PILOT-SCALE PRODUCTION

Technology packaging and transfer: All technical information is packaged into a series of reports that inform the final process. These provide inputs into the development of a process model that allows for the demonstration of efficiencies/ non-efficiencies across the process. The technology package further contains detailed standard operating procedures and raw material certificates of analysis that allows for easy technology transfer.

The BIDC offers bioprocess development, optimisation, scale-up and biomanufacturing at 10 to 30 Litres, 200 Litres and 1 000 Litres.

WORK WITH US

For more information, contact Lara Kotzé-Jacobs at **BIDC@csir.co.za**

BIOMANUFACTURING INDUSTRIAL DEVELOPMENT CENTRE

science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

technology innovation AGENCY

CSIR
Touching lives through innovation

The Biomanufacturing Industrial Development Centre (BIDC) offers technical support to small, medium and micro enterprises (SMMEs) who work in the development of biological products and speciality chemicals. During product and process development, the BIDC assists SMMEs with taking their ideas from the concept stage to market-ready products and supports them until pilot-scale production.

The centre is staffed with a team comprising biochemists, biotechnologists, process engineers, chemists and formulation scientists and has facilities comprising laboratories for molecular biology, microbiology, applied chemistry, process chemistry, as well as laboratory and pilot-scale process development. These facilities are complemented by high-end analytical infrastructure and skills within the CSIR.

BIDC INFRASTRUCTURE AND CAPABILITIES

PROTOTYPE AND PRODUCT DEVELOPMENT

- High-end analytical capabilities – mass spectrometry, nuclear magnetic resonance spectroscopy, gas chromatography, high-performance liquid chromatography;
- Access to product formulation capabilities such as tea-bagging, sachets, tube and bottle filling, capsuling, tabletting and extrusion;
- Protein purification capabilities from microlitre to multi-litre scale;
- A team with expertise and a track record in a wide range of downstream processing operations, ranging from crude cell separation via centrifugation or filtration to more complex chromatographic purification, solvent extraction and various drying process options (oven drying, fluidised bed drying, freeze drying, spray drying); and
- Complete lab and pilot-scale bioprocessing facilities to allow the development and production of bio-based technologies using wild-type and genetically modified microorganisms.

PROCESS DEVELOPMENT

A fully equipped bioprocess development laboratory for process evaluation and optimisation;

In-house production systems, including bacterial, yeast, fungal, plant and algal systems;

Process engineering specifics and basic engineering design;

Process, equipment and plant specification quality management systems development and implementation;

A medium-to-large-scale protein purification facility;

A fill and finish facility;

Technology and process validation – process validation is critical to successful technology transfer for scalable manufacture – here the team focuses on demonstrating reproducibility across the entire process, while ensuring that the necessary quality control measures and systems are in place; and

Techno-economic assessments and evaluation: The process model presents a detailed account of performance across all process unit operations – this allows the team to prepare a detailed cost of production for each product, as well as the process flow sheet and factory/ plant layout, which contains detailed information about the equipment and utilities required, which allows the team to do techno-economic assessment of the business with projected cash flows and resultant internal rate of return and net present value.