

CO₂-cooled climate chamber ICHeco with TwinDISPLAY + AtmoCONTROL software

Model sizes: 110 / 260 / 750

ICHeco / ICH with humidity control

ICHeco L / ICH L with humidity control and light ICH C with humidity and CO₂ control

Temperature range with humidity

ICHeco / ICH +10 °C to +60 °C ICHeco L / ICH L +10 °C to +60 °C ICH C +10 °C to +50 °C Humidity range 10 to 80 % rh

Temperature range without humidity

ICHeco / ICH -10 °C to +60 °C ICHeco L / ICH L 0 °C to +60 °C +10 °C to +50 °C

CLIMATE CHAMBER ICHeco These environmentally-friendly stability testing chambers operate with climate-friendly CO_2 (R744) as refrigerant. Powerful and climate-friendly at the same time, they are especially designed for testing pharmaceuticals according to ICH, Q1A and Q1B (option 2) as well as for testing the stability of cosmetics and foodstuffs. Temperature and humidity are distributed homogeneously and stable throughout the interior.



Refrigerant CO₂ is climate-friendly

The decision for a CO_2 -cooled climate chamber ICHeco makes sense. The refrigerant CO_2 (R744) is almost climate-neutral in contrast to refrigerants with fluorinated greenhouse gases (e.g. R134a). Legal restrictions for use are therefore completely excluded in the future. R744 is neither flammable nor toxic and does not cause ozone depletion in the atmosphere.



Refrigerant CO₂ ensures better cooling performance

An ICHeco is virtually maintenance-free and extremely powerful. Compared to appliances with refrigerant R134a, it scores with faster cooling-down times. The Memmert climate chambers ICH with refrigerant R134a will be available in parallel.



All-round protection of samples

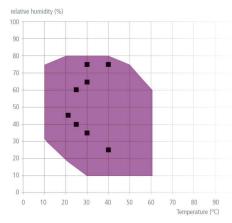
No icing, no drying out of samples, no dehumidification of the working chamber. Cooling aggregate and heating of the ICHeco/ICH are situated outside the working chamber in the air jacket surrounding the entire chamber thus ensuring quick and precise temperature control. Furthermore, the motor-driven forced air circulation, adjustable in 10 % steps, ensures particularly homogenous temperature distribution.



Optionally with illumination unit (ICHeco L / ICH L) or CO₂ control (ICH C)

For tests according to ICH Q1B, option 2, an illumination unit with standard light D65 is available if required. The light sources are fluorescent lamps with cold white light (daylight: light colour 865, 6,500 K) and UV lamps in the spectral range 320 - 400 nm. Especially for tests in the construction industry model ICH C is available with a digitised, electronic CO_2 control with automatic zero setting, NDIR measuring method, self-diagnosis system, acoustic error display and air pressure compensation.

Temperature-humidity working range



Note:

Within the respective temperature-humidity range, condensation-free permanent operation is possible. To which extent condensation may occur in the threshold range depends on the humidity content of the chamber load and the ambient conditions.





■ Temperature and humidity test points defined in the ICH guideline

CLIMATE CHAMBERS ICHeco

according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010

Standard units are safety-approved and bear the test marks: $\,$ C \in $\,$ ENI



Stainless steel, mat. 1.4301 (ASTM 304), deep-Interior:

drawn

Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour display) with touchscreen Housing:

Double doors: Outside stainless steel, fully insulated, inside glass

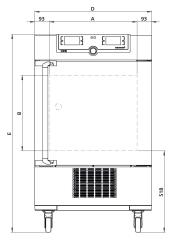
(size 750: two leaves)

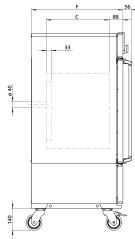
Mains cable with plug (German type) Connection:

Mounted on lockable castors Installation:

Interfaces:







