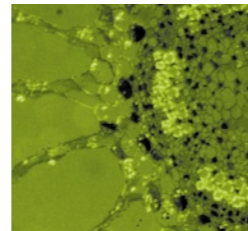


## Fermentation / media supply

Complete solutions  
for process plant

*GEA Diessel specializes in planning, construction and qualification of sterile process plant for liquids in pharmaceutical and biotechnology industry. Our process systems are operational within the area of parenterals, fermentation, feed media, blood plasma and special liquids as well as clean utilities.*

*GEA Diessel has 80 years of expertise and know-how in plant and equipment technology and holds a decisive position in development of modern process technology today.*



# Fermentation / media supply

Complete solutions for  
process plant



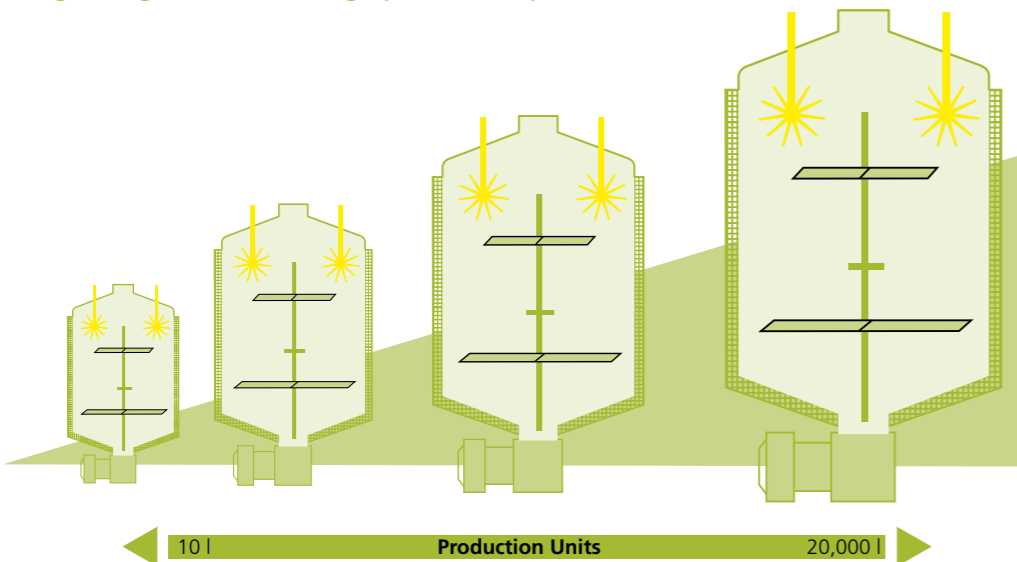
## Fermenters for every application

The pharmaceutical fermentation process makes the very highest demands on the quality of all the materials and vessels that are employed. In addition to providing for long-term sterility, it is necessary to ensure that all the many standards, statutory provisions and regulatory requirements are complied with.

As a result, pharmaceutical manufacturers demand the highest standards with regard to their fermentation systems. Every function, every component and every detail has to comply 100 per cent with the quality standards. The use of a high-performance and reliable fermentation system will in itself ensure that many of these conditions that are essential to safe and high-quality production are fulfilled.

GEA Diessel has been developing and building fermentation systems for the cultivation of micro-organisms and human or animal cells for over 20 years. Whether for individual fermenters or multi-stage fermentation systems, manufacturers again and again put their trust in GEA Diessel's efficient, customised plant.

### Single-stage and multi-stage production plant



### In addition to fermentation systems, GEA Diessel also supplies apparatus and modules for:

- the production and storage of media
- product harvesting
- the storage and distribution of highly purified media/clean steam
- formulation of API's

GEA Diessel is your competent partner for the manufacture of fermentation systems and complete plant for the pharmaceutical industry. We offer you full service for every requirement and to meet every specification. Our experienced process engineers will collaborate with you to develop innovative and efficient process technologies for your own very individual fermentation applications.

### GEA Diessel offers you:

- consultancy
- engineering
- automation
- manufacture of fermenters and process vessels
- skids/units
- installation
- qualification
- assistance with validation
- after-sales service



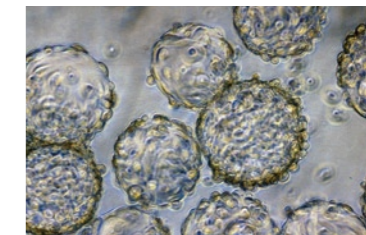
Production fermenter



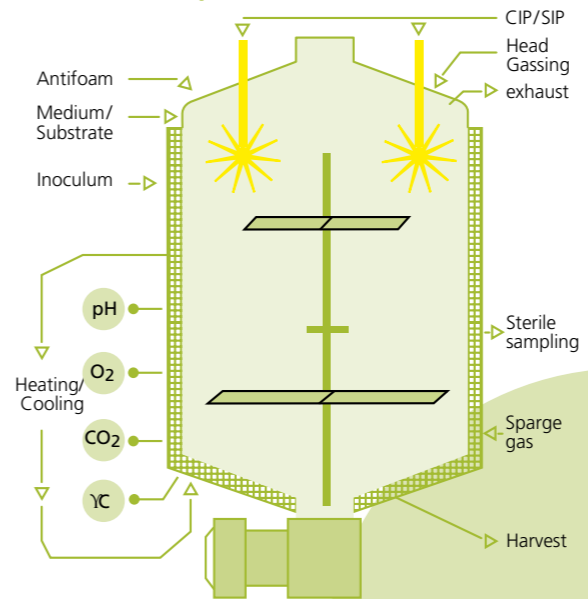
Fermentation plant (Fermentation skid)

### GEA Diessel gives you the best possible start

Whatever it is you want to use your fermentation plant for – to manufacture recombinant genetic products for therapeutic purposes (TPA, interferon, insulin, h-Factor VII) or growth hormones and enzymes, or for diagnostic purposes (monoclonal antibodies) – our great diversity of concepts will provide for any task to be performed and take account of any requirements or conditions. We use state-of-the-art components and valve technologies to produce high-performance fermenters and skids. Talk to us. Together, we will find the most appropriate solution to cover every aspect of your requirements. We will be pleased to advise you.



### Fermentation process



### Fermenters from GEA Diessel provide you

- long-term sterility during medium or nutrient change, aseptic sampling, aeration, venting or transfer
- highly accurate temperature control
- stirrers adapted to provide optimum oxygen transfer rates and cell densities
- a design free of dead-leg areas

### Everything automated

GEA Diessel provides for all important parameters to be monitored by a high-performance control system, with all processes being visualised. The control system features the automatic regulation of all parameters and the recording and documentation of all data, steps and parameters that are important to the process.

### CIP / SIP

An essential part of high-quality fermentation processes is an integrated CIP/SIP system. GEA Diessel provides efficient cleaning and sterilisation concepts adapted to the actual demands of the consumers and for a timely supply of the correct cleaning media to the points-of-use. From mobile and independent cleaning systems up to diverse CIP satellites fed with conditioned cleaning solutions – the range of customized solutions for your process plant is large.



Valve ring

