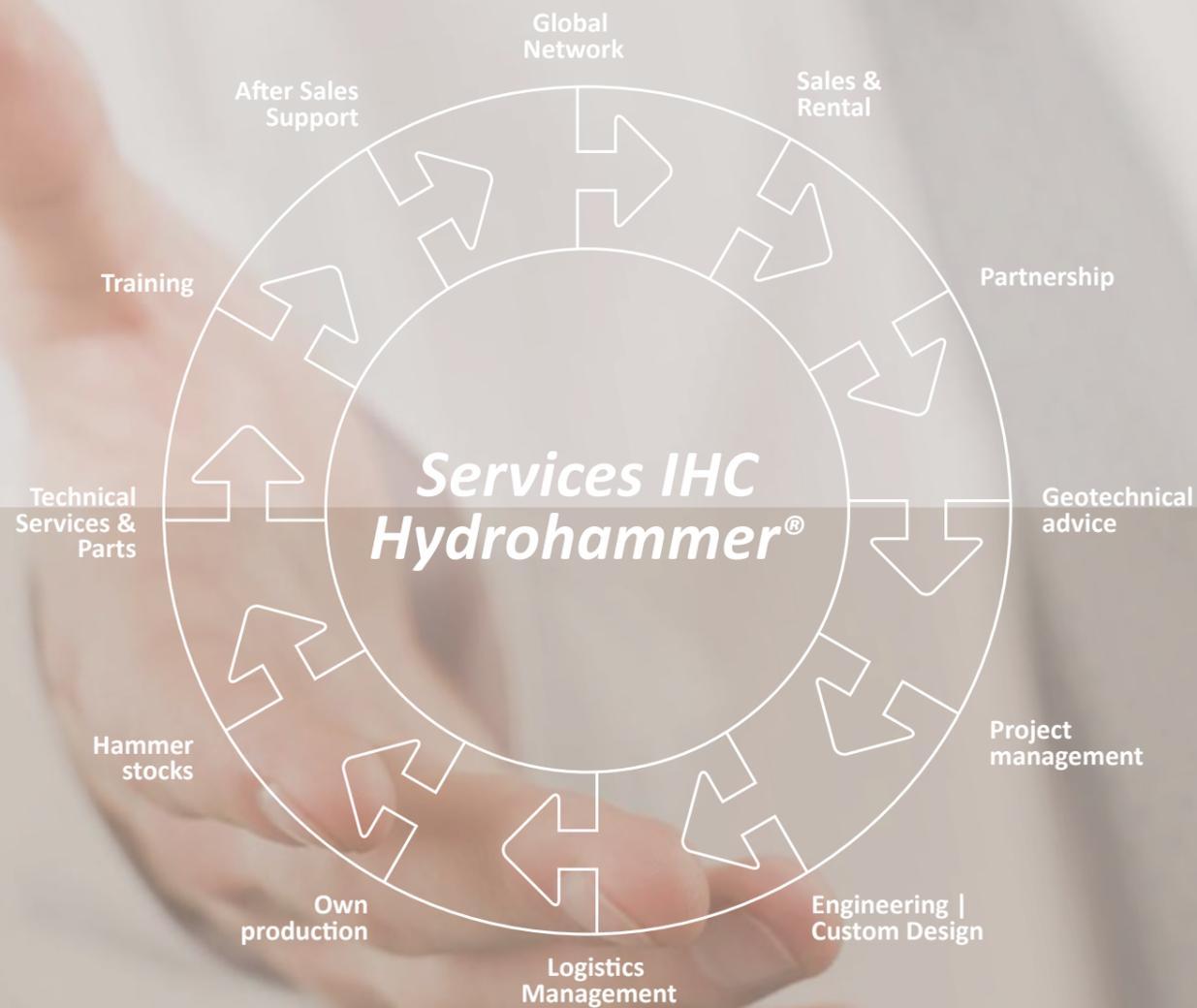
Jackets



Subsea Structures



Conductors



LIFE CYCLE SUPPORT

IHC Hydrohammer® introduces Life Cycle Support. At next to no cost, this agreement provides you with solutions for the optimum use of your equipment anywhere in the world.

This is implemented globally by various, Regional IHC Organisations (RIOs) that provide high-quality service and complete support. Both onshore and offshore.

