Parallel Bioreactor Systems For Unparalleled Results

DASGIP Technology

Rapid technological advances in biotech and pharmaceutical industries have created increasing demands in research and development. DASGIP Parallel Bioreactor Systems for microbial and mammalian cell culture applications support scientists and engineers to accomplish their projects quicker and more efficiently.

DASGIP systems offer comprehensive control at bench top scale. Based on a modular design, 4, 8 or 16 vessels can be operated in parallel. Integrated modules provide independent control of pH, dissolved oxygen, temperature, agitation, media and gas supply, as well as optical density and off-gas analysis. The compact size of DASGIP bioreactor systems ensures they easily fit into any laboratory, even when space is at a premium.

Reproducible results, ease of scale up and enhanced productivity support DASGIP users in accelerating process development. See how customers benefit from DASGIP Parallel Bioreactor Systems in the following application examples: mammalian cell line and microbial strain selection, process development and protein production.

Pick Your Winner

Characterization and Selection of Cell Lines and Strains

Each microbial strain or mammalian cell line differs in many ways such as growth characteristics, nutrition needs and expression level. DASGIP technology allows the identification of the best clone or strain. By tightly controlling all process parameters, users can simultaneously compare the performance of each clone or strain under different sets of conditions.

DASGIP products are designed to meet the precision that is required when working with small volumes, while at the same time, possessing all the features of large scale industrial reactors. The flexibility to operate at various volumes enables the DASGIP system to be used during scale-up, from development to pilot manufacturing, without excessive use of medium cells or manpower.

The biopharmaceutical company Symphogen, Lyngby, Denmark is dealing with the development of recombinant human polyclonal antibodies and has utilized an 8-fold DASGIP cell culture system for cell line development and process optimization.

"Using the DASGIP system we could test various cell lines and processes by comparing the impact of critical parameters. We were able to select the most productive cell lines, best process and could scale up from 400 mL to 5 L successfully",

commented Finn C. Wiberg, responsible for Process Engineering, Symphogen.

Parallel Cell Culture Vessels

Scalability

Unparalleled Results, Again And Again

Optimization of Process Parameters

Process development is an essential procedure in producing target products better, faster and more cost-effective.

DASGIP systems provide precise control of all critical parameters independently in each vessel, allowing users to optimize each parameter for maximum growth, stability and productivity. The multi-vessel capability combined with a high level of quality information, provides an effective development tool for a range of applications including factorial designed experiments. Scientists are able to investigate process features which were previously unavailable.

Process analytical tools such as off-gas analysis give insight into the metabolic state of mammalian cells and micro-organisms. Real-time in-depth process values are reported such as the oxygen transfer rate (OTR), carbon dioxide transfer rate (CTR) and the respiratory quotient (RQ) which are used as feedback for control loops. DASGIP's auto-sampling system provides an automated sampling capability and integrates off-line analysis.

Equipped with this efficiency, users such as the Science Applications International Corporation Frederick (SAIC Frederick), MD, USA were able to devise a new cell culture strategy that readily optimized medium and feeding schedules in a new bioreactor process.

Jianwei Zhu confirms:

"This has resulted in enhanced productivity and quality of our therapeutic proteins."

Reactor view in 4-fold microbial trial

Reproducibility

Simply More

Increasing Protein Production

Production of protein in the right quantity and quality requires extremely reliable processes.

With DASGIP's sophisticated software, users can easily plan and automate their experiments. For Example, DASGIP's optical density probe not only permits scientists to study growth of cells or microbes but also automates induction and feed based on biomass or cell density.

Sebastian Fiedler, Hartmut Oschkinat and Anne Diehl from the Leibniz Institute for Molecular Pharmacology (FMP), Berlin, Germany developed a fully automated multiphase process that reduced costs compared to traditional protein labeling methods for NMR-supported structural biology. Using the DASGIP system, they started to culture E.coli in batch mode, followed by fed-batch, then switched to an induced labeled feed, before finally cooling down the culture temperature for harvest. Everything within one fully automated process. The production of microbes could be optimized before labeled feed for maximized production of target proteins had even started. Compared to shaking cultures, costs per mg of solubilized triple labeled inclusion bodies such as outer membrane porin (OmpG), decreased to a quarter.

Dr. Diehl pointed out:

"The DASGIP system was of great use to save expensive isotopes, particularly with deuterated set ups, and to produce amounts in the range of a hundred mg per liter of difficult to express recombinant proteins, with reproducible results."

Bioreactor's Headplate

Productivity

DASGIP At A Glance

DASGIP develops and manufactures technologically advanced Parallel Bioreactor Systems for the cultivation of microbial and mammalian cells at bench top scale.

Process engineers as well as research scientists in the biotech, pharmaceutical, and chemical industries utilize DASGIP technology to bring their projects to the next level. Users benefit from increased productivity, high reproducibility, and ease of scale up, which results in accelerated process development cycles.

DASGIP is located in Juelich, Germany and in Shrewsbury MA, USA.

1991: Founded in Zuelpich, Germany, as an IT company by Dr. Thomas Drescher, Dr. Matthias Arnold and Dr. Falk Schneider

1992: Relocated to the Technology Center Juelich, Germany

1994: Formed a Biotech business unit

1997: Launched microbial fermentation product line – **50 bioreactors** in the field

1999: Certified according to DIN ISO 9001, moved into new company headquarters in Juelich, Germany – **300 bioreactors** in the field

2003: Opened North American subsidiary DASGIP BioTools, LLC., Shrewsbury, MA (USA)

2005: DASGIP's Cell Cultivation System "cellferm-pro®" wins Red.Dot Design Award

2006: DASGIP Awarded Second Prize in business competition AC2 – **1000 bioreactors** in the field

DASGIP's excellent products and outstanding services are widely recognized. The precise control, thorough documentation and intelligent software of DASGIP systems directly address important industry programs such as the FDA's 'Quality by Design' approach and PAT initiative.

The team at DASGIP looks forward to supporting the future success of its customers.

Headquarters

DASGIP AG
Rudolf-Schulten-Straße 5
52428 Jülich, Germany
Phone: (+49) 2461-980-0
Fax: (+49) 2461-980-100
E-mail: info@dasgip.de

North-America

DASGIP BioTools, LLC
151 Memorial Drive, Unit G
Shrewsbury, MA 01545, USA
Phone: (+1) 508-842-6900
Fax: (+1) 508-842-0141
E-mail: biotools@dasgip.com

www.DASGIP.com