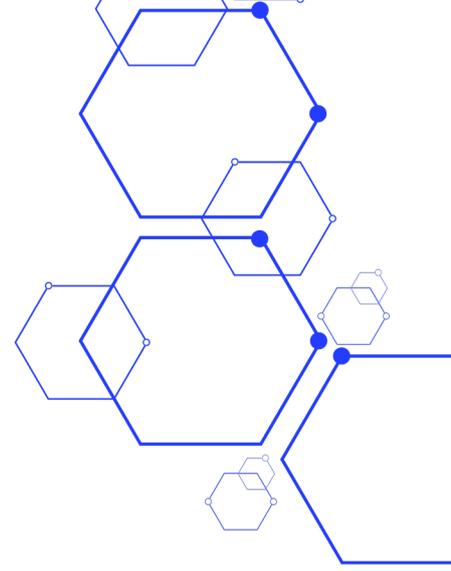


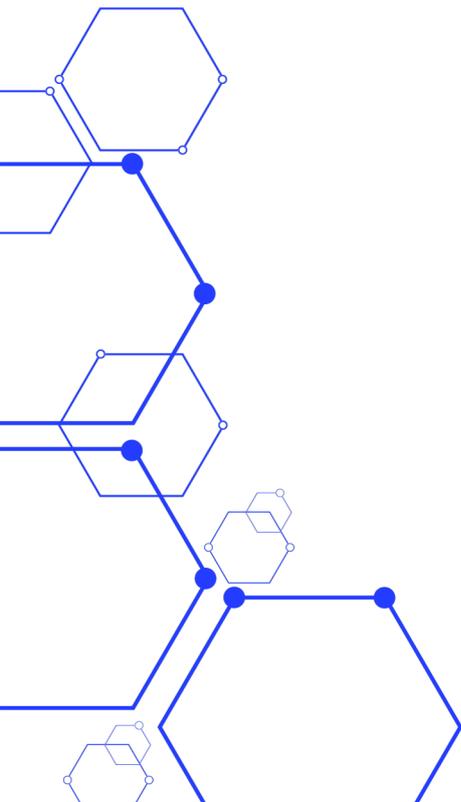


Global solutions for a growing world



FERMENTER TECHMI BIO FES

HORIZONTAL FERMENTERS FOR SOLID SUBSTRATE



TECHMI BIO FES FERMENTER

HORIZONTAL FERMENTERS FOR SOLID SUBSTRATE

TECHMI GROUP's horizontal fermenters are constructed of 316L stainless steel and specifically designed to optimize solid fermentation processes.

Solid-state fermentation (SSF) offers advantages such as lower water and energy consumption, higher concentrations of metabolites, and conditions more similar to the natural habitat of many beneficial fungi and bacteria, thus enhancing their yield. Furthermore, it allows for the valorization of organic waste as raw materials, reducing costs and environmental impact. These characteristics have driven its increasing application in the production of bioactive compounds, enzymes, and functional foods within a more sustainable production framework.



Our fermenters are equipped with temperature, humidity, aeration, and light control systems, which are essential for optimal microorganism growth. Temperature and humidity are critical factors affecting development and metabolite production, so maintaining these conditions within specific ranges is crucial. Our mixing and agitation devices are optimized to ensure uniform substrate distribution and facilitate gas exchange. Furthermore, proper aeration distribution is important to provide oxygen to the microorganisms and promote healthy growth.

TECHMI GROUP's horizontal fermentation equipment is available in a variety of sizes and capacities, allowing companies to tailor their production capacity to their specific needs, from laboratory equipment to large-scale production systems.

TECHMI BIO FES FERMENTER

Technical details

TECHMI GROUP's FES solid fermenters optimally replicate the natural conditions in which fungi grow. Solid-state fermentation promotes sporulation in filamentous fungi because the solid environment stimulates greater hyphal branching and mycelial development closer to their natural habitat, allowing for optimal fungal growth.

Technical specifications:

- Horizontal bioreactor with internal mechanical agitation by means of paddles (agitated drum).
- Level indicator with wide viewing angle, for a clear view of the interior.
- 12V safety inspection light, ideal for real-time monitoring.
- Temperature, stirring speed and humidity control.
- Adjustable speed 0–22 rpm.
- Mixing blades designed for axial and radial flow.
- Inoculation ports, feeding ports, sampling discharge ports and auxiliary ports.
- PLC control system with LCD touch screen.
- Automatic PID control.
- SCADA system and remote monitoring.
- 316L stainless steel.
- Motor SEW con giro reversible.
- Workload: 30-50%

Applications

Biofertilizers and Biocontrol Agents

- Trichoderma, Bacillus, Metarhizium, Epicoccum, etc.
- Microbial consortia
- Biofungicidas

Industrial enzymes

- Cellulases, proteases, lipases, amylases, pectinases
- Enzymes for textiles, food, paper, biofuels

Functional foods: improving the nutritional value of foods and reducing antinutritional factors

- Fermented flours
- Protein ingredients
- Natural vitamins
- Detoxified substrates

Plant-Based Meat Analogues (PBMA)

