



V1 LUX VAULTZ



TECHNICAL DATA

V1 lux VAULTZ

V04 | 02.10.2026

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TECHNICAL DATA V1 lux VAULTZ

These technical specifications are original and have been prepared by the manufacturer.

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Sundern, Oktober 01, 2026, Version 04

V04 | 02.10.2026

1. Base components

- Machine part designed as a cascade refrigeration unit, air-cooled, alternatively water-cooled, incl. energy-efficient electrical control cabinet
- Special evaporator
- Cell combination TYPE ISO 120 in its one-room version
- Service router with interface for remote monitoring
- Control panel: Microsoft Surface Tablet, incl. wall mount
- Semi-Automated Cell Drying
- Music playback in the treatment room
- Service-friendly design
- Energy efficiency through the use of service-friendly, durable semi-hermetic refrigeration compressors, electronic E-valves and speed-controlled fans

2. Technical specifications

2.1 Cascade refrigeration unit, air-cooled; alternatively water-cooled

Cooling capacity:	2.3 kW
Number of refrigeration circuits:	2 units
Refrigerants:	
1. Stage for the condensation of the 2nd stage of cascade	R 449 A
2. Stage for cooling treatment room	R 508 B
Width approx.:	1,440 mm
Depth approx.:	600 mm
Height approx.:	2,000 mm
Weight approx.:	670 kg
Ambient conditions:	
Min./max. ambient temperature:	5/25 °C
Sound pressure level at a distance of 3 meters, approx.:	65 dB (A)
Blow-off line cold:	¾" / min. PN 30bar (22 mm CU pipe)
Blow-off line water:	¾" / min. PN 10bar (fabric hose/CU pipe)

Adequate ventilation and, if necessary, air conditioning of the machine room must be provided.

2.2 Electrical control cabinet integrated in the machine part

Back-up fuse max.:	35 A
Maximum operating current at operating point*:	18.3 A
RCD installed:	Type A / 30 mA
Total connected load at operating point*:	12 kW
Electrical connection value:	3Ph/N/PE 400 V 50 Hz 32 A
Electrical system type:	TN – Network / TNC Network
Frequency converter in Stage 2:	7.5 kW / RFI filter Class A1 / B Operating point 2.2 kW
Control unit:	Siemens SPS S7-1200
Cabinet:	Integrated in the machine housing
Relays / contactors:	Weidmüller / Siemens
Circuit breaker:	ABB
Main switch:	ABB
System test:	according to DIN-EN 60204

*The operating point is an empirically determined value, which can vary due to various external effects.

2.3 Special evaporator

- Evaporator specifically designed for low temperature applications
- Evaporator block soldered with silver solder
- Evaporator core tubes internally finned
- Fan specifically designed for low temperature applications
- Electric defrost incl. safety shut-down
- Additional register for automatic dehumidification

2.4 Tablet and additional operating options

Display:	Microsoft Surface Tablet, incl. wall mount
Software:	Microsoft Windows 11

The following functions can be operated via the tablet:

- Music playback
- Temperature monitoring
- Countdown timer
- Switching the light on and off
- Setting the timer

Remote VPN access can be booked optionally

2.6 Semi-Automated Cell Drying

- **Wait for the cycle to end:** The set time has elapsed, or the system has been shut down manually.
- **Open the door:** Open the door as far as it will go. Make sure it is held in place.
- **Position the fan:** Set up the external fan outside the door's swing range so that the airflow is directed directly into the cell.
- **Start drying:** The cell is automatically dried through air exchange.
- **Close the door automatically:** The door closes automatically at the set start time. The closure is then automatically verified.
- **Wait for operation to resume:** The system automatically returns to operating mode.