Model sizes/Descrip	otion		110	260	750	
Stainless steel interior	Volume	approx. l	108	256	749	
	Width	(A) mm	560	640	1040	
	Height	(B) mm	480	800	1200	
	Depth (less 33 mm for fan)	(C) mm	400	500	600	
	Max. number of grids/shelves	number	5	9	14	
	Max. loading per grid/shelf	kg	20		30	
	Max. loading of chamber	kg	150	150 200		
	Max. loading per slide-in drip tray	kg	3	4	8	
	Max. loading per bottom drip tray	kg	3	4	8	
extured stainless	Width	(D) mm	745	824	1224	
steel exterior	Height (with castors)	(E) mm	1233	1552	1950	
	Depth (without door handle, depth of handle +56 mm)	(F) mm	585	685	785	
Standard equipment	Stainless steel grids, electropolished	number		2		
	Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by a silicone stopper, standard position at the back			•		
	Water tank including connection hose			•		
	Standard works calibration certificate (measuring point chamber center)		+10, +37	+10, +37 and +30 °C with 60 % rh		
Temperature	Working temperature range without humidity ICHeco (not suitable for long-term storing at sub-zero temperatures. During permanent operation, the glass door may ice over)	°C	-10 to +60			
	Working temperature range ICHeco / ICHeco L with humidity and/or light	°C	+10 to +60			
	Working temperature range ICHeco L without humidity	°C	0 to +60			
	Setting temperature range ICHeco	°C	-10 to +60			
	Setting temperature range ICHeco L	°C		0 to +60		
	Setting accuracy	°C		0.1		
Humidity	Setting range humidity	% rh		10 to 80		
,	Setting accuracy	% rh		0.5		
ight	Illumination unit (only ICHeco L) acc. ICH Q1B, option 2; separately switchable via controller, one box; Number of fluorescent lights with cold white light (size 110: 3, size 260/750: 4), light colour 865 6,500 K; Number of fluorescent lights with UV lamps (all sizes: 2), spectral range from 320 to 400 nm; (daylight and UV light comply with standard illuminant D65)			•		
urther data	Electrical load at 230 V, 50 Hz ICHeco	approx. W		1350		
	Electrical load at 230 V, 50 Hz ICHeco L	approx. W	14	50	1550	
Packing data	Net weight	approx. kg	114	165	254	
	Gross weight (packed in carton)	approx. kg	142	222	324	
	Width	approx. mm	880	930	1330	
	Height	approx. mm	1410	1760	2150	
	Depth	approx. mm	810	930	1050	
Order No. Climate Chambers			ICH110eco	ICH260eco	ICH750ec	
CHeco = Climate	e chamber e chamber with light		ICH110Leco	ICH260Leco	ICH750Lec	

K1

T72

T82

F3

F7

Options		
Chamber modification for the application of reinforced perforated stainless steel shelves or stainless steel grids rails mounted in the working chamber) - includes replacement of standard grids by reinforced grids (ICHeco/ICICH C only)		
Illumination unit (has to be ordered together with the	second hox	

Illum chamber) consisting of 4 fluorescent lights with cold white light (daylight: light colour 865, 6,500 K) and 2 UV lamps in the spectral range of 320 to 400 nm, acc. ICH Q1B, option 2 (daylight and UV light comply with standard illuminant D65) separately switchable via controller (only ICHeco L/ICH L)

Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent lamps: size 110: 5, sizes 260/750: 6, with cold white light (daylight: light colour 865, 6.500 K; daylight complies with standard illuminant D65) (only ICHeco L/ICH

Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent UV lamps: size 110: 5, sizes 260/750: 6, in the spectral range of 320 to 400 nm; UV light complies with

standard illuminant D65 (only ICHeco L/ICH L)

Interior socket, ampacity 230 V/2.2 A, can be switched off with the On/Off switch, cannot be switched individually, moisture tight IP68 (not for ICH110eco L/ICH110L) Entry port, 23 mm clear diameter, for introducing connections at the side, moisture tight, can be closed by flap and silicone stopper, standard positions (F1 and F3

not for models ICHeco L/ICH L) Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by silicone stopper, at the back (please state location). Not for models ICHeco L/ICH L

