

INJECTION MOLDING DEBINDING UNITS MDU-30 TO MDU-3000

ALTERNATIVELY DEBIND
USING WATER, ONE OR MORE
DIFFERENT SOLVENTS



TOP QUALITY

Highest
quality



Pan-european 24h
on-site service



EX II 3 G c IIA T3

Safe through
primary EX-protection



AUTOMATIC

Fully automatic for
monitoring free
24 operation



PROFITABLE

Production-
optimization through
quality increase



VARIABLE

Customizable



INTEGRATABLE

Integratable into
existing systems



MDU-60

INJECTION MOLDING DEBINDING UNITS MDU-30 TO MDU-3000

Modern injection molding debinding units enable high quality and cost efficient production cycles. For small batches of injection molding components the unit type MDU unites debinding, vacuum drying and solvent recycling in one unit. Medium and big batches are handled by two simultaneously working and communicating units: one debinding and drying unit and one solvent recycling unit.

The debinding in units of the MDU series takes place under vacuum. After loading the debinding reactor with parts it is evacuated using a vacuum unit. As soon as the desired vacuum value is reached, the reactor chamber is flooded with solvent. The binder is removed from the green parts during the debinding process using tempered solvent in an injection-circulation procedure. This special procedure provides a high debinding rate even with parts of varying form and geometry.

For reduction of emission the solvent is cooled throughout the discharging process. At the end of the debinding process the solvent then is discharged into a integrated buffer tank.

During the following drying process the parts are dried with inerting gas injection washing under vacuum. The injection method here also provides optimal drying rates even with highly varying parts. The solvent vapors which result from the drying are condensed in a special heat-exchanger and are fed back into the process.

In the last process step the vacuum distillation of the solvent (or water) which is contaminated with the binder takes place, so that after that the solvent can be reused for a fresh debinding process.

i Depending on the required throughput, the system consists of either a combined debinding and distillation unit or two seperate, coordinated and communicating plants for debinding and distillation.



DEBINDING REACTOR/ DISTILLATION UNIT	
▶ Double-walled vessel	✓
▶ Continous, freely adjustable level measurement between 50% and 95%	✓
▶ ☒-solvent circulation pump	✓
▶ Safety closure with O-ring seal	✓
▶ Basket for molded parts made of stainless steel or aluminum, size variable, mesh size up to < 0,5mm	○
▶ Vessel lamp in ☒-design	○
▶ Pneumatic drain ball valve for automatic discharge of liquid residues	○
▶ Vessel interior electropolished/ solvent & temperature resistant anti stick coating	○

VACUUM UNIT	
▶ Vacuum pump in ☒-design	✓
▶ Liquid ring vacuum pump, up to 35mbar, low maintenance	✓
▶ High-performance chemistry diaphragm pump, up to 10mbar	○
▶ Dry running high performance pump, up to 1mbar, low maintenance	○

HEATING	
▶ Heating in ☒-design	✓
▶ PID-controlled heat carrier heating	✓
▶ Temperature ramp function with 3 different temperature/ time presettings	✓
▶ Temperature ramp function with up to 7 different temperature/ time presettings	○

FRAME VARIANTS	UP TO MDU-300	FROM MDU-400
▶ Anodized, conductive aluminum profile frame	✓	○
▶ including panel sheets	✓	○
▶ Conductive, painted steel frame	○	✓
▶ Powder coated, conductive steel frame	○	○
▶ Galvanized, conductive steel frame	○	○
▶ Conductive stainless steel frame	○	○

✓=Standard, ○=Optional

Redundant heating regulation

- ▶ Temperature measurement in the reactor and in the heating carrier for constant debinding temperature

Realtime pressure measurement with ☒-transducer

- ▶ for continous monitoring of the debinding process
- ▶ for automatic release of the solvent filling
- ▶ for regulation of the reactor inerting

Continous level measurement through capacitive ☒-probe

- ▶ Freely adjustable levels for regulation of the automatic filling and discharge
- ▶ Analysis and graphical display at the touchpanel display
- ▶ Permanent leak test during the debinding process



ONE FOR MANY

Each injection molding system has its own demands on the debinding medium to be used. But even for the different systems, you will need only one debinding unit:

On request, the DesbaTec MDU Series can be equipped in a way, so that you are able to work with several different injection molding systems and solvents, but also with water.

For this purpose, the system will be equipped with several storage containers and programs for different debinding media.

After that you just choose which medium you want to use in the debinding process. The fully automatic PLC control does the rest.



