



Fermentation units

# GD-Ferm™

for microbial and cell fermentation

10 L – 20,000 L



- sterile design, free of dead-leg areas
- integrated CIP/SIP
- high-performance control system with visualisation
- high-quality individual components
- qualified and validatable
- customized solutions

#### GEA Diessel – convincing performance

GEA Diessel is the specialist in process plant for liquid pharmaceutical products. The name Diessel is well known for progress and expertise in plant and equipment technology all over the world. Our fermentation systems for the cultivation of microorganisms and human or animal cells provide manufacturers of pharmaceutical products maximum performance and economy for over 20 years now.



## GD-Ferm™

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### Technical data:

- Unit sizes (working volume in litres):  
10, 20, 30, 50, 100, 300, 500, 1,000, 1,500 litres
- bigger units acc. to customer
- H/D 3:1, 2:1
- Material of product contact surfaces:  
SS 316 L/1.4435/1.4404
- Internal surface  
Ra ≤ 0,5 µm (≤ 20 µinch) electropolished
- Pressure -1/+3 bar



Detail of container lid



Sample point

### Design

- design in conformity with ASME BPE, reactors in conformity with ASME/PED
- modular structure
- skid-mounted, open frame
- orbital welded pipework
- ports for all media and sensors required in the process
- ports installed flush with the base
- double jacket
- bottom-mounted Rushton turbine agitator with sterile seal flush, optional with magnetic drive
- baffles, removable
- sampling system

### Automation

The process is controlled and regulated by a programmable logic control (PLC); all the required values are recorded, e.g.:

- stirring with adjustable speed
- aeration by spargers
- headspace pressure blanketing
- temperature control
- pressure regulation of exhaust air
- filling with nutrient medium
- inoculation
- product harvest
- sterilisation of the nutrient medium by means of temperature control
- empty sterilisation with high purity steam

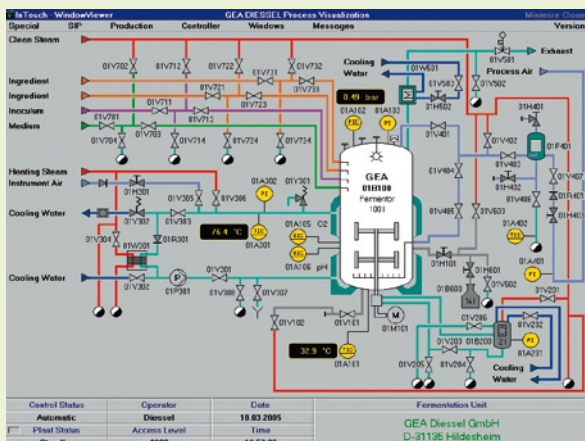
Visualisation based on the industrial standard for the operation and display of all process functions.

### Qualification

- validation of the software
- compliance with cGMP, GAMP, CFR 21 Part 11
- qualification documentation

### Special GEA Diessel services

- comprehensive process expertise in pharmaceutical and biological technology
- project management
- worldwide GEA distribution and service network
- local support on the spot



Process Engineering

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