

The latest Comacchio rigs complete the company's CH range

Comacchio enjoyed success at bauma 2022 with the CH 150 and CHF 900, which is its latest model of piling rig, marking the completion of the range, just seven years after the launch of the first machine in the series

The Comacchio CH range of piling rigs includes five models of multipurpose machines (in a weight range from 15 to 70t), that can be configured to cover a wide range of applications, such as bored piles with the Kelly system, CFA, DP (displacement piles) and soil mixing. The range also includes two models of dedicated CFA rigs, in the weight classes of 50t and 90t.

The recently launched CH 150 is the smallest model in Comacchio's CH range of drilling rigs

The concept of the range started from the idea of a common development for all models, driven by the uniformity of the base carriers, and by the

shared concept of hydraulic and electrical systems, electronically controlled through the CCS system (Comacchio Control System – a user-friendly control software entirely designed by Comacchio, controlling all drilling parameters and allowing for the complete management of the machine, including fault diagnostics). The advantages that this consistency offers are significant, both at the operational level and in terms of after-sales assistance.

THE CH 150

Presented for the first time in 2021 in Piacenza during Geofluid and then displayed at Bauma 2022, the CH 150 is currently the smallest model in the CH range.

The CH 150 was created to meet the growing demand for compact lightweight machines, able to operate in tight and difficult access spaces and/or low headroom conditions while achieving comparable performance to "conventional" piling rigs.

With a transport weight of 15t, the CH 150 is easy to transport and requires very little setup time.

Its design is based on the use of an excavator base carrier (in the 8-10t weight class) equipped with a modular drilling mast and a multipurpose rotary head. Using simple conversion kits, the CH 150 can be configured for Kelly drilling as well as CFA drilling.

The extended reach of the boom combined with the mast rotation movement ensures that the rig can be used to perform a wide variety of positions covering a large work area. The stability of the machine even at its maximum

reach (3600mm), is granted by the variable width undercarriage, allowing the width to be expanded to 2920mm.

The machine features two powerful winches (with 65 and 27kN pull) and a multipurpose rotary head designed by Comacchio providing up to 44kNm torque. The rotary can be operated in "constant power" mode, optimising performance thanks to the automatic adjustment between rotation speed and rotary torque. Alternatively, the same rotary can be managed with a manual gear change.

MODULAR DESIGN

The modular mast design allows the use of Kelly bars of up to nine elements and 3.5m in length to achieve depths of 27m. The Kelly has a 419mm diameter, but different diameters are possible on request, with minimal adaptations on the machine. In CFA configuration, the CH 150 can reach 12.1m pile depth, thanks to the use of a special extension. In addition to the Kelly and CFA set-up, the machine can also be configured for micropiles installation. Low headroom configurations are possible, too.

The cabin and the controls of the CH 150 are optimised to operate in confined spaces to guarantee great ease of use and manoeuvrability in any site conditions, with a view to achieving maximum comfort and safety for the operator. All of the controls are conveniently positioned on the joysticks. Through the use of sensors and the CCS system, the CH 150 ensures that the operator has a complete ▶





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With the problems of resources and environment becoming more and more prominent, scientific drilling and mineral exploration are constantly moving deeper to solve the above contradiction. Seamless steel pipes for wire-line core drilling is one of the main products of our company. In recent years, our company has been developing continuously. The billet used for manufacturing has high purity. Size tolerance, concentricity and straightness, which meet various special requirements of domestic and foreign geological exploration industries.

Main products used in foreign geological exploration industries are as follows:

Seamless steel tubes for Q and CQ series wire line coring drilling						
Specification	AQ	BQ	NQ	HQ	PQ	
	ACQ	BCQ	NCQ	HCQ	PCQ	
Outer Tube	OD (mm)	46.00	57.20	73.00	92.10	117.50
	ID (mm)	36.50	46.00	60.30	77.80	103.20
	WT (mm)	4.75	5.60	6.35	7.15	7.15
Inner Tube	OD (mm)	32.50	42.90	55.60	73.00	95.30
	ID (mm)	28.60	38.10	50.10	66.70	88.90
	WT (mm)	1.95	2.40	2.75	3.15	3.20
Drilling Rod QSeries	OD (mm)	44.60	55.70	70.10	89.00	114.30
	ID (mm)	35.00	46.10	60.10	77.80	101.30
	WT (mm)	4.80	4.80	5.00	5.60	6.50
Drilling Rod CQSeries	OD (mm)	44.50	55.60	69.90	88.90	117.50
	ID (mm)	36.50	47.60	61.90	80.90	108.20
	WT (mm)	4.00	4.00	4.00	4.00	4.65
	Joint ID (mm)	34.90	46.00	60.30	77.80	101.60




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The weight of the CHF 900 can be reduced to 65.5t in transport configuration

overview of the machine operations and is assisted in every step of drilling execution through a wide range of automatic functions. This system can be integrated with the ComNect remote fleet management tool, developed to provide customers with real-time information on the status of the machine and its performance and to offer the highest level of after-sales support. Not only that, but for greater safety of the machine and of the operator, Comacchio has chosen to equip the CH 150 with special electronic devices that detect the position and working angle of the machine allowing intervention on the operating parameters automatically, preventing the onset of any dangerous situations. These constructive choices allow the CH 150 to rank at the top of the segment in terms of safety.

