MFCS/DA – MultiFermenter Control System – Data Acquisition

MFCS/DA has been designed as an easy-to-use, self-explanatory system with plug and play configurations for BIOSTAT® Micro-DCU based fermentors.
It provides simultaneous data acquisition and control from up to 4 process units. In addition a single shared resource (e. g., off-gas analyser) may also be connected. The operator service program acts as the main of interaction with the software, providing access to all functions: set-up, control and plotting. Batch-oriented bioprocessing is central to data management, with all batch-related data stored under a unique batch name. MFCS/DA even includes the ability to incorporate other laboratory data, such as off-line process analysers, using the Sample Data Management function. A plotting module provides comprehensive features for further evaluation of measured bioprocess data, which together with an Export function gives added flexibility for analysing data using other off-line programs. More advanced control strategies can be developed by the user using the Programmer´s interface.

Summary of main features

- Plug and play configuration

- Up to 4 fermentors

- Batch oriented software package

- Online data acquisition

- Sample Data Management

- Enhanced Plotting

- Export functions

- Easy to use programming interface

Configuration Management

The Configuration Management module defines connected hardware and assignment of variables. It is optimised for use with new and existing, predefined Micro-DCU based BIOSTAT fermenters. MFCS/DA is delivered together with BIOSTAT definitions for supporting plug and play set-up. Each process unit may be configured to include on-line (direct data acquisition), off-line (sample data) and calculated (Prog. Interface) process variables.

Operator Service

The Operator Service module is the „front door"of MFCS/DA. Batch Display provides an overview of all process units. Additional on-line, configurable views display information for individual process units as well as an overall complete system display. Measured values, setpoints and alarms are indicated in the Group Display. Setpoints and alarms are modifiable.
Sample data management, Plotting and data Export modules are all accessible via the Operator Service program by simply selecting a batch.

Sample Data Management

During a batch, off-line sample analysis generates critical process data, which should be included in the batch record. These values can be entered into a standard spreadsheet/table.

Plotting

The Plotting Module provides a graphical presentation of one or more bioprocesses, from start to finish or in a defined timeframe (hours, days, etc.). Any combination (1 to 10 variables) may be displayed together. On-line data, as well as manually entered, off-line data can be selected. Line types, colours and other plot characteristics are user-definable. Preferences can be stored in re-usable plotting templates.

Data Export

Data from finished or still active bioprocesses can be further processed by 3rd party software using the Export Module. Outputs are in CSV-format (comma separated variable), compatible with most commonly available applications.

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MFCS/DA

Programming Interface

For application of user-defined calculations or for connection of MFCS/DA to 3rd party software, the Programmers Interface allows access to various process data. Sample Visual Basic and Excel code is shipped with the MFCS/DA package.
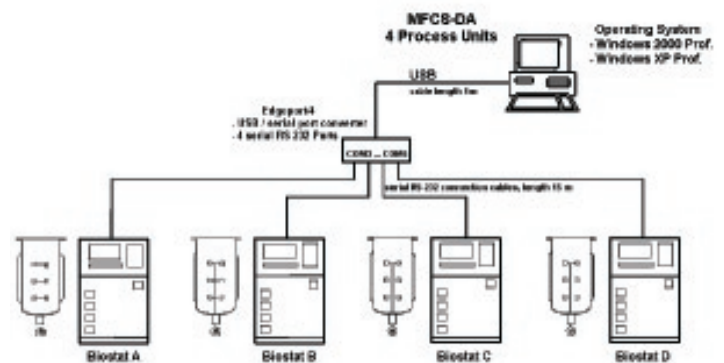
Typical applications of this module could include calculation of Oxygen Uptake Rate (OUR), Carbon Dioxide Evolution Rate (CER) and Respiration Coefficient (RQ) for use in establishing new controller setpoints for more advanced process control.

MFCS/DA Features Overview

• Operator service
– Process display
– Variable displays
– Set point management
– Alarm limits

• Sample Data–Management
– Entry of sample data
– Configurable columns

• Plotting
– Configurable plotting
– Single plots/comparison plots
– Up to 10 process variables
– Data Cursor
– Configurable templates
– Cyclic refresh
– Export functions for standard graphic formats

• Data Export
– Export to Excel compatible CSV-files
– Single– and multi–data select
– On–line and off–line data included

• Configuration Management
– Loadable BIOSTAT® fermenter configuration
– One additional shared ressource
– On–line, off–line variables, virtual variables

• Programming interface
– Read/write values
– Read/write controller set points
– Read batch age
– Visual Basic/Excel exampleg

• Additional Services
– Training
– Free e-mail support

PC System Requirements

Category	Requirements
Operating System Platform	Windows 2000 Professional Windows XP Professional
CPU Speed	300 mHz minimum, more is recommended
Memory	128 MB minimum (256 MB or more recommended)
Hard Disk	2 GB, more is recommended 50 MB min for installation)
CD-ROM	Required for installation purposes
Graphic Adapter	SVGA with at least 1024x768 pixels
Monitor	15" SVGA or better
Printer	Recommended
Interface	Free serial ports or USB port to connect a USB/RS 232 converter (Edgeport/4)

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