2.6 Service router with interface for remote monitoring

- Internet connection via WAN port
- PLC monitoring with an alert system (via e-mail)
- VPN switch for simplified on-site administration
- German brand product

Network:

VPN	OpenVPN server, OpenVPN client
WAN/LAN	2 x RJ 45 10/100 Mbit/s, full and half duplex
WLAN	802.11 b/g/n, access point, WAN client

2.7 Music playback in the treatment room

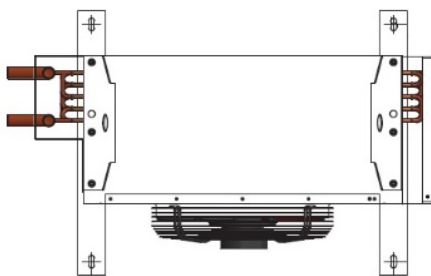
- Loudspeaker in treatment room

3. Choosable components

- Air-cooled condenser
- Water-cooled condenser with chill water
⚠ no city-water (drinking-water)
- Dry cooler incl. pump and expansion tank
- Cold water chiller
- Condensate pump, condensate for fully automated discharge of condensation water
- Cell combination

3.1 Air-cooled condenser

- High-efficiency compact vertical condenser
- Housing: galvanized steel, similar to RAL 7035
- EC-fan which meets the efficiency requirements of Directive 2009/125/EC



Width approx.:	1,719 mm
Depth approx.:	770 mm
Height approx.:	1,355 mm
Empty weight approx.:	156 kg

Max. ambient temperature:	43 °C
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Sound pressure level (OP) at a distance of 1 meters, approx.: 54 dB (A)

*On request, the unit can be designed in horizontal construction.

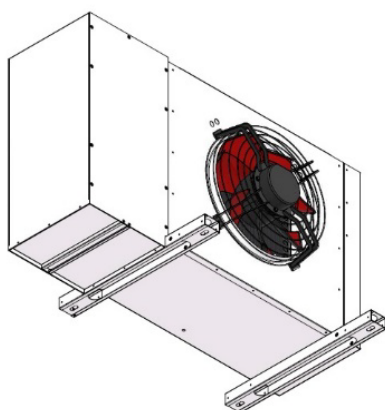
3.2 Water-cooled condenser (chill water)

⚠ Attention: no city-water (drinking-water)

Intake/discharge connections:	3/4" R-AG
Cold water volume flow	2.0 m ³ /h
Water intake min./max.	5/20 °C
Water pressure min./max.	1.5/5 bar

3.3 Dry cooler incl. pump and expansion tank

- The dry cooler is optimised for use in ultra-low temperature units
- The very compact housing has a vertical design
- The finned tube heat exchangers are designed for high efficiency with water-glycol mixtures
- The dry cooler is equipped with maintenance-free and durable EC fans
- The speed is controlled via a SPS
- Maximum distance to the dry cooler: 20 m



Dry cooler power:	14 kW
Air volume flow:	6,500 m ³ /h
Air intake:	40 °C
Air discharge:	46.8 °C

Medium: ethylene glycol:	34% volume
Medium intake:	50 °C
Medium discharge:	45 °C
Pressure loss:	0.19 bar
Volume flow:	2.66 m³/h
Width approx.:	1,994 mm
Depth approx.:	770 mm
Height approx.:	1,357 mm
Weight approx.:	200 kg
Sound pressure level (OP) at a distance of 1 meter, approx.:	54 dB (A)