SAFETY/ SYSTEM INTEGRATION

- | | |
|---|---|
| ► Explosion protection class EX II 3 G c IIA T3 (with inerting and suction) | ✓ |
| ► Inerting unit | ✓ |
| ► Suction hood at rigging aperture | ✓ |
| ► Explosion protection class EX II 2 G c IIA T3 (without inerting/ suction) | ○ |

CONTROL SYSTEM

- | | |
|--|---|
| ► Fully automatic, PLC operated system | ✓ |
| ► Designed for monitoring free 24h operation | ✓ |
| ► Delay timer for night-/ weekend operation | ✓ |
| ► Including 15m cable loom (from unit to switching cabinet) | ✓ |
| ► <u>At unit</u> | |
| ► On-/ off switch | ✓ |
| ► ⚡-operation indicator lamp | ✓ |
| ► Emergency stop palm button | ✓ |
| ► <u>At switching cabinet</u> | |
| ► Graphics display and operating terminal at cabinet door, monochromatic, 16 gradations, touchscreen | ✓ |
| ► Operation indicator lamp | ✓ |
| ► Error indicator lamp | ✓ |
| ► Emergency stop palm button | ✓ |
| ► PID-controller & display | ✓ |
| ► 50m cable loom | ○ |
| ► <u>At unit</u> | |
| ► ⚡-error indicator lamp | ○ |
| ► Graphics and operating terminal in ⚡-design | ○ |
| ► <u>At switching cabinet</u> | |
| ► Graphics and operating terminal with color display, touchscreen | ○ |

OPTIONAL ACCESSORIES

- | | |
|--|---|
| ► Integratable container for fresh/ contaminated goods | ○ |
| ► External, single or double-walled container for fresh/ contaminated goods | ○ |
| ► Vapor recovery pipeline between fresh goods and contaminated goods tank for emission reduction | ○ |
| ► Safety collecting drip pan according to WHG | ○ |

✓=Standard, ○=Optional

SERVICE

- | | |
|--|---|
| ► 24 months warranty | ✓ |
| ► Pan-european 24h on-site service | ✓ |
| ► Express shipment of spare parts | ✓ |
| ► Up to 60 months warranty | ○ |
| ► Remote maintenance through automation device or modem | ○ |
| ► Support at the creating of explosion protection document | ○ |

✓=Standard, ○=Optional

Injection circulation

- Special circulation procedure for high debinding rates even with parts of varying form and size

Inerting gas injection washing under vacuum

- Optimal drying rate even with parts of varying form and size

Closed tank system with vapor recovery pipeline

- Best emission/ environment protection
- Minimal solvent loss
- Increased explosion protection

Systems engineering according to european regulations

- Highest operational safety



Customizable

There are many use cases for injection molding debinding. For that reason, every unit is individually tailored and designed to the specific requirements. In order to producing optimum results for you and your company.



Safe through primary explosion protection

Primary explosion protection is written in capitals at DesbaTec. All injection molding debinding plants come off-the-shelf with inerting unit. This offers besides the self-evident secondary measures the highest possible safety.



Highest quality

Highest quality of the components is natural for us, as well as efficient production processes and precise, electronic measuring and control technology. All wetted parts are made of stainless steel, including the double-walled jacket and the welded heat-exchanger.



Production optimization through recycling

The circulating supply with debinding media (solvents) with constant high quality improves process results and thus provides an efficient production. Increase of production is often possible with this optimization.

TECHNICAL DATA	MDU-30	MDU-60	MDU-135	MDU-265	MDU-500	MDU-650
Reactor volume (l)	30	60	135	265	500	650
Overall capacity ca. (l) ⁽⁹⁾	26	54	120	235	450	590
Nominal distillation rate (l/h) ⁽¹¹⁾	6-10	10-16	18-30	30-60	70-140	90-150
Process pressure (bar)	-1,0 to +0,5					
Process temperature max (°C) ⁽²⁾	100°					
Max. volume for molded parts (m³)	0,03	0,06	0,09	0,19	0,30	0,45
Solvent circulation rate (l/h) ⁽¹⁰⁾	5-30	5-30	10-60	10-60	20-100	20-100
Thermal oil heating	integrated	integrated	integrated	separate ⁽⁸⁾	separate ⁽⁸⁾	separate ⁽⁸⁾
Protection class						
- with inerting and suction	EX II 3 G c IIA T3 ⁽¹¹⁾					
Power consumption						
- Normal operation (kW) ca.	2,0	2,5	3,5	5,5	11,0	14,5
Voltage, frequency ⁽³⁾	400V, 3Ph, 50Hz					
Coolant requirements (m³) ⁽⁷⁾	1,0	1,3	1,6	2,0	3,0	3,6
Width (mm)	590	590	850	850	1000	1000
Height (mm) ⁽⁴⁾	1600	1600	1600	1600	1650	1650
Depth (mm)	1000	1250	1350	2000	1600	2500
Net weight (kg) ca.	285	320	430	540	600	700
- with solvent container (kg) ca. ⁽¹²⁾	390	420	680	790	-	-
RELATED VACUUM UNIT	DT-6	DT-10	DT-25	DT-25	DT-30	DT-30
Vacuum pressure max. (mbar) ⁽⁵⁾	35	35	35	35	35	35
Max. suction capacity (m³/h) ⁽⁶⁾	6	10	25	25	30	30
Weight (kg) ca.	30	30	65	65	65	65
(1) depending on solvent, operating conditions, level of contamination and water content, (2) higher temperatures possible, (3) further on request, (4) depending on residue container, (5) vacuum system for up to 1mbar possible, (6) operating liquid H ₂ O at 15°C, at 50Hz, (7) at max. 15°C, (8) integratable on request, (9) depending on quantity and size of the injection molded parts, (10) adjustable, (11) Optional EX II 2 G c IIA T3 possible, (12) net weight incl. integrated solvent container. Solvent container separate from unit size 320 and up						