

Recycling of metals, treatment of municipal and industrial solid waste, and demolition of nuclear plants

Copex (Lanester, France) has developed a hydraulic shear-press of huge proportions which required a considerable re-dimensioning of the most recent Copex innovations.

Productivity gains, energy savings, flexibility, minimization of downtimes, security in operation, user-friendly maintenance, reduced running costs, Copex, designer and manufacturer of shear-presses for the recycling of metals, the treatment of municipal and industrial solid waste and the demolition of nuclear plants, present the CVB 1750 tons.

A steel monster, made to measure for the French metal recycling company „Hourquet & Fils“, specialized in the demolition of industrial sites, among which petrochemical installations. The CVB 1750 tons totalized around 3500 design hours for adapting the Copex latest technologies to those huge dimensions. The machine, like the iron glove in the iron hand is capable of swallowing, compressing and shearing various tons of scrap in record time, and concentrates many technologies, for the first time re-dimensioned to fit such a big scale.

In Lanester, on Tuesday 8th of December 2009, the Copex 15 000 m² facilities are buzzing like in a hive. However, on this very precise morning, the atmosphere is a little different from usual. The Copex staff is waiting for Mr Alain Hourquet, from Hourquet & Fils, who comes to check his 1750 tons shear-press before it will be disassembled for being transported to his yard.

Totalizing design, build and assembly of the machine, it took nearly one year to give birth to the giant machine. While the customer is inspecting each strategic part of the steel monster, the tension is palpable.

A big IPN steel beam of 70 cm height gets loaded into the box. Everybody holds his breath. The machine starts moving and makes very short work of the material with an exceptional accuracy. The challenge has been achieved, and everything works as expected. «To anticipate the economic recovery, we chose to prioritize activity against profitability, and decided to consider the economic slowdown as an opportunity to develop this exceptional machine, says Frédéric MALIN, Chairman of Copex. The CVB 1750 tons is a real achievement and an additional proof for our know-how».

A project with huge proportions

30 meter long, 9 meter high, 8 meter wide, 460 tons, 8 motors of 90 kW each, a compression box of more than 60 m³, 1750 tons cutting force, this giant shear-press represented a real technical and technological challenge. « This new machine is not the biggest one we have manufactured, emphasizes Emmanuel Audra director of engineering and R&D department at Copex. However it probably is the most powerful machine in the world which concentrates so much productivity and so many new technologies». The side compression force is of 3x250 tons, the lid force amounts to



3x200 tons and finally, the force of the longitudinal pusher has 200 tons. That's quite a feat if we consider the design, build and also transport which is going to require not less than 6 heavy convoys, and 7 to 8 semitrailers to go to the final destination yard in South-Western France.



Productivity gains thanks to new hydraulics

In this project, the technical department had to take up many challenges. The necessary adaptation of the new generation hydraulics developed by Copex, to such a big scale certainly was the major one. But it was out of the question to do without it. Totalizing a power of 720 kW, the new hydraulics allows increasing cutting speed by more than 20 % for equivalent installed power. Such a force allows, at high working speeds, to make simultaneous movements (2 separate pressure lines). The operation efficiency is therefore considerably increased. While the machine is compacting and shearing the scrap, the operator can control all operations and organs of the machine from his driving station, which is equipped with a digital screen, an ergonomic seat and air conditioning.



Optimization of energy consumptions

In order to reduce the heat losses and offer the new functions, the hydraulic blocks have been totally re-dimensioned. Additionally to that, Copex equipped this huge shear-press with analogical sensors and laser type measurement sensors which transmit very accurate information on accelerations, pressures and positions of each movement. The collected data allow decompressing high pressures in real time and in a very smooth way, controlling the position of the cylinders with very high accuracy and reliability, as well as checking in continuous the pressure of each point of the circuit. Among the advantages provided by all those automatisms, the whole available force can be optimized during the shear cutting process, and at the same time the movement of the slide-block can be controlled perfectly and instantaneously when treated products break. The pumps are equipped with an original regulation system which reduces noise, energy consumption and fluid overheating. « This new design makes that this shear-press is highly efficient and uses

a hydraulic potential which remained unexploited before», precises Emmanuel Audra.

A customer service 24 hours a day and worldwide

The high technicity level of the machine justified the use of sophisticated telemaintenance elements. For example, it is now possible to shut off the function of a motor and the pumps for service, without having to stop production. Speaking about blades, they can be replaced more easily than ever, thanks to a clever hydraulic locking system and an accessible footbridge. Moreover, through the system of telemaintenance developed by Copex, it is possible to get connected to the machine instantaneously and obtain all technical data and information necessary, being aware that the PLC keeps records on all events. A team of 15 itinerant technicians and an important stock of spare parts are completing the global customer service.

COPEX «technicity, security, reliability»

Since the very beginning, when COPEX was founded in 1948, the company specialized in the construction of hydraulic shear-presses and extended to new applications such as in the nuclear industry from 1988, and the municipal solid waste treatment (balers type POM) from 1990. In 1996, COPEX has built one CVB2200 t which is until now the biggest machine in operation in France. Totalizing more than 750 machines in operation all over the world, Copex is the specialist for shear-presses and balers for the recycling of scraps, as well as the compacting of municipal, industrial and nuclear solid waste. Designer and constructor of machines, COPEX more recently concentrated his efforts on R & D. Through this strategic option, the company considerably increased the performances of his products and reduces the energetic consumptions. Moreover, the automatization of COPEX machines has been developed with the objectives to privilege user-friendliness without making any compromises with regard to the robustness and reliability of the machines. Present

in 45 countries including Russia, China, Australia, Kazakhstan, Spain, Austria, Finland... Copex makes nearly 80 % of his sales with Export countries.

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