4 - 20 mA current loop interface

Temperature controller actual value (-20 to +70 $^{\circ}$ C = 4 -Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring (max. 3)

price per sensor (-20 to +70 °C = 4 - 20 mA) Humidity controller, actual value (0 to 100 % rh = 4 - 20

second box (cannot be switched on separately)

Fan speed monitoring with switching off the heating and with alarm in case of failure Works calibration certificate for one (freely selectable) temperature and humidity value Compressed air dehumidification (efficient dehumidification of the interior by means of compressed air - only

ICHeco/ICH and ICHeco L/ICH L) Standard works calibration certificate (measuring point chamber centre) at +10 °C with Door with lock and key (safety lock) Potential-free contact for combination error message (e.g. supply failure, sensor fault, fuse)

Door-open-recognition, shuts down humidity, light and CO₂ (standard with ICH C and ICHeco L/ICH L)

MobileALERT, notification by SMS in case of any error or alarm of the device (requires option H6)	C3	
Accessories	110	260
Stainless steel grid, electropolished	E20165	E28891
Reinforced stainless steel grid, electropolished, max. loading 60 kg; size 750 with guide bars and fixing screws (requires option K1). Please consider max. loading of chamber		
Perforated stainless steel shelf	B00325	B29725

Reinforced stainless steel shelf, max. loading 60 kg; with guide bars and fixing screws (requires option K1). Please consider max. loading of chamber Stainless steel slide-in drip tray, 15 mm rim (may affect the temperature distribution, not in connection with option K1) Stainless steel slide-in drip tray, 15 mm rim, with guide bars and fixing screws (may affect the temperature distribution, only in connection with option K1) Stainless steel bottom drip tray, 15 mm rim (may affect the temperature distribution, not in connection with option K1)

Stainless steel bottom drip tray, 15 mm rim (may affect the temperature distribution, only in connection with option K1) Holder for water tank (2.5 litres) for mounting on the rear of the appliance. Standard equipment for size 750 Central water supply with filter cartridges for connection to the domestic water supply. Product information on demand

Central water supply without filter cartridges for connection to the domestic water supply (only for demineralised water with a conductivity of 5 to 10 μS/cm and a pH value between 5 and 7). Product information on demand **USB-Ethernet adapter**

Ethernet connection cable 5 m for computer interface

USB User-ID stick (with User-ID licence): Oven-linked authorisation licence (User-ID-programme) on Memory-stick, prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number FDA conforming software AtmoCONTROL (FDA edition). Meets the requirements for the use of electronically stored data sets and electronic signatures as laid down in Regulation 21 CFR Part 11 of the US Food and Drug Administration (FDA). Base licence for the control of one unit. Respective IQ/OQ documents available in German and English language (without surcharge)

Integration of additional units (up to max. 31 units) into an already existent FDA-software licence External measuring instrument with sensors for daylight and UV-light. Product information on demand (only ICHeco L/ICH L)

DAkkS calibration for one (freely selectable) temperature and humidity value according to method C (DKD-R 5-7) DAkkS calibration for further temperature and humidity values according to method C (DKD-R 5-7)

