

You should not forget our post-sales technical department which will provide you, within a record period of time, with any type of supply, maintenance service or inform you how to manage an unexpected situation which may take place due to the passing of time while our equipment is in operation. In this way, a complete service is guaranteed to our customers from the moment of the first initial contact for the further manufacturing and up to the constant service offered during the useful life of the equipment. In our workshops we also produce any kind of vessels and fittings to implement the process installation,

such as product containers, special grating, coils, internal supports, hydraulic platforms... this allowing to produce turn-key plants including total supply of machinery, its automation, fittings and final start-up.

Also bear in mind our after-sales technical staff that will assist you in a record time with any supply, maintenance or unforeseen event that could occur as the different pieces of equipment keep on running, thus certifying a full attention to our clientes from the first contact for a future production to the constant service for the life of the plant.

Facing this deep transformation and applying its more than sixty years of experience within the sector of pressure vessels, INDUSTRIAL OLMAR, S.A. has been able to manufacture industrial autoclaves which include the most technological developments, turning them to be the most modern and technologically-advanced equipment at present.

GRUPO OLMAR

OLMAR
GRUPOOLMAR

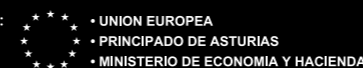
COSERMO
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OLPRIM
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PROYECTO COFINANCIADO POR:

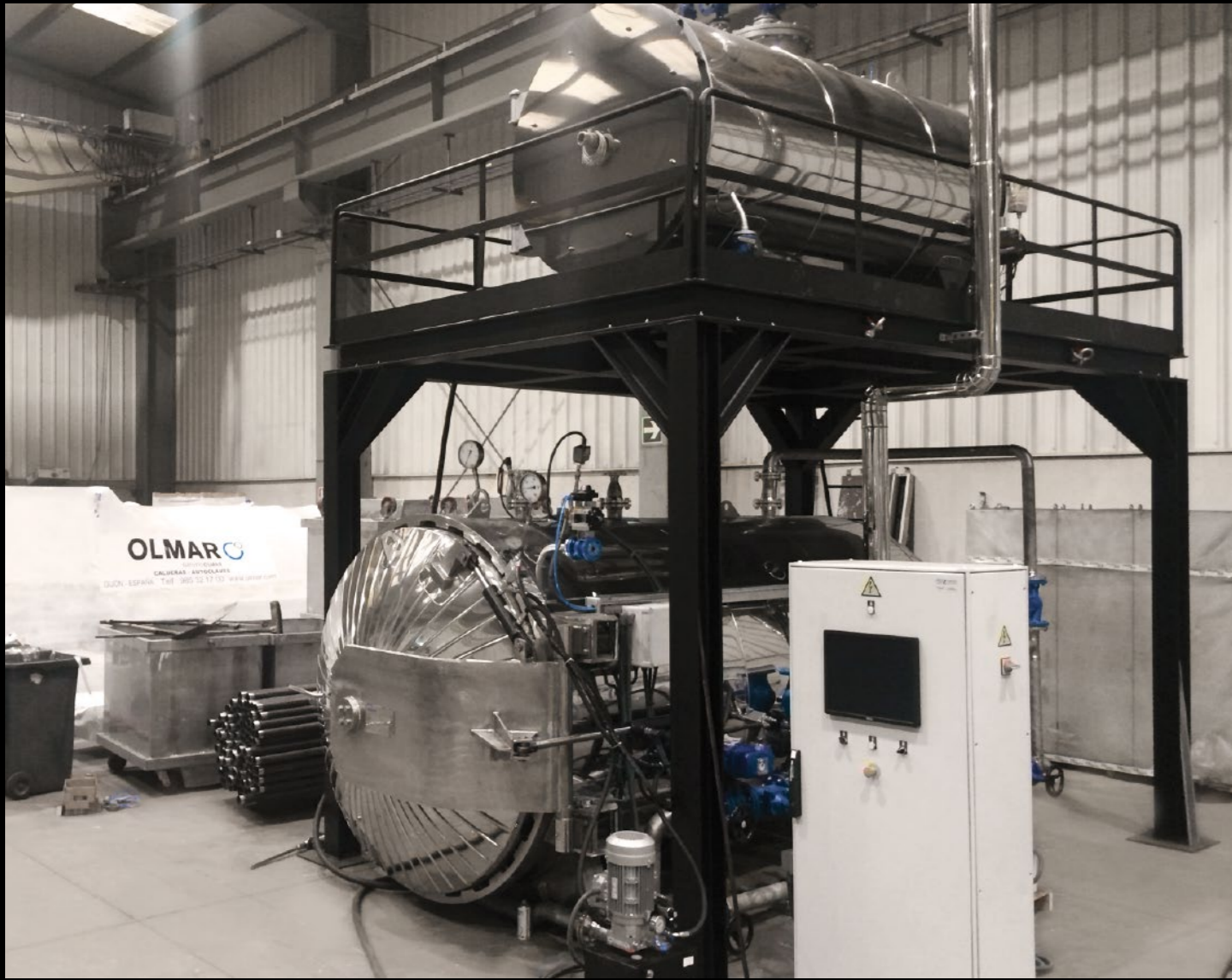


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Autoclaves

VULCANIZATION





Materials such as rubber, its combination with special polymers and plastics, or the combination with metals -as it happens with rollers- have made a complete change in building equipment and their fundamental pieces. Their treatment and the interaction among themselves have given rise to the need to use equipment with a technological level which was impossible to be imagined some years ago.