- Micoproteína
- Fermented plant fibers
- Natural meat-like aromas

Antibiotics and bioactive metabolites

- Penicillins, statins, pigments, antifungals
- Acids and biofuels

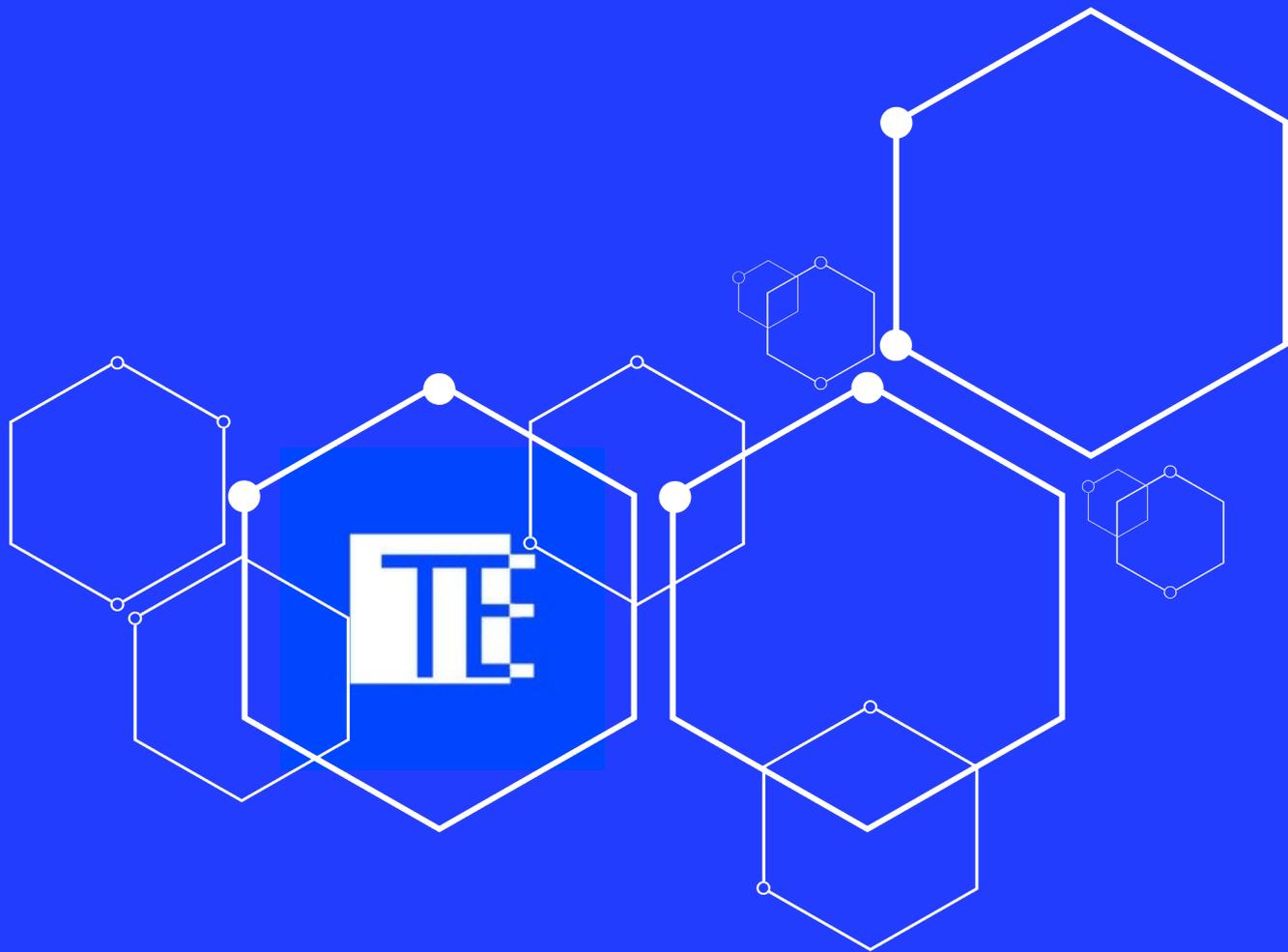
Citric, lactic, fumaric, succinic acids

- Ethanol 2G, lipid biomass

TECHMI GROUP's FES Solid Fermenters have a long track record in the production of fungi such as Trichoderma. Trichoderma is highly relevant in the agricultural and biotechnology industries due to its ability to control plant diseases, promote plant growth, and degrade organic matter. Efficient, high-quality production of these microorganisms is essential to maximizing their potential in diverse applications. In this context, TECHMI GROUP's FES solid fermenters stand out as an advanced solution. The fungal growth conditions in the bioreactor allow for:

- **Increased Spore Production:** The near-natural environment within FES solid fermenters allows for more vigorous fungal development. As a result, a significant increase in the number of spores produced is observed, which is crucial for the effectiveness of agricultural and biotechnological applications.
- **Superior Spore Quality:** Not only are a greater number of spores produced, but their quality is also significantly higher. Spores generated in FES fermenters are more resistant and viable, ensuring greater effectiveness in disease control and plant growth promotion when applied in the field.
- **Production Cycle Optimization:** Solid fermenters allow for precise control of growing conditions, such as temperature, humidity, and aeration. This ensures a more efficient and predictable production cycle, which is essential for large-scale production.
- **Enhanced sterility control and product traceability:** On-site sterilization of the equipment, along with its sterility and design, allows for work in a controlled and sterile environment to prevent contamination. Furthermore, the recording of variables and parameters, combined with process automation, improves traceability and repeatability of the production process.





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