Hydraulic Press Specialist

gigant
THE BEST WAY TO PREDICT THE FUTURE IS TO INVENT IT

ALAN KAY
Gigant, founded in Bologna, quickly becomes a leader in the hydraulic press market.

1956

At the start of the new millennium Gigant’s headquarters are relocated in a new and larger factory in Calderara di Reno.

2000

Gigant collaborates with several Universities and major industries and participates to several European and National R&D funded projects for advanced and innovative metal sheet and composite process solutions.

2009

Gigant acquires Promotec Srl. The acquisition extends the operating market sectors to the plasma, laser and oxy sheet metal thermal cutting industry. Gigant Industries Group is born.

2014

Gigant acquires Promotec Srl. The acquisition extends the operating market sectors to the plasma, laser and oxy sheet metal thermal cutting industry. Gigant Industries Group is born.

5 CONTINENTS

+50 COUNTRIES

+3000 MACHINE INSTALLATIONS
Cookware is one of the industrial application sectors in which Gigant Hydraulic Presses become a main reference by offering, highly reliable, highly performing and high quality solutions. Gigant Hydraulic Presses are able to provide the optimal solution adapting the products performances to the continuous evolution of the raw materials and coatings used for the realization of baking components (aluminum, copper, stainless steel, etc.) even in presence of variable production requirements.
The appliances sector is in continuous evolution; final products are now requiring the use of new materials (mainly stainless steel and aluminum) and an increasingly innovative design.

Gigant presses are widely used all over the world, both by dies manufacturers and integrators, within different type of appliance production lines. Gigant presses guarantee, even to the most demanding final producers, that the metal sheet will keep its essential characteristics: quality, surface aesthetic beauty and strength.
Automotive and Aerospace are two key sectors for the world’s economy. Technological development that goes with the growth of these sectors involves all the production chain, including the molding segment. In the Automotive and Aerospace sectors, the forming operations evolved through time following the development of the raw materials, now employing high-resistance steel, steel associated with other mineral components and increasingly complex aluminum alloys. Even the dies, combined molds and special deformation instruments, are integrated within the sheet metal finishing processes, and the high resistance and low weight composite materials (carbon, SMC, thermo-plastic). In this situation, Gigant has determined a technological advantage for the end-users by offering a perfect symbiosis between molds and materials, thanks to the experience of over 60 years of production and installation of Hydraulic Presses in the Automotive and Aerospace sectors. Challenge is ever present, and Gigant has the background to face it.
### PROCESSES
- Deep Drawing
- Hydro Forming
- Hot Stamping
- Gas Forming

### MATERIALS
- High Resistance Steels
- Composites
- Aluminum Alloys
- Titanium
DEFORMATION PROCESSES

COLD FORMING
- CUTTING AND DRAWING
- DEEP DRAWING
- ELASTO FORMING
- HYDRO FORMING

HOT FORMING
- HOT FORGING
- HOT STAMPING
- HOT HYDRO FORMING
- HOT GAS FORMING
Cold deep drawing represents the main process of the Gigant hydraulic presses. The characteristic that the hydraulic control offers, consists in the possibility to fine tuning the speed and RAM power on every point of the press stroke and in a variety of cycling processes. For the deep drawing process, the blank-holder group is of particular importance: during the forming phase the metal sheet is accompanied softly, avoiding in this way any imperfection in the final product.

Being “hydraulic press specialist” means to be able to suggest the best solution to each customer. Thanks to the synergy and to a constant comparison with dies manufacturers of various sectors, Gigant has designed many options for the blank-holder operation:

MAXIMUM POWER ACCORDING TO THE FORMED MATERIAL
CHANGE OF THE PRESSURE BY STEPS OR IN CONTINUOUS
DIFFERENT PRESSURE AREAS
ACTIVE PRESSURE OF THE CUSHION

Gigant distinguishes itself also for the layout of its presses, that changes according to the application process and to the final product; last but not least adaptations are also a consequence of the employed material.
Dies manufacturers, for the sheet metal, use in every sector the hydraulic press for coupling testing and to improve the mathematics of the mold. The hydraulic presses developed for this sector ensure:

**STRENGTH AND RIGIDITY OF THE STRUCTURE**
**PARALLELISM OF THE PLANES**
**REPETITIVITY OF THE PROCESS**
**FINE REGULATION OF SPEED AND PRESSURE**

For dies manufacturers control and flexibility are very important, and Gigant knows that. Despite the technological improvements, in many instances the job still has an “artisan” portion. Also in this application being “hydraulic press specialist” means to provide an added value for the customer and the user, for example:

**PROGRESSIVE LOW CYCLE:** the operator splits working stroke and pressure into steps. At the achievement of every pre-set level, the press is found at safe mode to allows the operator to check every single phase of the process.