3.4 Cold water chiller (on request)

3.5 Cell combination Rectangular Version TYPE ISO 120

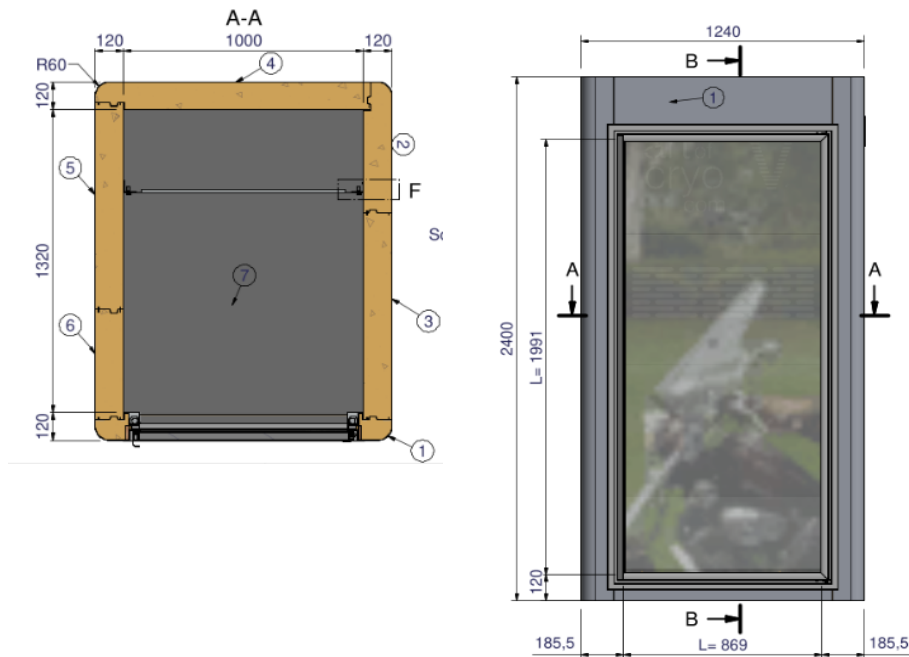
Insulation:	120 mm rigid polyurethane foam Foamed free of CFCs/HCFCs
Surface:	Sheet metal, galvanized on the inside and the outside, powder coated
Pressure compensation:	2 pc of pressure compensation valves with increased heating
Floor:	0,8 mm stainless steel floor manufactured as a bottom tray. Slip resistance class 11 load capacity 20 kN/m²
Lighting:	2 pcs of LED linear lights / LED lightning / time line
Inner dimensions:	
Width approx.:	1,200 mm
Depth approx.:	1,300 mm
Height approx.:	2,115 mm
Exterior dimensions:	
Width approx.:	1,440 mm
Depth approx.:	1,540 mm
Height approx.:	2,355 mm
Weight approx.:	450 kg

The colour is similar to RAL 9010 on the inside and RAL 9006 on the outside, other RAL colours are possible, on request.

Environmental specifications:

Temperature range: 18-23 °C

Rel. air humidity, max.: 50%



3.5.1 All-glass entrance door

Type:

DIN left or right

Insulating glass door with frame

Door dimensions approx.

926 x 2,045 mm (W x H)

Internal door dimensions approx.:

869 x 1,991 mm (W x H)

- Circumferential magnetic seal
- Natural anodised aluminium frame with heating
- Continuous handle rail
- Heated triple glazing

3.6 Cell combination Corner Version TYPE ISO 120

Insulation:	120 mm rigid polyurethane foam Foamed free of CFCs/HCFCs
Surface:	Sheet metal, galvanized on the inside and the outside, powder coated
Pressure compensation:	2 pcs of pressure compensation valves with increased heating
Floor:	0,8 mm stainless steel floor manufactured as a bottom tray. Slip resistance class 11 load capacity 20kN/m ²
Lighting:	2 pcs of LED linear lights / LED lightning / time line
Inner dimensions:	
Width approx.:	1,230 mm
Depth approx.:	1,230 mm
Height approx.:	2,400 mm
Exterior dimensions:	
Width approx.:	1,470 mm
Depth approx.:	1,470 mm
Height approx.:	2,640 mm
Weight approx.:	500 kg