one box T81

one box T01 second box (cannot be switched on separately) T02

> R3 F0 left centre/centre

left centre/top F1 right centre/top

V3 ۷6

V4 D00105

C9 В6 Н6

٧7

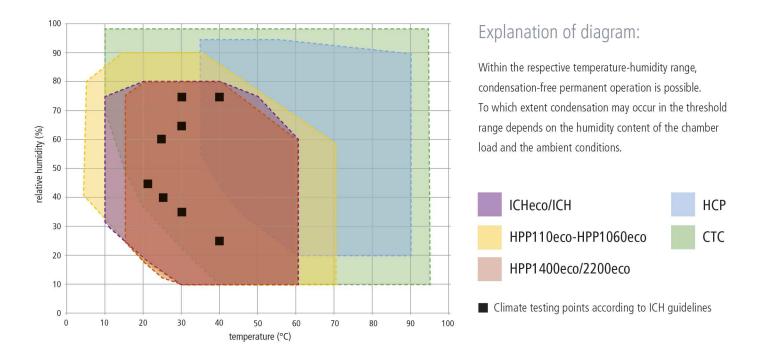
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B32190 B00325 B29725 B00328 B32191 F02073 E29726 E02075 B32763 B04362 B04359 B29722 B34055 E32172 ZWVR6 ZWVR7 E06192 E06189 B33170 FDAQ1 FDA02 B04713 External measuring instrument with additional measuring head for temperature and humidity measurement. Product information on demand B04714 E48847 E48848

E20182

Accessories	110 260	750	
IQ document with device-specific works test data, OQ/PQ check list as support for validation by customer	D00124		
IQ/OQ document with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05. PQ check list as support for validation by customer. 305 € for further temperature values			
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer. 475 € for further temperature and humidity values		D00136	
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, and measuring of light intensity, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer (models ICHeco L/ICH L). 605 € for further temperature and humidity values, and measuring of light intensity	D00137		
On-site IQ/OQ for a freely selectable temperature and humidity value, including temperature distribution survey for 27 measuring points to DIN 12880: 2007-05 (excluding travel costs, not subject to discount, GER, AT, FR only)	DLQ101		
Extension of DLQ101 by an additional freely selectable temperature and humidity value (not subject to discount)			
Individual on-site Performance Qualification (PQ)	DLQ200		
Maintenance ICH/ ICHeco - carrying out and documentation according to Memmert maintenance plan (excluding travel costs, not subject to discount, GER, AT, FR only)	S00322		
Maintenance contract ICH/ ICHeco - carrying out and documentation according to Memmert maintenance plan, minimum duration 3 years (excluding travel costs, not subject to discount, GER, AT, FR only)		S00322J	
Calibration of one freely selectable temperature value (excluding travel costs, not subject to discount, GER, AT, FR only)			
Calibration of an additional temperature value (not subject to discount)			
Calibration of one freely selectable temperature and humidity value (excluding travel costs, not subject to discount, GER, AT, FR only)		S00207	
Calibration of an additional temperature and humidity value (not subject to discount)	S00216		

DECISION AID FOR PRODUCTS WITH HUMIDITY CONTROL



Model selection

Model selection						
Model size in litres (= dm³)	ICHeco/ICH	НРРесо		НСР	СТС	
56				HCP50		
107			* * * * * * * * * * * * * * * * * * *	HCP105		
108	ICH110eco/ICH110	HPP110eco				
156			* * * * * * * * * * * * * * * * * * *	HCP150		
241				HCP240		
256	ICH260eco/ICH260	HPP260eco	8 6 8 8		CTC256	
384		HPP410eco	8 8 8 8			
749	ICH750eco/ICH750	HPP750eco	0 0 0 0 0 0 0			
1060		HPP1060eco	9 9 9 9			
1360			HPP1400eco			
2140			HPP2200eco			
Temp. with hum.	+10 to +60 °C	5² to +70 °C	15³ to +60 °C	7¹ to +90 °C	+10 to +95 °C	
Temp. w/o hum.	-10 to +60 °C	02 to +70 °C	15³ to +60 °C	7¹ to +90 °C	-42 to +190 °C	
Humidity range	10 to 80 % rh	10 to 90 % rh	10 to 80 % rh	20 to 95 % rh	10 to 98 % rh	
Ambient conditions	+19 to +25 °C, max 50 % rh according to Memmert works standard					

¹ above ambient temperature

Important notes concerning working ranges

If the temperature-humidity values exceed the specific limits (working range), the superheated steam introduced will immediately condense at the coldest point in the appliance, due to the dew point.

If the temperature-humidity values fall below the specific limits (working range), the effective range is heavily dependent on the humidity content of the chamber load.

