ITALIAN MACHINE TOOLS, ROBOTICS & AUTOMATION INDUSTRY ~ NEWS

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AMAPLAST
ITALIAN PLASTICS AND RUBBER PROCESSING MACHINERY AND MOULDS MANUFACTURERS' ASSOCIATION

UCIMU
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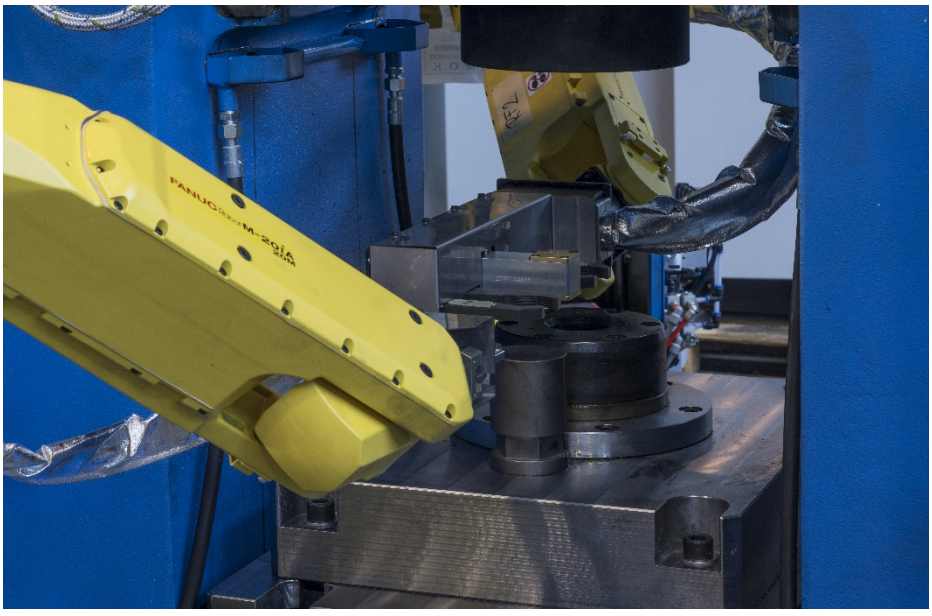
FICEP

DD: THE DIRECT DRIVE PRESS TECHNOLOGY BY FICEP FOR PERFORMANCE AND CONTROL IN THE PRODUCTION CYCLE

Ficep positions itself as a comprehensive partner for the international forging and stamping industry, thanks to its complete technological offering, configurable from bar cutting to hot stamping presses. In the aerospace industry - including engine components, structural parts, landing gears, turbine components, and other uses - the extensive use of special steels or titanium alloys, which are distinguished by their high strength, requires technologies capable of delivering significant stamping forces. The Direct Drive presses from Ficep, characterized by high structural rigidity, are particularly effective for forging in these types of applications.

The Direct Drive screw press range from Ficep, featuring direct electric transmission, has been developed in line with the increasing use of special alloys - such as titanium and other special steels like duplex and superduplex - in high-tech applications such as aerospace. However, this is not the only sector; the automotive industry, agricultural and earth-moving machinery, petrochemical, and medical sectors also make extensive use of these types of alloys.



The Direct Drive presses from Ficep allow for precise control of speed, energy, and generated force. By integrating 6-axes and 4-axes robots from the RF and RP series, respectively, direct control over critical factors such as temperature and lubrication is achieved. The high performance delivered by these presses, combined with total control over the production cycle, makes Ficep offering particularly valued in sectors with stringent production parameters.

The Direct Drive technology of Ficep screw presses is designed and built to significantly reduce the potential variability of the finished product and simplify maintenance operations. In the past, the leather clutch of traditional presses, subject to wear and environmental factors, could not ensure perfect production repeatability; the high number of components also complicated routine maintenance activities. Ficep has worked on simplifying the system architecture, constructing it with fewer components and eliminating all components related to mechanical motion transmission.

With the Direct Drive system, which replaces mechanical transmission, production cycle variability is eliminated. The Brushless motor directly drives the screw: by controlling the motor with extreme precision and accuracy via software, both speed regulation and motor management as a driving and braking unit can be achieved. By combining the action of the permanent magnets in the Brushless motor and software-controlled voltage regulation, it is possible to control the screw's rotational speed, which also determines the hammer's descent speed and, consequently, the kinetic energy available to the hammer when it strikes the piece. This control is a key aspect in the forging process, as it is the amount of energy that the hammer transfers to the raw material that determines how much it will be deformed and consequently the level of precision of the finished part.

