

# REACTION UNIT WITH RECTIFICATION EQUIPMENT IN MINIPLANT TECHNOLOGY



## STANDARD AUTOMATIC APPARATUS FOR DISCONTINUOUS OPERATION

M106E.1

### GENERAL

This compact, automatically operated Miniplant unit can be used for process optimization with scale-up or for the production of small quantities. In particular, processes such as chemical reactions, heat exchange, homogenization, formation/production of emulsions and suspensions, crystallization, distillation to influence the reaction process or to separate substances, can be analysed. These Miniplant units are applied in wide areas of research and development but also in the fields of professional training and small-scale production. This type of reaction unit is of particular interest to customers from the chemical, pharmaceutical and biochemical industry, universities and research institutes.

The Miniplant reaction units have a modular design. Their basic equipment can be supplemented and expanded, depending on the requirements. The range of the plant equipment extends from manual control with individual measuring instruments and control units to fully-automatic, user friendly, process control systems. Graphic recipe control and programming ensure the uncomplicated/easy operation of the reaction unit.

Access to all process data is possible, either for display or further processing by means of EXCEL spreadsheet.

The reaction units offer the following advantages :

- The materials in contact with the product are borosilicate glass 3.3 and PTFE, unless other materials are prescribed to be used.
- Visual observation of the reaction owing to the use of glass.
- The reaction unit is dead-space reduced and can be emptied completely.
- Working within the pressure range of -1 bar to +0.5 bar and the temperature range of -40°C to +200°C.

They can be used for the following processes :

- Boiling under reflux
- Distilling off
- Rectification
- Reactions
- Dissolution/mixing

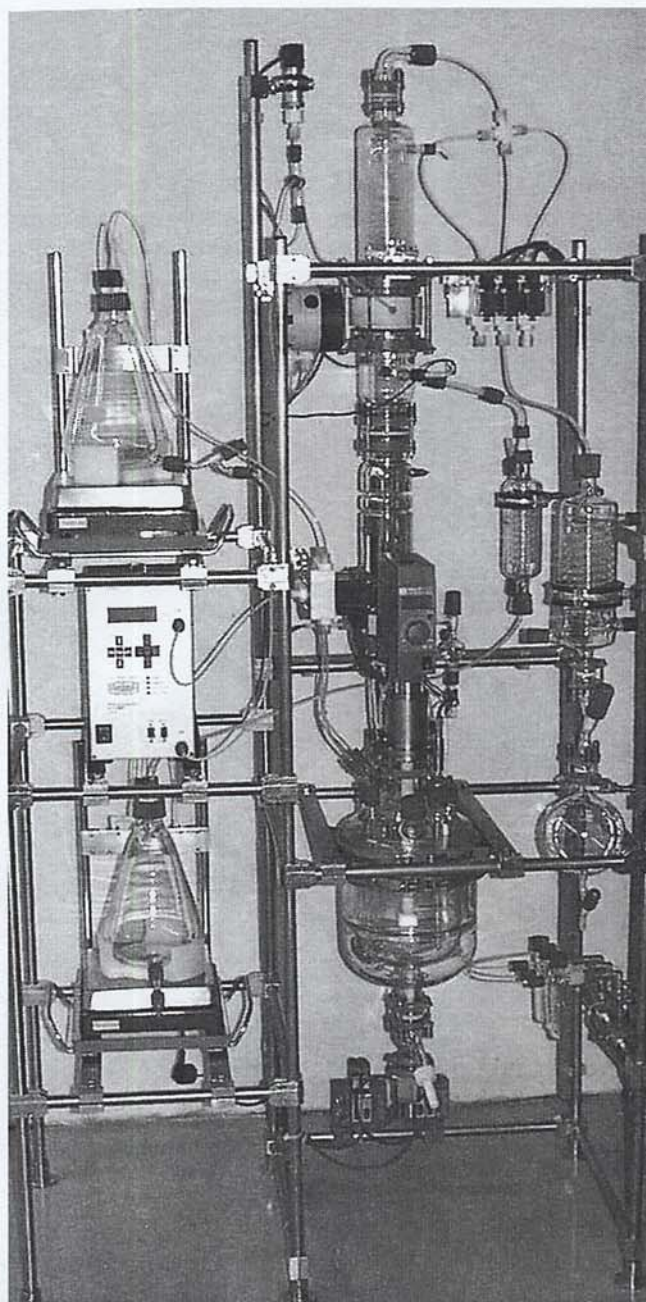


Fig.1: 2l Reaction unit



## EXAMPLE: 2 L REACTION UNITS

### MAIN COMPONENTS

B1	Jacketed reaction vessel 2 L
B2	Dosing unit 1L
B3	Distillate receiver 1L
K	Column DN40 x 300 mm with Sulzer packings and internal reflux divider unit
W1	Condenser 0.3m <sup>2</sup>
W2	Product cooler 0.06m <sup>2</sup>
W3	After cooler 0.1m <sup>2</sup>
R	Agitator, 110W, 60Ncm, 50.....1000 Rev/Min
P	Precision dosing pump, 0.....2500 ml/h
WE1	Weighing unit 6.3kg, accuracy 0.1g
WE2	Weighing unit 6.3 kg, accuracy 0.1g

