

Going large leads to success

In recent years Comacchio has focused on the development of large diameter piling rigs and as a direct result has seen both production and turnover increase significantly

Comacchio has built its reputation by listening to its customers and reacting to their needs and the latest example of this can be seen with the upcoming launch of Geofluid of the company's latest rig – the CHF 500 – a self-erecting hydraulic piling rig for CFA.

However, when Comacchio first began in 1986, the company founded by brothers Renzo (current company president), Pasqualino (product development and sales) and Patrizio Comacchio (production and aftersales), was not a drill rig manufacturer. Based in Castello di Godego in Treviso, Italy, Comacchio began by offering aftermarket parts and upgrades for rigs from established manufacturers and then expanded upon that to provide onsite servicing too.

This work gave the Comacchio brothers a great insight into what the market did and did not want as well as what options were currently available. Armed with this information by 1989 the business took a change in direction with the launch of the first Comacchio drill rig, built at the workshop on the family farm.

Success quickly followed and by 1992 Comacchio had opened its first dedicated drill rig production facility in Castello di Godego. During those early years, the focus of the business was firmly on the domestic market constantly developing and improving the rigs in production taking on board feedback from customers.

EXPORT MARKETS

Business once again took a turn in 1997 when Comacchio received its first export order for a rig to go to Sweden. To this day the Scandinavian market remains an important one for Comacchio.



The new level of confidence this export order brought to the brothers prompted a wave of new thinking and new ideas and the first of these to come to market – the MC 1200 – was a first for the drill rig industry. When Comacchio launched the small bore MC 1200 (now known as the MC 22), a hydraulic crawler-mounted drill rig it was the first drill rig in the world to offer 'front the wall' articulation – drilling on the side of the track, providing a greater range of movements than had been known previously.

Suitable for specialised civil engineering including micropiles, anchors and ground consolidations, as well as geognostic-environmental soil investigations and core drilling it was an instant success. The MC 1200/MC 22 went on to become a bestseller for Comacchio mainly down to articulation of the rig's mast that allowed the front the wall operation. The brothers were

able to gain patent protection on their updated version of the system, with no re-pin the cylinders.

The Comacchio family continued to listen to market requests and feedback from its customers on how it could improve its product offering and the next innovation to come out of the Italian factory was a remote control system for the company's drill rigs. The first Comacchio radio remote rigs were brought to market in 2000.

Over the years the engineers at Comacchio have worked to constantly refine the remote control systems and in 2011 a new package was introduced. Not only did this new development offer the existing functions of tracking and drilling control it also added the ability to remotely control the machine set-up and carousel function. The addition of such functionality increases the ease of operation and thus reduces the man-hours needed for any job. ▶

Comacchio's staff outside the company's headquarters in Riese Pio X

"The first drill rig in the world to offer 'front the wall' articulation"

“2017 was a memorable year as it saw the production of the 3,000th Comacchio drill rig”

► EXPANSION

It was not only machine development and the introduction of new technology that was taking place within Comacchio. The success of the business domestically and internationally meant that it had outgrown its existing premises and in 2003 production moved from Castello di Godego to a new purpose-built 5,000m² facility in Riese Pio X, which to this day remains the company's headquarters. It has now been expanded 10,000m² of production space and 1,400m² of offices. In the three years after the move production was doubled and in later years 90 per cent of production has been destined for the export market.

Expansion was once again in focus for Comacchio when the range of machinery it was producing was expanded to include an increasing number of rigs for foundation and construction work. After the introduction of the CH 450 for large diameter piling in 2015, the company began construc-

Bored piles is one of the 15 configurations of CH 450 rig offered by Comacchio



tion of a second 4,000m² facility once again in Castello di Godego dedicated to the production of the CH lines of piling rigs. Production and servicing and repair of the company's MC Line foundation equipment and Geo Line of drill rigs for water wells, exploration, soil investigation and geothermal work continues at the headquarters in Riese Pio X.