Service is our second nature

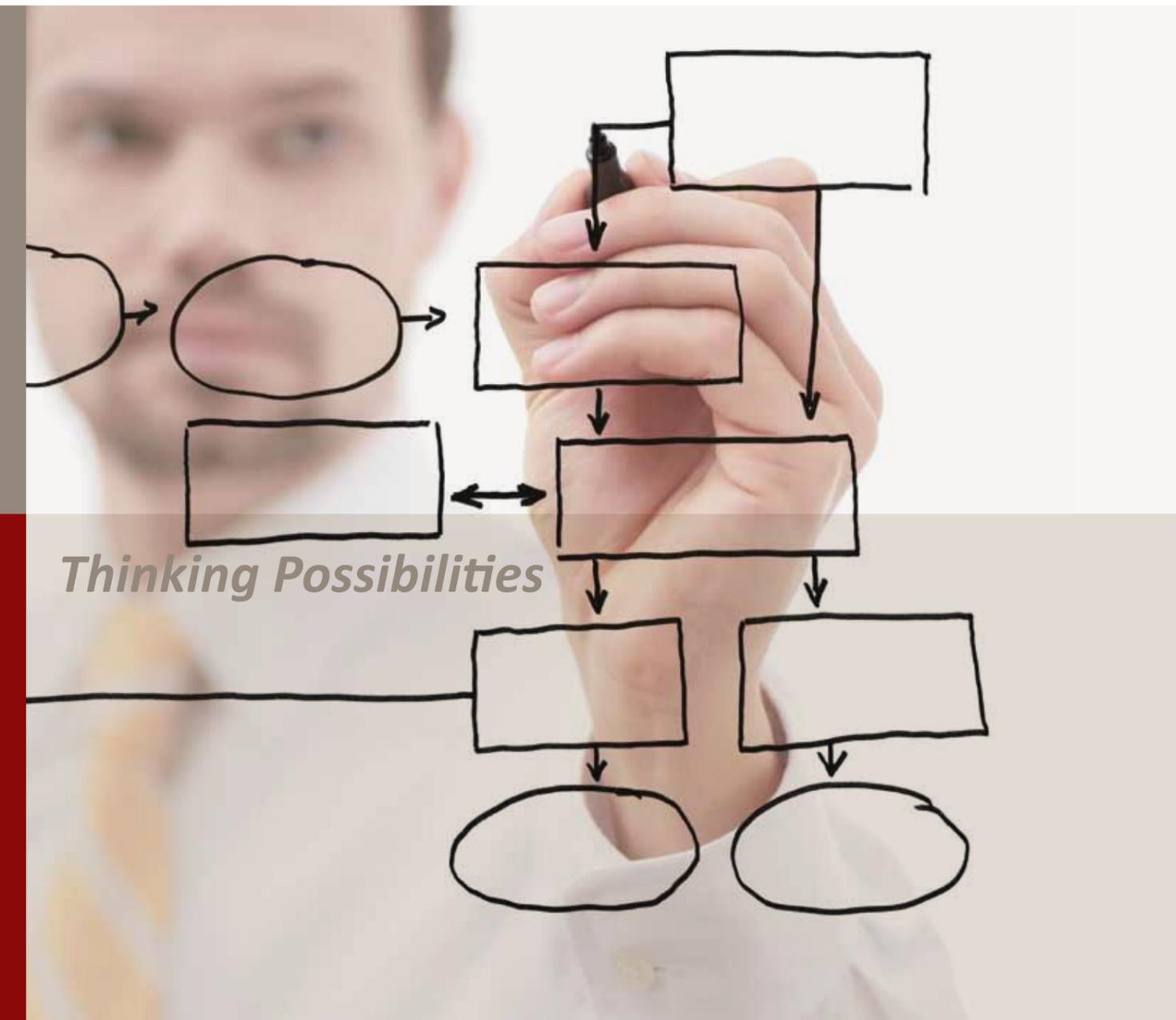
Expertise and skill are central to IHC Hydrohammer®. For decades now, we have been successfully developing the own production of our piling hammers. If necessary, we utilise the additional knowhow of other IHC Merwede units. Our own production ensures an ample rental fleet which makes the desired hammers rapidly available. We also have sufficient parts in stock. IHC Hydrohammer® does not limit itself to supplying technological products. Our long experience at very different locations and under many different conditions means we can provide or support project and logistics management with high-quality service. This is implemented globally by various, Regional IHC Merwede

Organisations (RIOs) that provide high-quality service and complete support for complicated projects both onshore and offshore. We provide comprehensive pile driving technology. If so desired, this starts with geotechnological advice. Furthermore, we have a global network of IHC Hydrohammer®-trained service engineers and a wide range of common spare parts. If operational support is desired for a project we can provide it or mediate. IHC Hydrohammer® provides training for the operation, maintenance, malfunction resolution and possibly overhaul of equipment. This training can also be provided on site and can be tailor-made to suit your company's needs.