The higher the humidity content of the chamber load, the more steam is generated inside the chamber. This may influence the maintenance of the constant humidity. If you need constant stable operation at the edges or the chamber load is very humid, we recommend dehumidifying with compressed air. We also have other technical solutions for special needs that guarantee stable operation. Send us your inquiry!

To support you in choosing the right appliance, the Memmert TechLab MPTC is always available for tests under realistic conditions. Your customer service representative will gladly establish contact.

² at least 20 °C below ambient temperature

³ at least 10 °C below ambient temperature

MODEL VARIANTS

SingleDISPLAY ControlCOCKPIT with one TFT display	TwinDISPLAY ControlCOCKPIT with two TFT displays		
AVAILABLE APPLIANCES	AVAILABLE APPLIANCES		
UN / UF / IN / IF / IPPeco / IPP / UNm / UFm / INm / IFm / SN / SF / IFbw	HPPeco / ICHeco / ICH / HCP / UNplus / UFplus / UF TS / UNpa / VO / INplus / IFplus / ICO / IPPecoplus / IPPplus / ICPeco / ICP / UNmplus / UFmplus / INmplus / IFmplus / SNplus / SFplus / ICOmed		
One high-resolution TFT colour display with touch-sensitive buttons for selection of functions	Two high-resolution TFT colour displays with touch-sensitive buttons for selection of functions		
Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time	Available parameters on the Control COCKPIT: All parameters of the SingleDISPLAY and device-specific parameters like relative humidity, illumination and ${\rm CO_2}$		
One temperature sensor Pt100 DIN class A in a 4-wire circuit	Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error		
	HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and \pm 50 % (not valid for models 30, HPP110eco, IPP110ecoplus, ICPeco, ICP, ICHeco, ICH)		
AtmoCONTROL software ¹⁾ for reading out, managing and organising the data logger via Ethernet interface (temporary trial version can be downloaded). USB stick with AtmoCONTROL software available as accessory (on demand)	AtmoCONTROL software ¹⁾ on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port		
	ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function		
	Displaying of already logged protocol data on the ControlCOCKPIT (max 10,000 values correspond to approx. 1 week)		
Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging	Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging		
Double overtemperature protection: Electronic temperature monitoring with freely adjustable monitoring temperature, for models U, I, S with option A6 TWW/TWB (protection class 3.1 or 2), mechanical temperature limiter TB acc. to DIN 12880	Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.1 or 2 resp. 3.3 for units with active cooling) and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN / MAX values for over/undertemperature and also for all other parameters such as relative humidity, CO ₂		
PID microprocessor control with	integrated auto-diagnostic system		
Structured stainless steel housing scratch-resistant robust and durable; rear of zinc-plated steel			

Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel

High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards

Internal data logger with a storage capacity of at least 10 years

German, English, French, Spanish, Polish, Czech, Hungarian language settings available on the ControlCOCKPIT

Digital backwards counter with target time setting, adjustable from 1 minute to 99 days

The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points – optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber

Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT

¹⁾ As a manufacturer, Memmert GmbH + Co. KG clearly labels its devices, which are medical devices in the sense of the European legislation. The AtmoCONTROL software is not a medical device.

All Memmert medical devices can be used for their purpose without the software AtmoCONTROL. AtmoCONTROL is only intended for reading the data logging in conjunction with Memmert GmbH + CO. KG medical devices.

SOFTWARE AtmoCONTROL

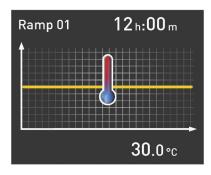
AtmoCONTROL

The innovative control and logging software

Parameters such as temperature and humidity as well as the process time can be set directly at the ControlCOCKPIT. Ramp programming is done via the control and logging software AtmoCONTROL.

Drag, drop & go!

Numerical and graphic programming of complex processes is a thing of the past. Today, programming is done via AtmoCONTROL by means of the mouse or touchpad on your notebook. Even the most complex ramp programmes are created within minutes. Simply drag & drop the graphical symbols for the desired parameters to the input field and change the values according to your wishes with a mouse click.



