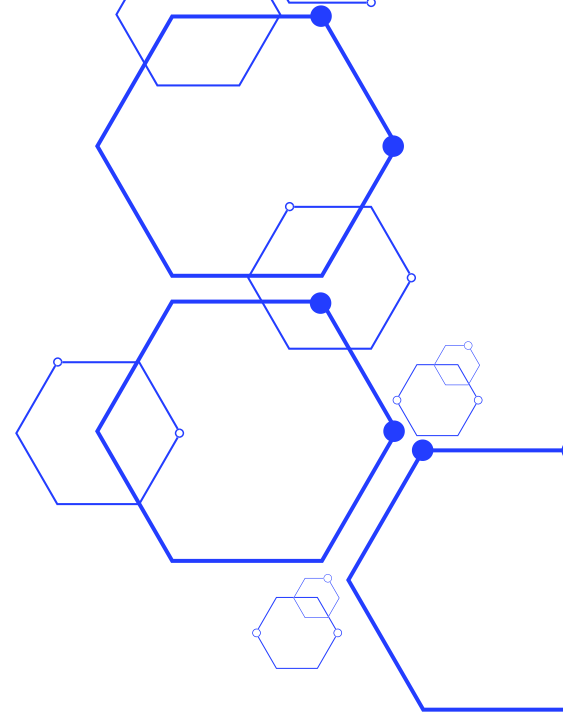


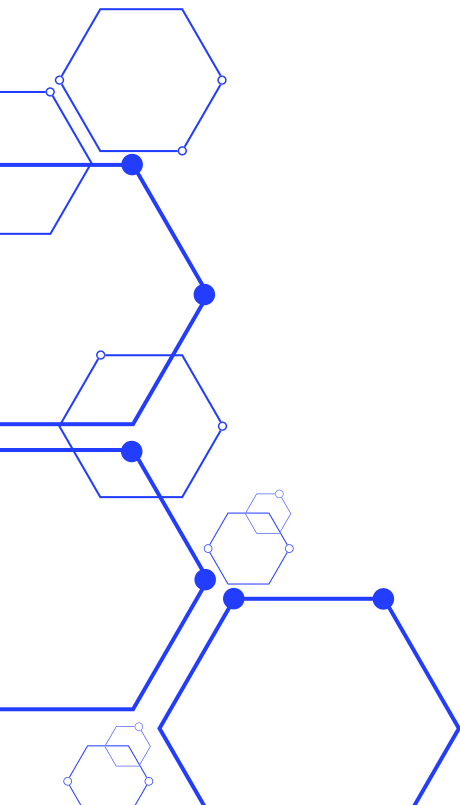


Global solutions for a growing world



TECHMI GROUP BIOFERMENTER

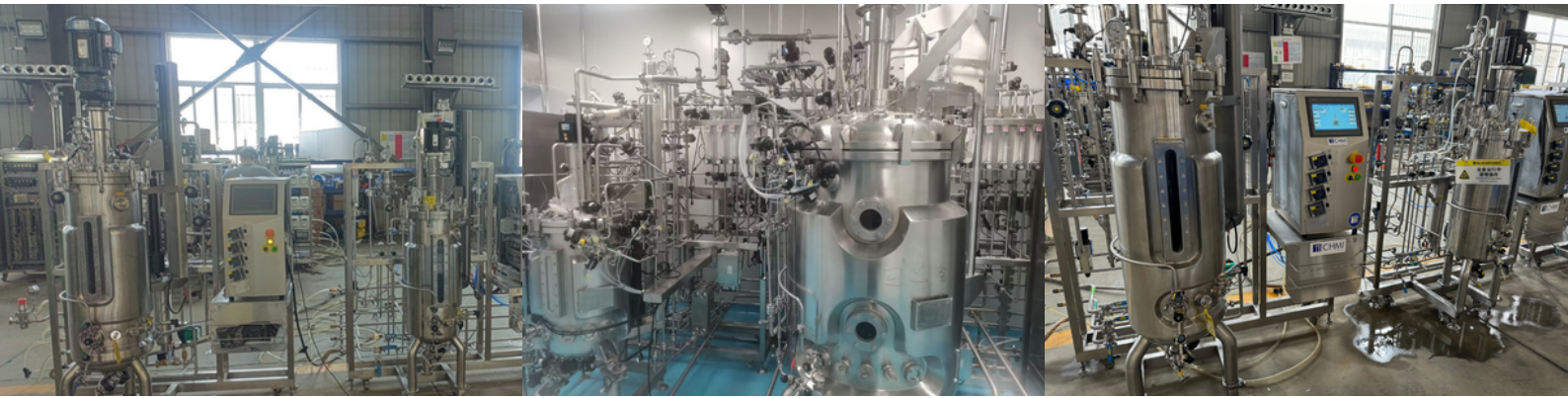
FERMENTATION SCALE-UP TRAINS



TECHMI GROUP BIOFERMENTER

FERMENTATION SCALE-UP TRAINS

TECHMI GROUP's biofermenters are highly sophisticated equipment designed to facilitate and optimize the fermentation process in the production of biological products.



Inoculum scale-up and multiplication is a crucial process in biotechnology, especially when seeking to increase production to industrial levels from a small initial amount of microorganisms.

The process begins with the preparation of a starter culture in a small bioreactor or shaker bottle. Here, the microorganisms are grown under controlled conditions to achieve a high cell concentration.

Once the inoculum has reached the exponential growth phase, it is transferred to a larger capacity biofermenter. TECHMI GROUP offers biofermenters of different sizes, allowing a gradual scale-up. For example, the inoculum can be moved from a 10 liter fermenter to a 100 liter fermenter, then to 1,000 liters, and so on, depending on the desired production capacity.

TECHMI GROUP biofermenters are equipped with advanced systems that allow precise control of critical parameters such as temperature, pH, dissolved oxygen concentration, agitation speed, and pressure. This control is essential to maintain optimal conditions for the growth and metabolic activity of microorganisms.

Real-Time Monitoring:

