

# DISTILLATION UNIT IN MINIPLANT TECHNOLOGY TYPE DED



## STANDARD APPARATUS FOR DISCONTINUOUS OPERATION

M101E.2

### GENERAL

This Miniplant batch distillation unit type DED with flask contents between 1 and 5l can universally be used in laboratories for synthesis as well as for solvent recycling. The achievable separation efficiency is a function of the column type and the throughput. The advantages of this laboratory distillation unit are:

- Due to its low construction height which is even less than 3 m the unit may be installed in nearly every laboratory.
- The materials coming into touch with the product are either made of borosilicate glass 3.3 or materials like PTFE.
- Beside the laboratory distillate receiver all glass parts are equipped with the robust QVF fat end safety flanges.
- The unit can be operated at pressures between 1 and 1000mbar and temperatures up to 200°C
- The measuring and control technology is a modular system. Hence, the distillation unit may be gradually upgraded from a manually operated system to a fully automatic one.

### CONSTRUCTION

The distillation unit DED consists of the parts indicated in figure 1. It is equipped with an electrical heating mantle and a magnetic stirrer and is therefore limited to a flask capacity of 5 litres. The heating rate may either be pre-set or regulated as a function of the temperature difference between the flask charge and the heating mantle. When the predetermined max. temperature in the flask is reached the heating is switched off. In order to ensure easy emptying and cleaning the flask with the magnetic stirrer and heating mantle can be lowered by aid of a hydraulic cherry picker after having loosened the quick release coupling connecting the flask to the column.

As standard, the columns are isolated by a silvered high vacuum jacket and filled with Raschig rings.

Reproducible reflux ratios can be achieved by an electronically controlled liquid divider which is also high vacuum jacketed. The reflux divider is switched to total reflux when the selected max. head temperature is reached.

The standard version has an Anschütz-Thiele-Receiver for easy fractionation even for operation under vacuum. An adapter at the outlet of the intermediate Anschütz-Thiele-Receiver permits the use of standard laboratory flasks. As a rule, this final receiver has the same capacity as the distillation flask to avoid overflowing by mistake.

The entire unit is sited in a free-standing mounting structure made of 3/4" galvanised tubes.