The case of the automotive industry in which the hoses are made, the manufacturing of the big pieces made of rubber used to protect harbours, ports and airports, the world related with tires and retreading, the rollers which, in some cases, have a small size and are used

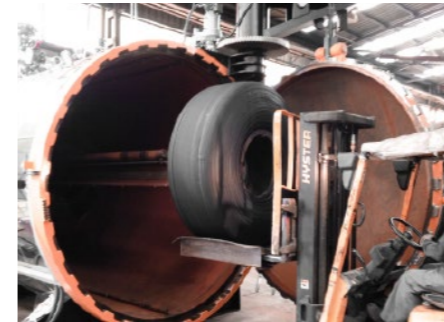
in graphic arts and, on other occasions, have a great size and they are used in mines and also in great iron and steel industries, and even the making of small-size pieces that are going to be used daily in the transformation of plastics and rubbers, are all of them clear examples of the technology which actually is being used day by day in our lives.

These autoclaves may be made of any type of steel, including stain-less steel, and based on International Codes in accordance with and obtaining the EC Certificate, based on the 97/37/EC Directive which refers to pressure vessels, and duly certified by institutions recognised by the European Union.

Our equipment is tailor-made, according to our customers' needs, with diameters of up to 5 metres, a length of up to tens of metres and pressures of up to 30 Kg/cm2. About this matter, INDUSTRIAL OLMAR, S.A. informs our customers that all the members of our technical team are at their disposal in order to study the types of autoclave, auxiliary equipment, complete plants and any other technical solution for the development of all types of processes.

VULCANIZATION

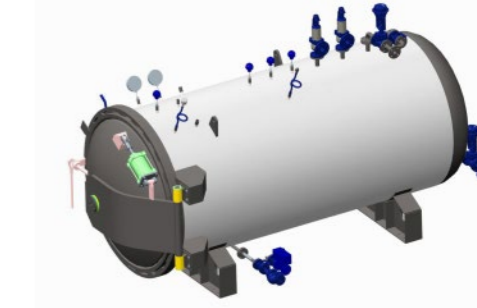
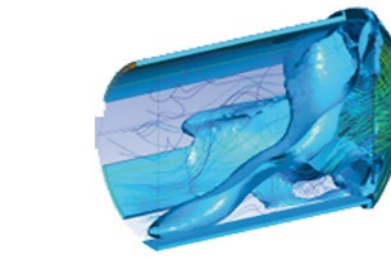
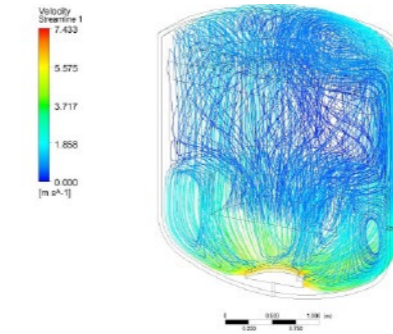
The most advanced technology in **Autoclaves** | **Ovens** | **Control systems.**



The above mentioned vulcanization, depending on each case and on each type of industry is achieved, in some cases, by means of direct steam and in other cases, by using hot air, though in OLMAR we have already manufactured autoclaves which may work with both systems.

- In the first case, the steam coming from a boiler (generally manufactured by OLMAR), is directly introduced into the autoclave, thus achieving a direct vulcanization within a steam environment...

- In the second case, vulcanization is obtained by air, which is heated inside the equipment with electrical resistances or with steam and/or thermal oil through an exchanger. In this case, a powerful electric fan moves the inside air creating forced circulation to obtain temperature values inside the equipment with minimum variations between some points and others. Cooling process is achieved making cold water circulate through an exchanger which, already designed for this purpose, permitting forced circulation of the air between its plates, the reduction of the temperature inside the equipment up to the desired values.



CFX (Fluid dynamics analysis)
CFD (Control dynamic fluids)
[m s⁻¹]



It is very important to point out that our equipment may be equipped - if requested by the customer- with independent conduits in order to be able to carry out vacuum operations, by means of an vacuum pump, in independent envelopes which contain the product and that will be introduced into the autoclave. In this way, vacuum conditions are achieved inside each envelope.

In both cases, pressure might also be controlled using independent inlet and outlet valves of compressed air.

The whole process mentioned above with different variations or repetition of cycles, depending on the type of industry involved and the process to be developed will be carried out in a completely automatic way. A microprocessor will be received the information that is going to be provided with by the data collectors during the cycle and immediately, orders will be sent to the corresponding valves and actuators in order to regulate the process based on the set points which have been previously programmed. Sensors of the product may be included which will give us the possibility to know, in real time during

the process, the values corresponding to pressure and/or temperature of the product which is being treated. As it may be thought, if during the process any anomaly takes place, equipment will immediately inform about the possible failure in the system or in the supply of fluids by means of the corresponding alarms in order the immediate action to solve the problem that begins to take place.