Thanks to real-time sensors and monitoring systems, operators can observe and adjust process parameters as needed, ensuring that microorganisms develop in an optimal environment and that production is consistent and of high quality.

Automation and Programming;

The biofermenters are highly automated, allowing the fermentation process to be precisely programmed and controlled. This includes automated nutrient feeding, aeration regulation, and fermentation time management, which reduces the need for manual intervention and minimizes errors.

High Quality Design and Materials:

Constructed with 316L stainless steel, **TECHMI GROUP**'s biofermenters offer excellent corrosion resistance and a sterile environment, which is crucial to prevent contamination and ensure culture purity. In addition, their design facilitates cleaning and sterilization, maintaining high hygiene standards.

Inoculum Scale-up and Multiplication Process:

Inoculum scaling and multiplication is a crucial process in biotechnology, especially when seeking to increase production to industrial levels from a small initial amount of microorganisms.

The process begins with the preparation of a starter culture in a small bioreactor or shaker bottle. Here, the microorganisms are grown under controlled conditions to achieve a high cell concentration.

Once the inoculum has reached the exponential growth phase, it is transferred to a larger capacity biofermenter. **TECHMI GROUP** offers biofermenters of different sizes, allowing a gradual scale-up. For example, the inoculum can be moved from a 10-liter fermenter to a 100-liter fermenter, then to 1,000 liters, and so on, depending on the desired production capacity.