### Sensors

Process control system, control cabinet, PC

Assembly framework

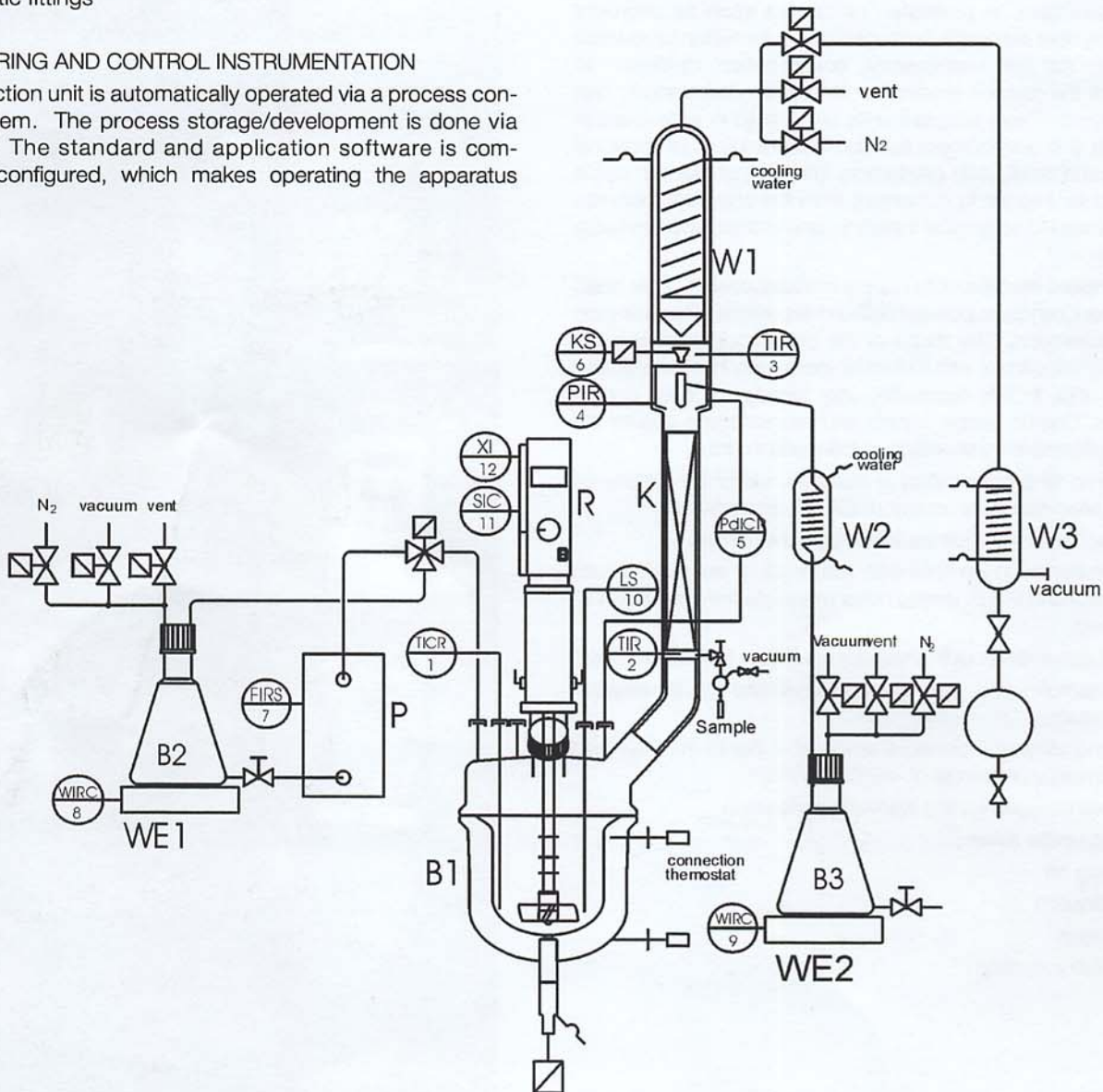
Automatic fittings

### MEASURING AND CONTROL INSTRUMENTATION

The reaction unit is automatically operated via a process control system. The process storage/development is done via the PC. The standard and application software is completely configured, which makes operating the apparatus easy.

### MEASURING AND CONTROL INSTRUMENTATION-FUNCTIONS

TIC	Temperature regulation via PC and thermostat
TIR	Display and registration of temperatures via PC
PIR	Display and registration of pressure via PC
PdICR	Differential pressure control via PC and thermostat
KS	Reflux divider control via PC and head temperature
LS	Liquid level observation via PC
WIRC8	Gravimetric dosing via weighing unit, dosing pump (FIRS) and PC
WIRC9	Gravimetric registration of the distillate via weighing unit and PC
SIC	Speed display, registration and control via PC
XI	Torque trend display and registration via PC



**QVF GROUP**

Hauptsitz

QVF ENGINEERING GMBH

Postfach 33 69

D-55023 Mainz

Hattenbergstraße 36

D-55122 Mainz

Tel.: (+49) 0 61 31/ 97 04-0

Fax: (+49) 0 61 31/ 97 04-500

E-mail: mail@qvf.de

Internet: www.qvf.com

Member of

**De Dietrich**  
PROCESS SYSTEMS

www.dedietrich.com