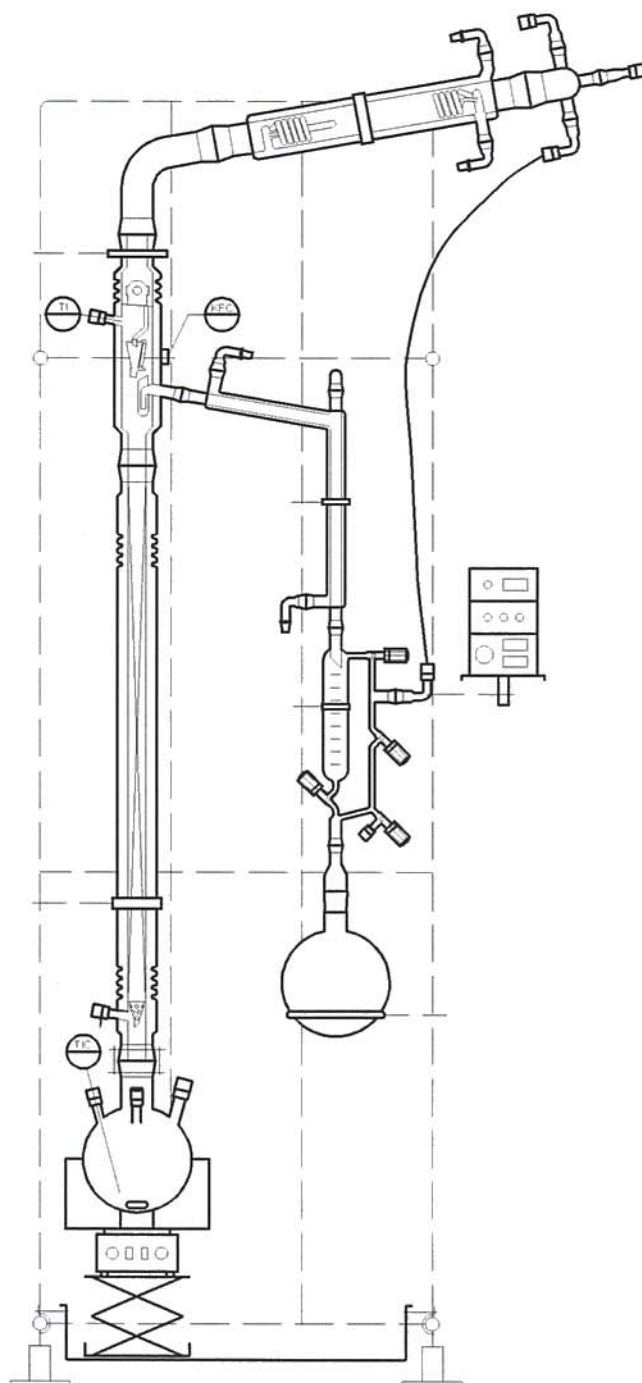


Figure. 1: Distillation unit DED

The additionally incorporated safety pan under the distillation flask may accommodate more than the total flask quantity.

## ADDITIONAL EQUIPMENT

The figured standard unit can be used at atmospheric pressure without any additional equipment. The modular construction allows the unit to be easily upgraded. Hence, additional control equipment and vacuum equipment are available and may easily be added to the existing unit. The control devices of the standard unit can be connected to a process control system if the unit should be controlled automatically. The handling of the unit and the data acquisition may be simplified by the use of a PC-visualisation.

Optional:

- Vacuum generation system
- Circulation cooler
- Heating elements for the upper flask section
- Control of the heating rate according to the pressure drop
- Measurement of cooling water flow
- Level measuring in the distillation flask
- Temperature measuring above the condenser
- Process control system
- PC visualisation

## OPTIONAL EQUIPMENT

Contrary to additional equipment the optional equipment replaces parts of the standard unit.

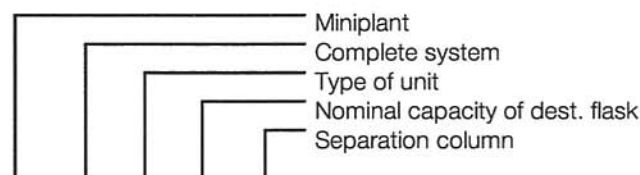
The extension with optional equipment such as fraction collector, phase separator, vapour divider etc. is almost unlimited and permits solutions totally different to the standard which we would gladly elaborate with you.

Selection of further optional equipment:

- Bubble-cap tray columns
- Oldershaw sieve tray columns
- Columns for packing
- Column for Sulzer and other structured packings
- Additional sampling and temperature measuring nozzles
- 3/4" Tubular structure made of stainless steel

## CODE FOR ORDER NUMBERS

(see technical data and product information "separation columns")



M- SY/ DED 2 FMR3

## TECHNICAL DATA<sup>1)</sup>

Nominal column width		DN1	30	30	50	
Nominal / useable flask charge		l / l	2 / 0,15-1,5	4 / 0,2 - 3	6 / 0,3 - 5	
Max. operating temperature / pressure <sup>2)</sup>		°C / mbar	200 / 1000			
Filling height		mm	1020			
Capacity	Standard	Max. sep. efficiency	$\eta_t$	18	18	15
		Min. operating pressure	mbar	10	10	10
	Optional	Max. sep. efficiency	$\eta_t$	45	45	45
		Min. operating pressure	mbar	2	2	1
Power supply <sup>3)</sup>		V / Hz / W	230 / 50 / 800	230 / 50 / 1100	230 / 50 / 1500	
H x W x D		m	2,75 x 1,25 x 0,75			
Order No.:			M-SY/DED 2 FC3	M-SY/DED 4 FC3	M-SY/DED 6 FC6	

<sup>1)</sup> Other versions are available upon request

<sup>2)</sup> Absolut pressure

<sup>3)</sup> Power supply without additional or optional equipment

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