THE CHF 900

The absolute novelty of the CH range, which made its debut at bauma 2022, was the CHF 900. This is a dedicated CFA drilling rig and is part of a larger project for the launch of a 90t class multipurpose machine, with which Comacchio aims to complete its range of piling rigs. Like all Comacchio CH and CHF machines, the CHF 900 has been

designed to be self-erecting and it can be transported in one piece, minimising the need to disassemble some machine parts in transport configuration, therefore allowing for quick and easy rig-up, supported by automated rig-up systems.

LIGHTWEIGHT CONSTRUCTION

The extremely lightweight construction (86t operating weight) is the result of a careful selection of all materials and the use of high-strength, light steels and highly specialised mechanical processing. Thus, the machine weight can be reduced to 65.5t in transport configuration (removing the rotary and the counterweight), but the weight can be further reduced to 45.8t in case of special needs. The fully self-assembling modular counterweight has been designed to minimise the tail swing radius and ensure easy handling during loading/unloading operations.

The CHF 900 is mounted on an extendable undercarriage with a larger wheelbase, to ensure reduced dimensions during transport, less bearing pressure and greater stability. The configuration on display at bauma included a variable width undercarriage with 800mm track shoes, ranging in width from 2990mm with retracted side frames

(in transport position) to 4590mm in working position.

The choice of the Volvo engines allows Comacchio to manage the requests coming from various markets more flexibly, implementing Stage III or Stage V engines according to the required performance and current regulations, with minimal variations on the machine.

STAGE V

The version presented in Munich featured a Stage V engine with 345kW power, chosen by the customer with a view to reducing fuel consumption and emissions. A 405kW setting is also possible with the same engine. It is noteworthy that, with a view to reducing energy consumption, the air conditioning system of the cabin is powered by an electric battery, thus disconnecting the use of air conditioning from the use of the engine.

The use of parallelogram articulation allows a working radius ranging from 4000 to 4600mm. The set-up exhibited at bauma included a mast with a 26.8m stroke and a 6m auger extension, equipped with a 4th line pull system that allows for the construction of CFA piles up to 32.5m deep, using 27m long augers. The maximum diameter of the augers is 1200mm. The

“The concept of the range started from the idea of a common development”



CHF 900 offers an extraction force of 1120kN. An additional 150kN of crowd force on the auger can be provided through an additional pull-down winch on the rotary, available as an option.

Particular attention was paid to the development of the rotary head. This too is the result of a dedicated project for CFA drilling and is capable of delivering hydraulic power of 310kW, reaching 256kNm of actual torque (280kNm nominal torque) and a speed of 40rpm. The rotary can be operated in “constant power” mode, which automatically adjusts the rpm and torque according to operating conditions. It can also be equipped with an optional 150kN pull-down winch. The CFA configuration is completed by numerous accessories such as the auger guide and the auger cleaner (roller, brush or star-type).

A UNIQUE MACHINE

All this makes the CHF 900 a unique machine on the market. To achieve comparable performance, Comacchio’s competitors offer larger machines, weighing about 110t.

Like all the rigs of the CH/CHF series, the CHF 900 is equipped with the HPE (High Power Efficiency) system which introduces an innovative approach to the management of the hydraulic

power delivered by the pumps, overcoming the concept of load sensing technology. The idea of this system is based on electronic pump control, which significantly reduces power dissipation that occurs on a “conventional” hydraulic system. As a result, fuel consumption is significantly reduced with more power available. The saving in litres of fuel per hour of work at full power is about 6.5l (equal to 7%).

Greater cooling efficiency and noise reduction are provided by the new cooling system concept. The engine cooling system, as well as the oil cooling, have been optimised by Comacchio to control heat dissipation, based on the actual operating needs of the machine. The speed of the cooling fan is adjusted through an electronically controlled system. This type of approach significantly limits the use of the fan, which comes into operation at full capacity only when the operating conditions require it, thus generating lower emissions, lower consumption and lower noise levels.

ERGONOMIC DESIGN

The cab project has also been updated by Comacchio. The new cab stands out for its ergonomic design and safety features,

offering a high level of comfort for the operator. The workspace is adjustable and uses capacitive levers and manipulators as well as a large 12in colour touchscreen display connected to the CCS system. The CCS system that equips the drilling rig can be integrated with a data logger for CFA parameters. The cabin meets the most stringent safety requirements, having obtained the TOPS and FOPS-1 certification. The rig is also equipped with a set of cameras, radio/CD player with Bluetooth system and a mobile phone charger.

The safety features of the CHF 900 comply with the strictest European regulations: the set-up includes a radio control kit for tracking, side walkways with handrails, rubber protections on the auger guide and load cells for the main and aux winches. ♥

“Fuel consumption is significantly reduced with more power available”

The CHF 900 Comacchio displayed at bauma 2022 featured a Stage V engine from Volvo with 345kW of power