*The world gradually becomes bigger and more challenging. This requires curiosity, **enterprise** and **guts**.*



IHC Hydrohammer® is a NEN-EN-ISO 9001 certified company



Thinking Possibilities

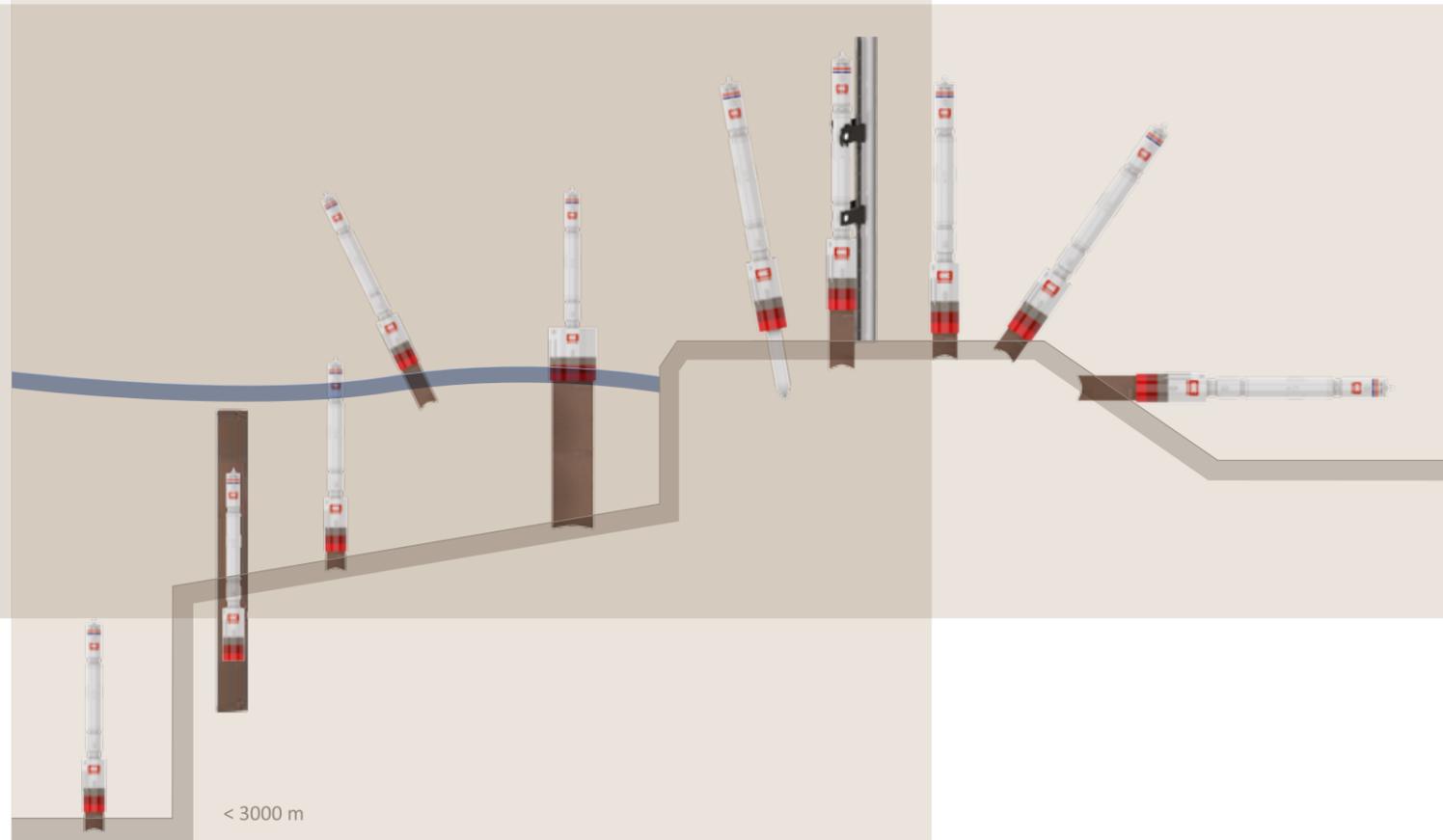
You increasingly examine your *options* and test the *boundaries*.

