

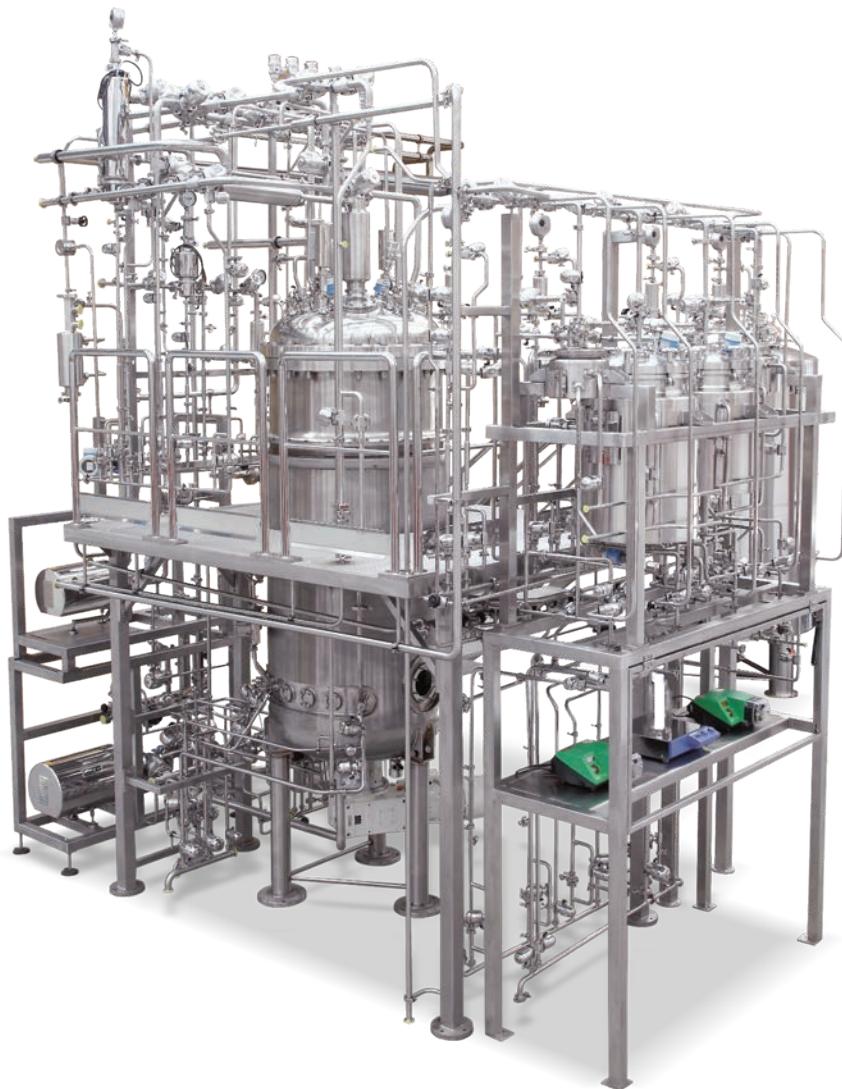


VACCINES

TRICKY BIOTECHNOLOGICAL COMPOUNDING

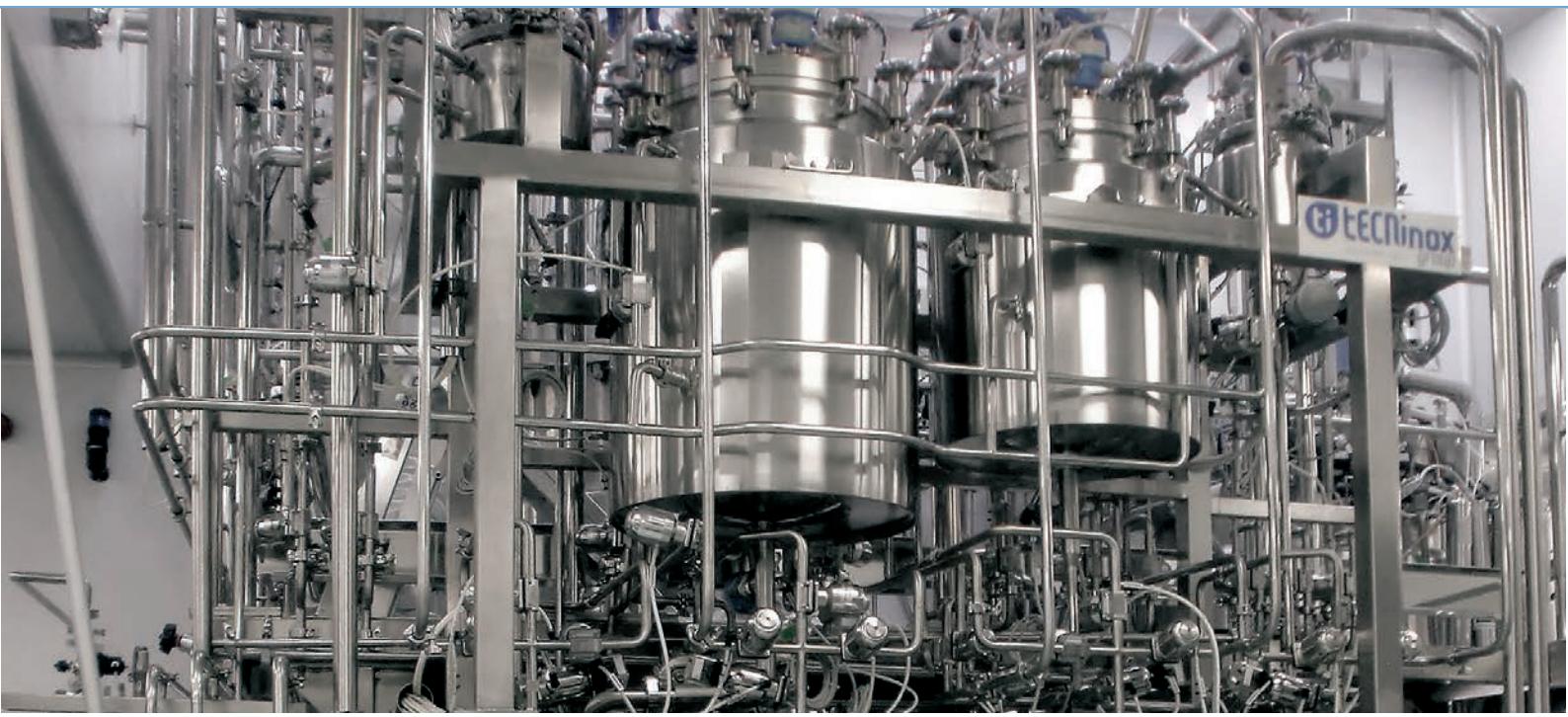


BIOREACTOR: THE START



The fermenter or bioreactor is a pivotal element in industrial production of vaccines.

It is indeed a tank which becomes the ideal environment to support the growth of microorganisms. Cells are able to optimally play their function only under suitable environmental conditions, so it's essential to constantly monitor parameters such as temperature, pH, gases (oxygen, nitrogen or carbon dioxide), by using sensors and a finely designed automation system. Likewise, sterility of the whole process is indispensable.



HIGH STANDARD AND AUTOMATION

The TECNinox Group is leading vendor in design, manufacturing, commissioning of Vaccine Plants, built according to ASME BPE, GEP, cGMP, FDA standards, and complete of automated systems able to control each step of the process.



PROCESS AND INDUSTRIALIZATION

From upstream to downstream, a step in the scale-up process

Fermenters are employed in the Upstream process, that's to say the process to obtain the product used in mass production. During Upstream, the culture starts in laboratory with small volume tank, gradually increasing volume of bioreactor itself.

How to choose the right fermenter depends on type, quantity or characteristics of what is to be produced. The fermenter has to be easily sterilizable, with aeration and agitation systems, valves to allow control by sensors.

At the end of fermentation, the process of product recovery, namely Downstream, is carried out: most often the microbial biomass is isolated from the spent culture medium by centrifugation or filtration.

Within the vaccine production cycle, the fermenter is between laboratory cell culture and industrial production, in an intermediate step in the scale-up process.



COMPLETE SYSTEMS

The Company also supplies the whole vaccine plant that will produce the final product, without overlooking the design of C.I.P. and S.I.P. modules ensuring maximum cleanliness and sterility level at any stage.



**WE LISTEN, WE DESIGN,
WE CREATE WITH PASSION.**

IT IS THE MIND THAT SHAPES THE STEEL

Solutions for the
pharmaceutical and
biotechnological industries



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