LARGE DIAMETER RIGS

The opening of the plant in Castello di Godego was done to allow the development team at Comacchio to fully invest its time in creating a complete range of piling machinery. This began with the introduction of the large diameter CH 450 and then the CH 650 rigs. As always with the introduction of new models, the brothers at Comacchio took note of feedback from customers and that has seen the CH line develop into a range of three models available in 15 configurations. The self-erecting CH 450 was Comacchio's first drilling rig for large diameter drilling and was designed to cover a wide range of processes that include bored piles, continuous flight auger (CFA piles), micropiles, displacement piles and soil mixing. The machine can be supplied in the CPD (cylinder pulldown) and WPD (winch pulldown) versions and can be equipped with kelly bars with a maximum length of 13.0 to 13.5m (CPD-WPD) and with different outer diameters, including HD (heavy-duty) and XHD (extra heavy-duty) bars.

It is a similar story with the CH 650 class of rigs. They are multipurpose drilling rigs mounted on dedicated excavator carriers with an operating weight of 70 tons. The rigs are also self-erecting and can be transported with minor disassembly of the machine for easy and fast rig-up. The CH 650, like the CH 450, has been designed to cover a wide range of drilling technologies including bored

piles, continuous flight augers (CFA piles), displacement piles and soil mixing. The machine can be supplied in CPD and WPD versions and can be equipped with different kelly bars, reaching a maximum pile depth of 69m.

Following the move into production of large diameter drilling rigs in 2015 Comacchio, already a very successful business, saw its annual turnover increased from €43 million to an estimated €70 million in 2018. As turnover has risen, so to have employee numbers, since 2013 staffing levels have almost doubled.

Along with a record number of employees, 2017 was a memorable year as it saw the production of the 3,000th Comacchio drill rig. It was also the year that saw the opening of a 2,500m² warehouse at the Riese Pio X and the addition of a second sales agent in the UK.

For many years Comacchio has worked with JKS Boyles in the UK and today this successful relationship continues with the Derbyshire-based company being responsible for Comacchio's Geo and MC Line products. The CH line large diameter piling rigs are handled in the UK by North Equipment and it is North's founder and owner, Robin North, who provided the impetus for Comacchio to create the CHF 500 – its latest large diameter piling rig which it will debut at Geofluid 2018.

The launch of the CHF 500 is a further step in Comacchio's plans to expand its product range in order to be able to offer a complete range of drill rigs for all applications. With the MC and CH lines, in particular, it aims to be able to offer comprehensive solutions for clients operating in the foundation construction sector.

Once it has been officially launched the CHF 500 will join the three model / 15 configuration CH line and the 35 model MC range. What sets the

CHF 500 apart from the existing model range is that it is a self-erecting hydraulic rig specifically for CFA applications and was designed in response to the unique demands of the UK construction industry reported to Comacchio by

Robin North acting on feedback from his customers. North also has a second CHF 500 on order as once the first one has been displayed at Geofluid it will travel to the UK to be put immediately to work. ▼

Comacchio's newest rig the CHF 500, designed for CFA applications will debut at Geofluid