IHC Hydrohammer® is the global standard in the field of pile driving hammers.

Why? Because we think in solutions. After all, in practice, every problem on the market demands its own, innovative solution. It is in our nature to think in opportunities. Our years of experience, our empirical approach and – in particular – our intensive cooperation with many onshore and offshore clients means we always see

room for improvement. For example, in recent decades we have broadened our horizons.

On the one hand, by not compromising and only being satisfied with the best. On the other, by entering into joint ventures and partnerships with users. Elevating each other, creating opportunities and subsequently capitalising on them. Success starts with the right attitude. It makes you think in solutions.



Offshore

Technology & Services

Mining

Dredging

Synergy / IHC Merwede Group



*This goes a lot better if you can count on the tried & tested knowledge and experience of your **homebase**. That **confidence** makes you take extra steps earlier.*

IHC Merwede is focussed on the continuous development of design and construction activities for the specialist maritime sector. It is the global market leader for efficient dredging and mining vessels and equipment – with vast experience accumulated over decades – and a reliable supplier of custom-built ships and supplies for offshore construction.

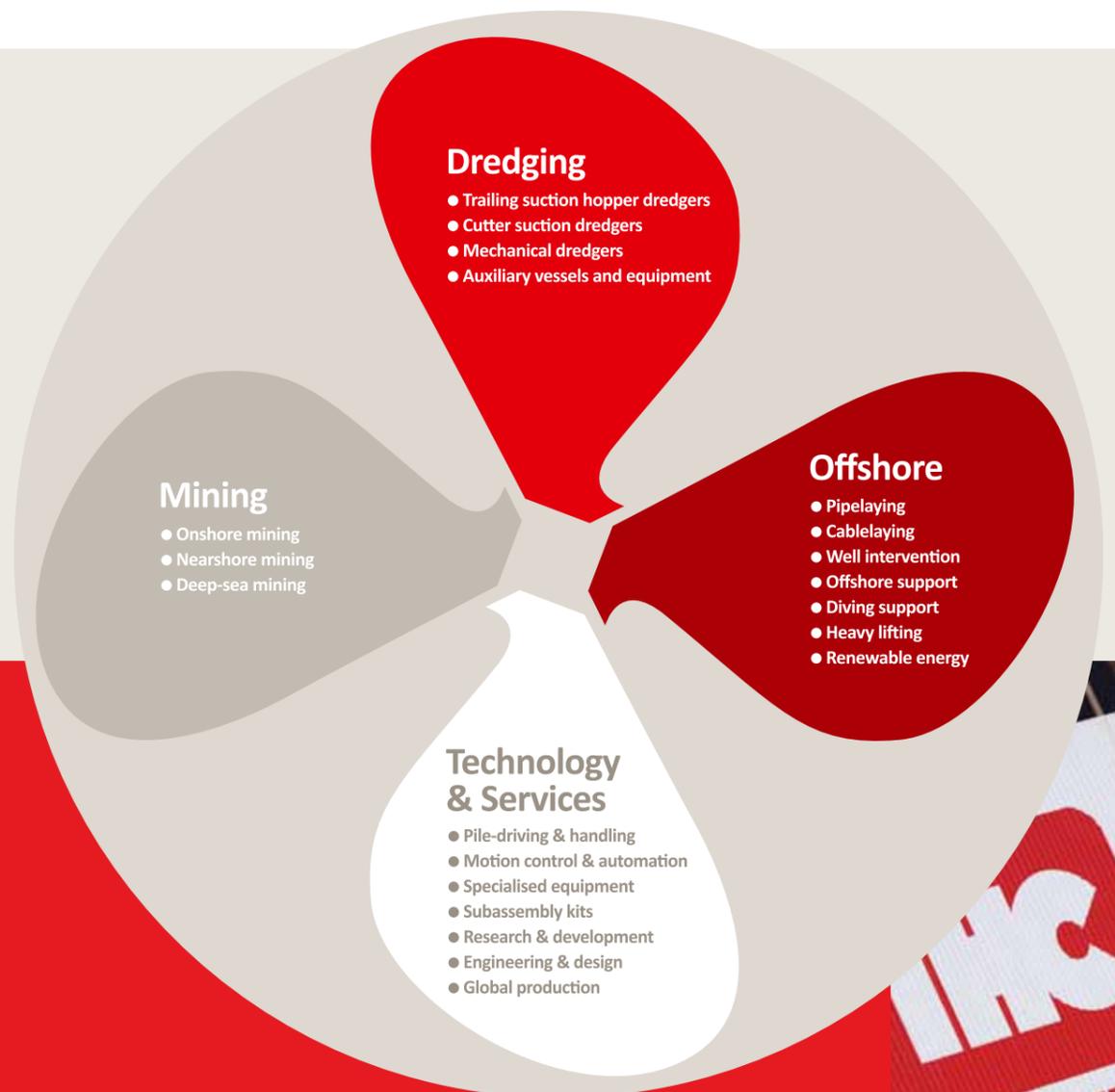
IHC Merwede has in-house expertise for engineering and manufacturing innovative vessels and advanced