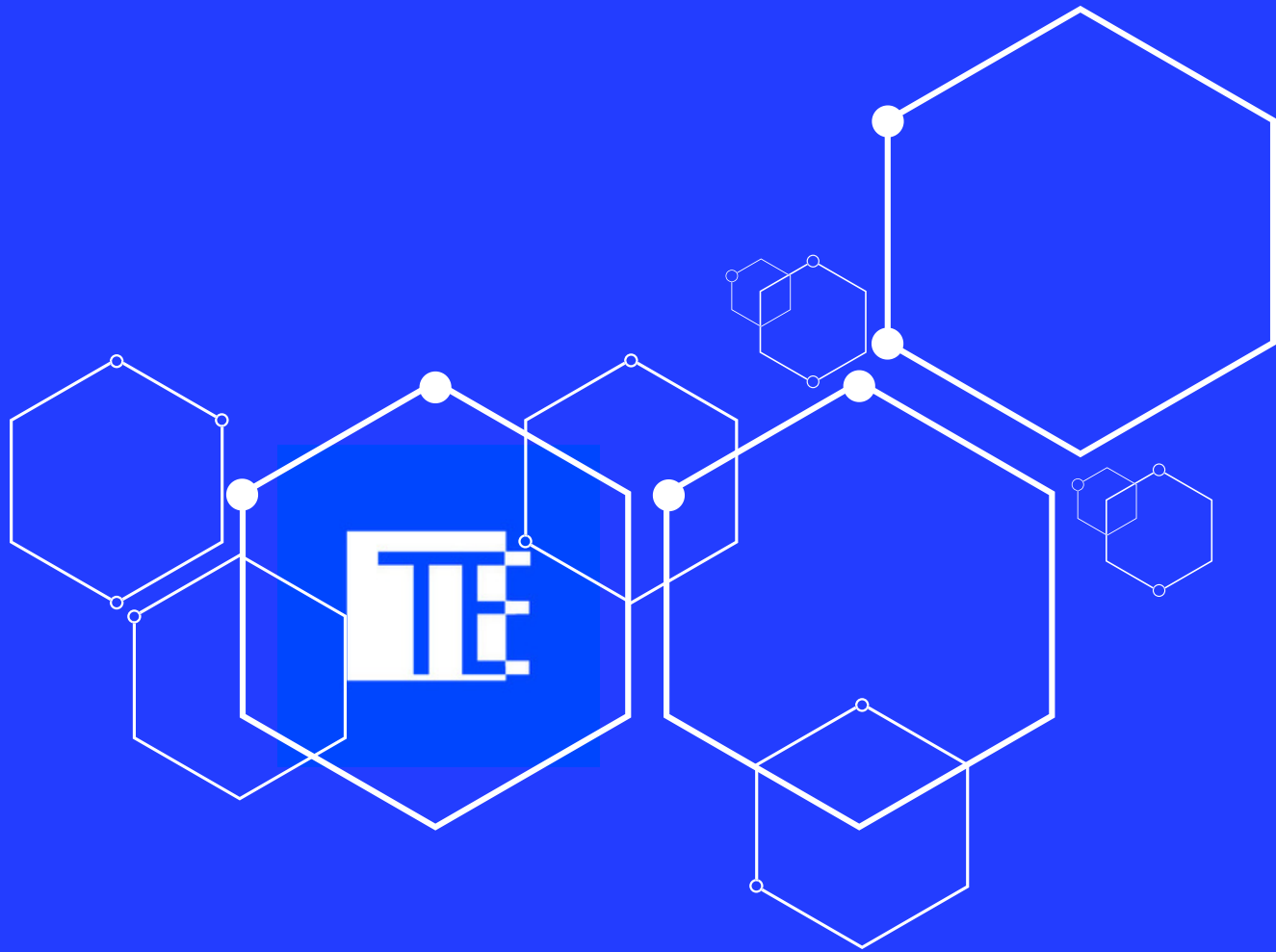
During each scale-up phase, **TECHMI GROUP**'s biofermenters maintain optimal growth conditions by precisely controlling all relevant parameters. The objective is to multiply the biomass efficiently, ensuring that the microorganisms retain their viability and biological activity.

Optimization and Continuous Adjustments:

During the scale-up process, it is essential to make adjustments based on the behavior of the culture on a larger scale. **TECHMI GROUP**'s monitoring and control systems allow these adjustments to be made in real time, ensuring that scale-up does not compromise product quality.

Large Scale Production:

Finally, the large-scale inoculum is used for industrial production of the desired product, which can range from enzymes, probiotics, biofertilizers, to pharmaceuticals. **TECHMI GROUP**'s biofermenters are designed to handle industrial volumes, maintaining efficiency and quality throughout the process.



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