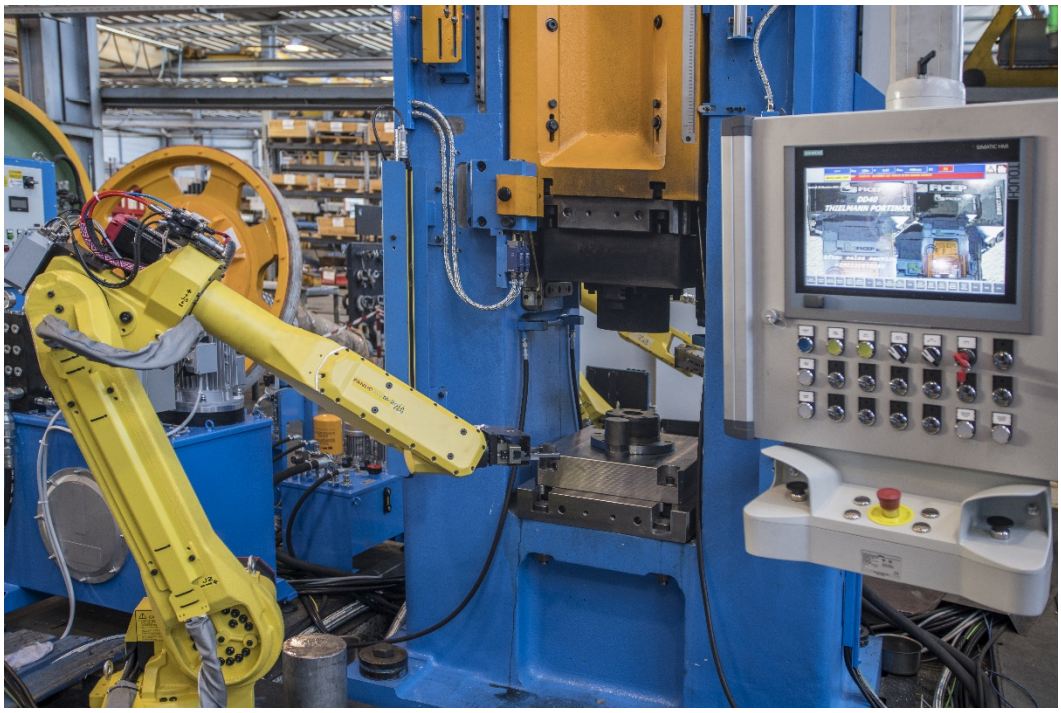
The Direct Drive system operates like a numerical control system: it is sufficient to set the desired hammer speed at the moment of impact, and the system automatically adjusts the descent speed to accelerate or decelerate until the point of impact with the molds.

Thanks to the electronics provided by Siemens and the elimination of the entire motion transmission part, which had a major influence on the process variability, Ficep is able to ensure an accuracy of 0.5 per cent on the energy value of the hammer at the end of the stroke.

This precise hammer speed control system makes these machines extremely versatile and valuable when processing special materials within strict temperature parameters. In this regard, the integration of Ficep robotic systems into the production cycle, which automate handling phases, allows for constant and controlled production. The 6-axes and 4-axes robots are designed for handling billets and stamped parts both hot and cold, and their contribution in terms of process automation minimizes forging cycle variability. By producing in this manner, costly scrap production is drastically reduced, which in turn lowers the unit sales price. Additionally, it simplifies the inspection phase, ensuring that each stamped piece is identical to the previous one.

Another very important aspect, especially in the current economic situation, is the **energy recovery system of the Direct Drive presses**: **KERS (Kinetic Energy Recovery System) significantly contributes to reduce the energy consumption of the machines, which have traditionally been considered very energy-intensive.**

Automation in Industry 4.0 optimizes processes, crucial in costly raw material sectors with strict quality standards like forging. In the forging process, automated systems ensure that the same amount of time is always spent bringing the hot billet from the furnace to the press, so the part will always be processed at the same temperature. Even die lubrication is nowadays performed by robots that spread a uniform layer over the entire die surface, thus ensuring optimal and always equal material flow in all areas of the die. This maintains quality, minimizes scrap, and enhances competitiveness by enabling flexible, efficient production aligned with real-time demands, reducing time to market.



FICEP COMPANY PROFILE

FICEP is the world's leading machine tool manufacturer for the fabrication of structural steel and forging industry, with an experience of over 9 decades. Our extensive and innovative product range and its aggressive penetration of the world market has been achieved by the creation of many subsidiaries all over the world.

Located next to the Alps in Varese, Italy, we have specialized production facilities. The main location in Gazzada Schianno, which includes over 100.000 sqm, also contains Headquarters, R&D, Academy of Technology, Showroom and the main after sales service departments.

Our mission is to satisfy the demand of machinery and systems for the high quality processing of metal profiles in the most profitable markets, promoting the FICEP brand and trademark globally. Our wide range of machinery fully satisfies the demanding requests and covers all needs in the structural steel, fabrication and forging industry.

Find out more on https://ficepgroup.com/en/

The project Piattaforma India has been promoted by UCIMU – Association of Italian Machine Tools Manufacturers and AMAPLAST – Italian Plastics and Rubber Processing Machinery and Moulds Manufacturers Association. The two associations agreed on the idea that promoting a network of associations and entrepreneurs who have developed knowledge and experience on the Indian market, can be useful in favoring of new paths of development for business. The Indian companies who are interested to form JV, cooperation, technical tie up, purchase machinery etc from/with Italian companies can contact below mentioned address for any assistance:

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