equipment, as well as providing life-cycle support. Its integrated systematic approach has helped to develop optimum product performance and long-term business partnerships. The company's broad customer base includes dredging operators, oil and gas corporations, offshore contractors and government authorities.

IHC Merwede has over 3,000 employees based at various locations in The Netherlands, Brazil, China, Croatia,

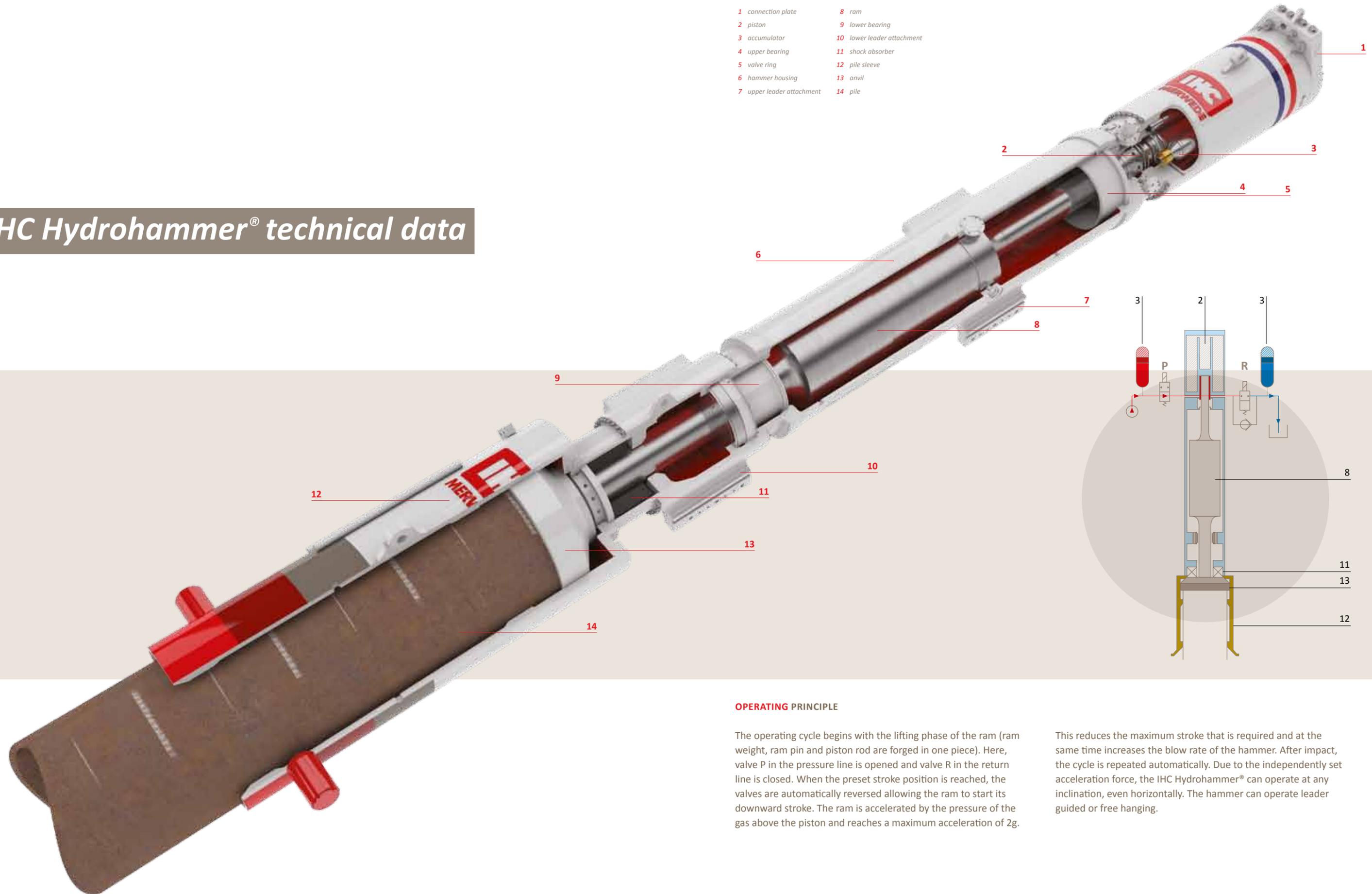
France, India, Malaysia, the Middle East, Nigeria, Singapore, Slovakia, South Africa, the United Kingdom and the United States.