**ERGONOMICS:** work quality is getting more and more important for companies. The operator that is not hampered by the machine and other technological components, works in safety conditions and following the production with more care. In fact Gigant hydraulic presses of large dimensions are equipped with a moving bolster with variable height according to the requirements. Inside the press basement a fixed table is added hence offering extra rigidity. This configuration is one of the most appreciated by the operators.
DEFORMATION PROCESSES
HYDRO FORMING

Hydro forming process, thanks to the hydrodynamics action of the fluid (water plus additive) that is injected at very high pressure (until 4500 bar/65,000 psi), determines the deformation of the metal sheet that takes the shape desired of the inside wall of the die. In pipe deformation it offers big advantages concerning reduction of cycle time and associated costs, allowing fewer phases and integrating the cutting and hole-making activity required during the hydro forming production. Hydro formed components could be made in various types of stainless steel, carbon steel, aluminum, copper, magnesium and others.

HIGH PRESSURE HYDRAULIC CIRCUIT
THICKNESS AND RADIUS OF CURVATURE CONTROL
MAKING HOLES ON PIPE AND ELIMINATE WELDING PHASE

Gigant has patented a specific hydraulic circuit for its hydraulic presses that decreases cycle time and energy consumption. Within the hydro forming process, the press is completely integrated to the mold unit and to the high pressure and high tonnage producing system (approx. 10,000 tons max closing force). Gigant helps the customers when they move from traditional deformation to hydro forming, offering the development of a pressure model for the required deformation, tests profiles, technical and economic analysis until the final stages of installation.
DEFORMATION PROCESSES
HOT STAMPING

Hot stamping process is a central application in the Automotive industry.

HEATING PARTS TO REACH A PLASTIC CONDITION
STAMPING AT VERY HIGH SPEED
FAST COOLING INTO DEDICATED MOLDS

In this process, the material quenching is obtained hence increasing its structural stiffness and resistance characteristics. The technology allows to make in just one relatively light component what, in traditional drawing, would be heavier, less resistant and welded. Steels for hot stamping represent the required technology in the Automotive sector, to allow achieving better results in the qualification tests for the passenger’s safety, consumptions reduction and the aerodynamics.
In the hot forging sector, the requirements needed are function of the specific product and sector of application, mainly Automotive and Aerospace. The process is developed with materials at high temperatures (up to 1150 °C for mild steel and between 360° and 520 °C for aluminum alloys). High temperatures are necessary to avoid the hardening of the metal during the deformation phase. This process is always preliminary to further (polishing, coating, painting) that will define the final product.

Gigant has developed presses with multiple upper molds that allows the progressive forging, without any additional needs of pre-warming of the part, with an important saving of costs and time.
GTP

C-Frame hydraulic presses type, models GTP from 700 to 2,500 kN for mid-drawing and deep drawing operations in the cookware application, uses metal sheet (for variable production type) and stainless steel, with processes of reverse-drawing, folding, surface deformation like “Embossing” for composite material stamping. The press structure, open on the front side, allows the integration between automations and dies, creating high flexible lines not always allowable with other types of press structures. Moreover, when comparing different press manufacturer on the same table dimensions, Gigant GTP model is more compact frontally and with reduced lateral overall dimensions.

G4M

4-Uprights hydraulic press type model G4M is developed in a monolithic structure with lateral openings. Sector and application areas are the same as for the “C-Frame” Hydraulic Presses. This model is suited for applications where the working tables are required with similar sizes of width and depth (i.e. 1,200x1,000mm) and important side opening dimensions. The moving table has prismatic guides on 16 surfaces ensuring the best parallelism conditions, with advantages both for the final product quality and for the reduced wear of the dies. Further advantage is also found in the reduced floor space occupied when comparing equal tables and tonnage forces.

<table>
<thead>
<tr>
<th>GTP series</th>
<th>G4M series</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORCE OF THE MOVING TABLE (RAM)</td>
<td>UP TO A 2,500 kN</td>
</tr>
<tr>
<td>RAM STROKE</td>
<td>UP TO 800 mm</td>
</tr>
<tr>
<td>VERTICAL DISTANCE BETWEEN THE WORKING AND THE MOVING TABLE</td>
<td>UP TO 1,000 mm</td>
</tr>
<tr>
<td>FORCE OF THE BLANK-HOLDER</td>
<td>UP TO 1,250 kN</td>
</tr>
<tr>
<td>BLANK-HOLDER STROKE</td>
<td>UP TO 300 mm</td>
</tr>
<tr>
<td>TABLES DIMENSIONS</td>
<td>UP TO 1,200 x 1,000 mm</td>
</tr>
<tr>
<td>INSTALLED POWER</td>
<td>UP TO 55 kW</td>
</tr>
</tbody>
</table>
**G4**

**COLUMN HYDRAULIC PRESSES**

Hydraulic column presses model G4 are available starting from 1.000 to 30.000kN for stamping operations, shearing, embossing, folding, hot forging to take advantages of the column wide configuration and for the production by thermic deformation or composites materials. Within equal size and power, an hydraulic column type press has reduced dimensions when compared to an uprights type press.