Launching the CHF 500

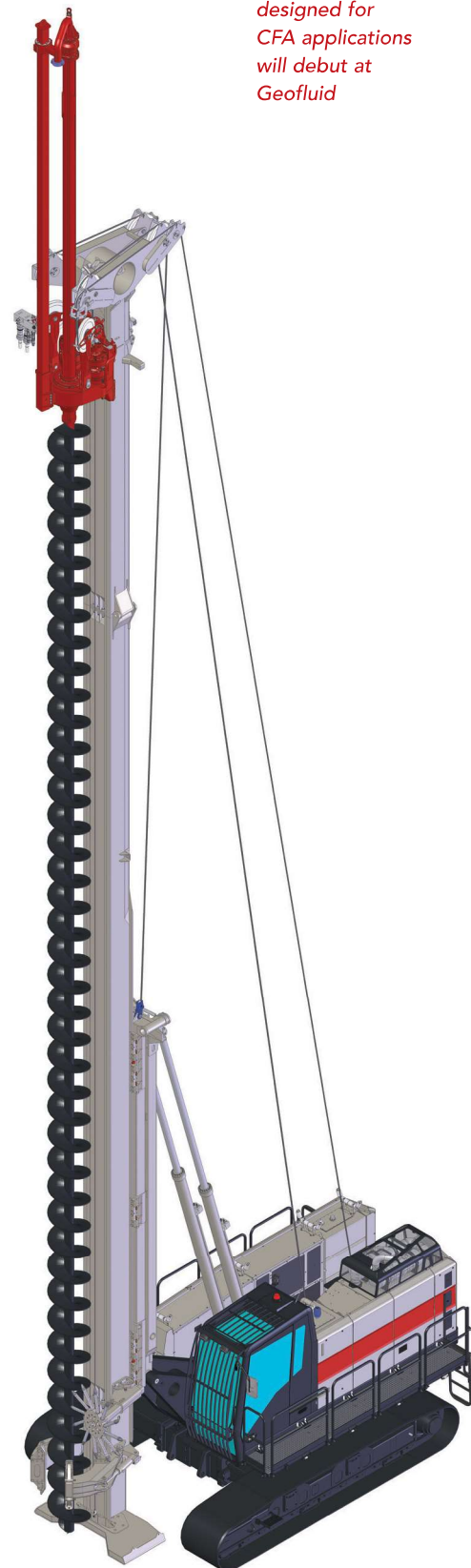
The latest addition to the range of large diameter drilling rigs produced by Comacchio is the CHF 500, a machine which was developed to meet the needs of UK distributor North Equipment and its desire to be able to offer its customers a dedicated CFA rig.

Due to debut at Geofluid, the CHF 500 has an operating weight of 46 tons and can create CFA piles up to 27m deep and can handle auger diameters up to 1m. However, it is not simply the ability of the CHF 500 to meet the demands for large CFA piles that sets it apart from competitors' rigs. From the ground up every aspect of the rig has been examined and developed. Throughout its construction special steels have been used that blend lightweight with improved strength. As part of the development, a prototype cab was sent for lab testing and while the steel deformed the cab remained in one-piece and successfully passed the testing process thus obtaining TOPS and FOPS-1 certification. The CHF 500 is fully compliant with EN16228 standards for drilling and foundation equipment.

It was not only increased strength that was a consideration when the cab was designed, operator comfort was given careful considera-

tion too. With noise and heat being two of the biggest issues for operator comfort, Comacchio examined the rig as a whole with a view to reducing these two factors as much as possible. To achieve this Comacchio has reconfigured the cooling system for the Euro stage IV compliant engine. The changes that have been made not only direct hot air away from the operator's cab but also away from the engine. An additional benefit of the changes is a general lowering of the engine's running temperature, which in turn reduces the use of the fan. Then to reduce noise not only is the engine bay heavily insulated, which also helps with the heat issue, but the radiator fan is not driven directly by the engine but controlled by sophisticated electrics. By operating in this way it only operates when needed, rather than running constantly.

The undercarriage of the CHF 500 has been extended for increased stability and to reduce ground pressure. The track width is also hydraulically adjustable to ease transportation between job sites. Once a site is reached set-up of the CHF 500 is as automated as possible – the mast can be raised by the operator from inside the cab without additional help.



CHF 500 Technical specification

Rotary table		
Nominal max torque	153kNm / 113,000lbf-ft at 35MPa / 5,080psi	
Set torque	131kNm / 96,600lbf-ft at 30MPa / 4,350psi	
Max drilling speed	58.5rpm	
Hydraulic power	153kW	205hp
Hex joint passage	4in or 5in	
CFA (Continuous Flight Auger)		
Max pile diameter	1,000mm	3ft 3in
Max length of augers	21m	69ft
Max length of auger extension	6m	19ft 8in
Max pile depth	21 + 6 = 27m	69ft + 19ft 8in = 89ft
Extraction force	540kN	121,396lbs
Crowd force on auger (option)	45kN	10,113lbs
Max drill string weight	4,500kg	9,900lbs