Technological innovation will remain the company's underlying strength through its continuous investment in research and development. Moreover, it helps to safeguard a sustainable environment.



IHC Hydrohammer® technical data

- | | |
|---------------------------|----------------------------|
| 1 connection plate | 8 ram |
| 2 piston | 9 lower bearing |
| 3 accumulator | 10 lower leader attachment |
| 4 upper bearing | 11 shock absorber |
| 5 valve ring | 12 pile sleeve |
| 6 hammer housing | 13 anvil |
| 7 upper leader attachment | 14 pile |



OPERATING PRINCIPLE

The operating cycle begins with the lifting phase of the ram (ram weight, ram pin and piston rod are forged in 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 allowing the ram to start its downward stroke. The ram is accelerated 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 leader guided or free hanging.

UNIVERSAL AND UNIQUE

There are no compromises in the design of the hydraulic Hydrohammer® where reliability, efficiency, possibilities and safety are the focus. A design forged from billions of hammer strikes, both onshore and offshore.

The Hydrohammer® combines a solid one-piece ram with a fully enclosed hammer housing. The result is an elegant yet robust and reliable hammer. IHC Hydrohammer®'s unique design makes it suitable for all types of piling and foundation work, ranging from piling impact sensitive concrete piles, to piling large and long offshore caisson piles. The hammer can even be used to break rock (also under water).

MORE RELIABILITY

Solid piece Ram. The ram weight, ram pin and piston rod are forged in one piece, which means there is no risk of the parts separating.

Materials. The forged alloy steel guarantee durability. This also allows unlimited piling on steel using full power.

Shock absorber. The robust and tested construction and the materials used sustainably resist the reaction forces from the pile.

Bearings. The ram is guided above and below by lubricated bearings. This reduces ram wear to a minimum.

Limited parts. The use of a limited number of parts leads to lower risk of failures and fewer spare parts.

MORE POSSIBILITIES

Enclosed hammer housing. The energy supplied by the Hydrohammer® is the same both above and below water.

Tools. The hammers can be equipped with rock chisels, noise bellows and sheet piling and pile guides in all sizes.

Sleeve design. Due to the flat anvil, the sleeves can be adjusted to suit any pile diameter.

Free hanging. The Hydrohammer® can operate leader guided and free hanging (fitted with a pile sleeve).

Clamp system. A special clamp system rigidly connects the pile head and the hammer housing. As a result, only one Hydrohammer® is needed to drive and to extract piles. This makes the Hydrohammer® ideal for the installation of cast-in-situ (vibro) piles.

Acceleration energy. In addition to piling vertically, the Hydrohammer® can also operate at full power horizontally and at any other inclination. Thanks to the acceleration energy, it has a relatively low weight and a high peak force to overcome soil resistance.

Forged pieces. Due to the high-quality forged and alloyed parts, the Hydrohammer® is suitable for driving steel on steel.