---

**G2**

**2-UPRIGHTS HYDRAULIC PRESS**

Uprights hydraulic presses model G2 are available starting from 600 to 30.000 kN. According to the power and the dimension, the press structure could be monolithic or composite with hydraulic pre-compressed tie-rods. G2 model can cover every sector and application processes, both traditional and innovative, associated to hydraulic presses today, with specific reference to the use of multiple molds, elasto-forming, production of stainless steel parts for cookware and household appliances, thermostetting, SMC and Carbon parts for Automotive, and for the Aerospace production of parts made in aluminum and other light-weight alloys.

<table>
<thead>
<tr>
<th>FORCE OF THE MOVING TABLE (RAM)</th>
<th>UP TO 30.000 kN</th>
<th>UP TO 30.000 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM STROKE</td>
<td>UP TO 1.500 mm</td>
<td>UP TO 1.500 mm</td>
</tr>
<tr>
<td>VERTICAL DISTANCE BETWEEN THE WORKING AND THE MOVING TABLE</td>
<td>UP TO 2.500 mm</td>
<td>UP TO 2.500 mm</td>
</tr>
<tr>
<td>FORCE OF THE BLANK-HOLDER</td>
<td>UP TO 15.000 kN</td>
<td>UP TO 15.000 kN</td>
</tr>
<tr>
<td>BLANK-HOLDER STROKE</td>
<td>UP TO 600 mm</td>
<td>UP TO 600 mm</td>
</tr>
<tr>
<td>TABLES DIMENSIONS</td>
<td>UP TO 6.000 x 2.500 mm</td>
<td>UP TO 6.000 x 2.500 mm</td>
</tr>
<tr>
<td>INSTALLED POWER</td>
<td>UP TO 400 kW</td>
<td>UP TO 400 kW</td>
</tr>
</tbody>
</table>
LOADING AND UNLOADING ROBOTS

Gigant can provide as a complete and integrated system robot units that can load and unload the mold with the pieces to be stamped. In some cases (for example in completely automated islands), robot bodies could be installed on the press’ structure.

METAL SHEET FEEDING SYSTEMS

Gigant integrates decoiler system, straightener units and lubrication system for the metal sheet coils. Cooperative work between customer and dies manufacturers allows to define a tailored process solution that can optimize the investment, minimizing the scraps and ensuring high productivity. Alternative sheet metal feeding systems can be employed when square metal sheets parts are required.

AUTOMATION LINES

Integrated Hydraulic Press with automaton systems allow to move the parts from one press to another in the production line, or from one mold station to the next one, when in a press there are more than one die. The automation level to be provided is function of the specific production cycle and Gigant 60 years of technological experience, ensures that each customer will receive an optimized solution.
Gigant presses could change in dimensions according to the table sizes, the distance between the tables, the cylinder’s stroke or to the force, depending on the specific technical requests.

For equal power and dimensions two presses could have different functionalities and areas of application: The target of the "job-shop customer" is having a flexible press; companies with dedicated productions have as target the optimization of a specific process. Software and electrical and hydraulic circuits are designed according to the process, the productivity and the level of integration required with the other company’s machines. The comparison between the customer and the dies manufacturers determines the cycling of the process: cycle time, number and type of pressure points, communication with the line and the mold.

The project focuses on the ability to understand how the company works and make this work efficient, safe and ergonomic for the operators to increase work quality and productivity. Gigant offers a wide range of accessories such as: quick mold change with internal and external rollers, hydraulic clamps for a pressure safe fixing of springs or azote-cylinders molds, integrated cutting system, inverter operation with Start Stop function, frontal or lateral moving bolster until 6 meters of width.
Alcuni esempi di accessori disponibili sulle nostre presse:

- CAMBIO STAMPI
- RULLIERE E BLOCCAGGI
- PROTEZIONI SCORREVOLI, APRIBILI O PNEUMATICHE
- CONTROLLO PARALLELISMO
- TRANCIATORI
- MOVING BOLSTER
- CONTROLLO DOPPIO PEZZO
- AMMORTIZZATORI
Other energy saving configurations are:

- AUTO-OFF MODE WHEN IT IS NOT OPERATIONAL
- HIGH EFFICIENCY ENGINES
- START STOP FUNCTION WITH INVERTER

Gigant, R&D of innovative solutions offers a real energy saving factor by an Hydraulic-Electrical-Software mix.
Under tons of Steel and Power there is a Technology heartbeat. The ultimate version of PLC and I/O. All controlled by our software, developed in a specific way, to help the operator to work simply and immediately.
Training for the users
On-time diagnostic
Tele-assistance
Service centers
Easy access to the maintenance areas
Preventive maintenance programs
Direct service
Main spare parts available on the world market