Programme functions for appliances with SingleDISPLAY and TwinDISPLAY

- Reading out, managing and organising the data logger
- Saving the log memory in various formats
- Online monitoring of up to 32 connected appliances
- Optical alarms when the alarm limits individually set at the ControlCOCKPIT are exceeded
- Automatic alarm to one or several e-mail addresses

Additional functions for appliances with TwinDISPLAY

- Intuitive programming and archiving of ramps and programme sequences
- Synchronous visualisation of the created programme sequence during programming
- Application-specific repeat functions (loops) can be inserted within a temperature control programme in any place
- Simple creation of repeating weekly programmes
- Programming, managing and transferring programmes via Ethernet interface or USB port



24 HOURS AT YOUR SERVICE

www.memmert.com

Here you can find the latest news concerning our company and products, as well as detailed descriptions of every single product. Additional information on the technologies used will support your sales arguments. In addition to this, data sheets, certificates, operating instructions and brochures are available for download. Service notifications can be submitted to our service team using the corresponding form.

Dedicated login area for our trading partners

- Technical information:
 - Service instructions, software download, wiring diagrams, maintenance schedules etc.
- Marketing/sales information:
 - Press releases, product photos, image photos, videos, order form for advertising material etc.
- Download of price list and customisation department price list
- Dates and registration form for sales and service trainings

Our tip:

Please consider the Memmert customer information, which we regularly send exclusively to our trading partners. We inform you about campaigns, upcoming product launches, service offers and new application reports!

Device Modifications - Proven and Good

The perfect extension for your Memmert appliance

Our mission at Memmert is to provide you with the best possible solution for your individual application. With the increasing complexity of customer processes, a custom-fit modification of our appliances has many advantages for your application. Through modifications, process and set-up times can be significantly reduced or errors in the application can be completely ruled out by monitoring devices. Even small measures, such as individually adapted accessories, have a noticeable influence on the ergonomics and user-friendliness in the operation of the appliance.

You as a customer have the best ideas - and often already have a specific idea of how our products can be better used in your working environment.

Tell us about your thoughts and let us create an individual solution together with you! Please contact us and call us at +49 9122-925-0 or send us an email to sonderbau@memmert.com.

The Memmert customisation department team is looking forward to hearing from you!

Versatile modifications for our standard appliances



Mechanics

- Customised interior fittings
- Individual entry ports in all sizes and shapes
- Telescopic slide pull-outs for ergonomic loading



Electronics

- Extended parameter monitoring e.g. by means of additional measuring sensors
- · Optical and acoustic process monitoring e.g. by means of a traffic light system



Software

- · Additional interfaces for data evaluation
- Individual temperature, humidity and CO₂ parameters



Accessories

- Tailor-made subframe and stacking options
- · Modified grids and shelves
- Individual air filters

CUSTOMER SPECIFIC SOLUTIONS

Customised solutions for your requirements

Our expertise as a development partner in plant and project business

The Memmert customisation department has been active in the project business for over 20 years now and has proven itself in countless projects as a strong and reliable partner. The experts in customisation benefit from two aspects: Access to the complete capacities of an ultra-modern and specialised production line, as well as the entire technical know-how of the Memmert company in designing climate and temperature control appliances. Combined with the experience of our project managers, the Memmert customisation department is also able to find a solution for the most complex requirements.

Special sizes

Does your product not fit into a standard unit? We build appliances to measure! Whether you need more volume in the interior or there is not enough space for installation at the installation location, we have the expertise to design your appliance individually. Ask us!

Process and plant integration

Integrate our technology seamlessly into your plant or your work organisation. We will find the right solution together for your process integration:

- · Preparation for integration into your plant
- Integration of your processes into our appliances
- Inclusion of customer-specific installations
- Interface for semi-automatic assembly

Project business

Are you a project developer with ideas for innovative products and looking for a strategic cooperation? Take advantage of our know-how and manufacturing capacities for your project. Our customisation department will be pleased to hear from you!