MORE EFFICIENCY

Hammer control. All hydraulic functions of the Hydrohammer® are electronically controlled and monitored. This contributes to allowing the optimal blow energy to be set.

Modular structure. All parts that could possibly need attention between major services are easily accessible from the outside.

Oil flow. Due to the accelerated ram weight, it is possible to realise a high blow count at a relatively low oil flow.

Real time monitoring. The piling data are directly printed on site or stored in a data logger. This allows a detailed analysis of the driving operation to be conducted.

INCREASED SAFETY

Safety provisions. Signals from the hammer sensors are centrally processed in the control box. If the length of the ram stroke is too long or too short, the hammer is stopped. If the hammer/pile positioning is incorrect, the hammer cannot be started.

Environmentally friendly. The Hydrohammer® can use biodegradable oil. Noise reduction is optimised by fitting the Hydrohammer® with the available noise reduction packages.



HAMMER S SERIES

	S-30	S-40	S-70	S-90	S-120	S-150	S-200	S-280	S-500	S-600	S-800	S-900	S-1200	S-1400	S-1800	S-2000	S-2300	
OPERATIONAL DATA																		
Max. blow energy on the pile	kNm	30	40	70	90	120	150	200	280	500	600	800	900	1200	1400	1800	2000	2300
Min. blow energy on the pile	kNm	3	4	7	9	12	15	20	28	50	60	80	90	120	140	180	200	230
Blowrate at max. blow energy (1)	bl/min	65	65	50	46	48	44	45	45	45	42	38	38	38	40	35	35	30
WEIGHTS																		
Ram	ton	1.6	2.2	3.5	4.5	6.2	7.5	10	13.6	25	30	40	43	60	69	90	100	115
Hammer with ram in air (2,3)	ton	3.9	4.7	8.3	9.7	14.3	16.2	25.8	30.5	57.5	64	83	120	140	148	210	225	242
DIMENSIONS																		
Length hammer (4)	mm	6100	6850	7400	8055	8166	8900	9095	10390	11943	12715	14610	12795	14297	16090	16510	17335	18290
HYDRAULIC DATA																		
Oil flow	l/min	175	175	250	250	460	460	800	800	1600	1800	1800	2400	2400	3600	4400	4400	4800
POWER PACK TYPE																		
Recommended		P-175	P-175	P-250	P-250	P-460	P-460	P-800	P-800	on request								

HAMMER SC SERIES

	SC-75	SC-110	SC-150	SC-200	
OPERATIONAL DATA					
Max. blow energy on the pile	kNm	75	110	150	200
Min. blow energy on the pile	kNm	8	11	15	20
Blow rate at max. blow energy (1)	bl/min	50	45	45	45
WEIGHTS					
Ram	ton	5.7	7.9	11	13.6
Hammer with ram in air (2,3)	ton	9.8	14.1	18.7	26.5
DIMENSIONS					
Length hammer (4)	mm	6245	5755	6630	5730
HYDRAULIC DATA					
Oil flow	l/min	250	460	460	800
POWER PACK TYPE					
Recommended		P-250	P-460	P-460	P-800

ACCESSOIRES

Pile sleeves	Hoisting cats
Sleeve inserts	Hose reels
Anvils	Winches
Pile cap	Printers
Sheet legs	Control cabins
Leader claws	Monitoring equipment
Chisels	Noise reduction packages

NOTES

- 1 When using recommended power pack.
- 2 Hammer weight without anvil/pile cap and pile sleeve.
- 3 Sleeve and anvil dimensions and weight depend on application. Information on request.
- 4 Length hammer up to lifting point.
- 5 All hammers and power packs can be operated using bio-degradable oil.

POWER PACK TYPE

	P-175	P-250	P-460	P-800	
OPERATIONAL DATA					
Max. pressure	bar	350	350	350	350
Max. oil flow (5)	l/min	175	250	460	800
Power	kW	110	168	387	565
DIMENSIONS					
Length	mm	2613	3500	4030	4500
Width	mm	1200	1540	1545	1800
Height	mm	1775	2044	2225	2520
WEIGHTS					
Net. weight	ton	2.4	3.5	5.4	7.8
Weight incl. fuel and oil	ton	3.8	4.5	7.4	9.7



Any time. Any how. Anywhere

*IHC Hydrohammer®
Piling Equipment | Worldwide*

Kinderdijk, The Netherlands