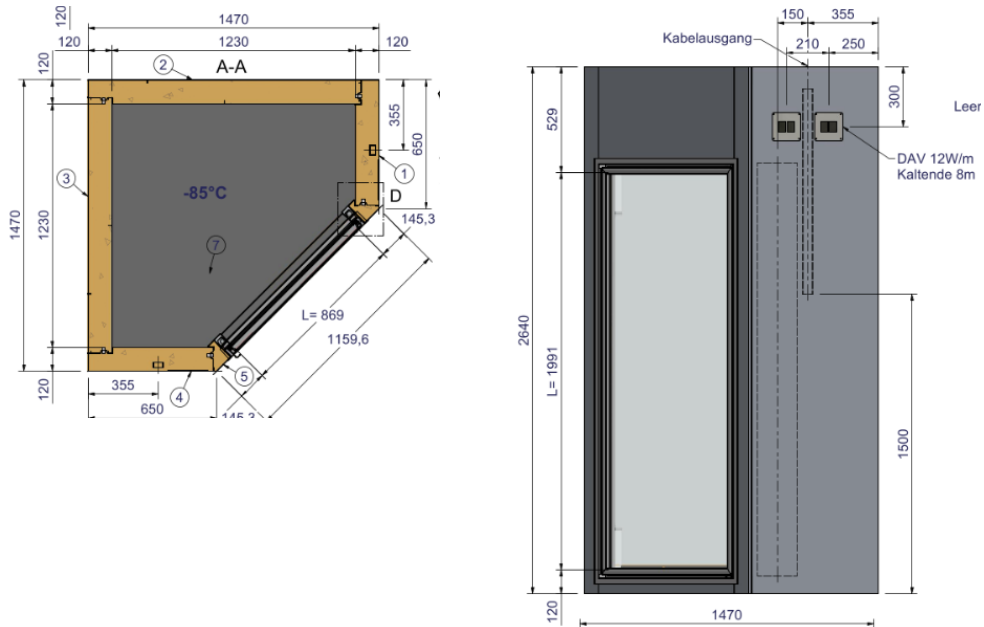
The colour is similar to RAL 9010 on the inside and RAL 9006 on the outside, other RAL colours are possible, on request.

Environmental specifications:

Temperature range: 18-23 °C

Rel. air humidity, max.: 50%

All joint seals on the cell, windows, doors and elements serve as a maintenance joint.



3.6.1 All-glass entrance door

Type:

DIN left or right

Insulating glass door with frame

Door dimensions approx.

926 x 2,045 mm (W x H)

Internal door dimensions approx.:

869 x 1,991 mm (W x H)

- Circumferential magnetic seal
- Natural anodised aluminium frame with heating
- Continuous handle rail
- Heated triple glazing

4. Optional components

- Hybrid cooling (switchable air and water cooling)
- Heat recovery

4.1 Hybrid cooling

- Manually switchable air and water cooling on request again extra cost

4.2 Heat recovery

The condensation capacity is 9 kW.

- Delta T 5 K
- Connection nozzle ½" inch
- Pressure drop approx. 0.3 bar
- Flow rate 1.2 m³/h

The heat output depends on the desired water temperatures. High water temperatures lead to partial liquefaction in the heat recovery heat exchanger, the remaining liquefaction takes place in the downstream condenser.

Example with a condensation power of 9 kW

100% heat recovery at a water temperature of up to 38 °C:	approx. Q = 9.0 kW
approx. 60% heat recovery at a water temperature of up to 45 °C:	approx. Q = 8.0 kW
approx. 40% heat recovery at a water temperature of up to 50 °C:	approx. Q = 7.5 kW
approx. 20% heat recovery at a water temperature of up to 55 °C:	approx. Q = 7.0 kW

Information: When using chlorinated water in operation, an intermediate circuit must be installed to separate the system. A titanium heat exchanger can be used as an option (on request).

5. On-site services

In order to ensure optimal introduction, installation and commissioning of V1 lux, please meet the following prerequisites:

5.1 Connections

1. Current:
Back-up fuse max.: 35 A
Operating voltage: 3Ph/N/PE 400 V 50 Hz
Electrical system type: TN – Network / TNC !

The system is fitted with an RCD Type A / 30mA and a 7.5 kW frequency converter / RFI filter Class A1 / B (operating point 2.2 kW).

2. Network / Internet:

The service router sets up an outbound TCP connection to the address.
<https://vpn.kaeltecloud.de> (IPv4: 128.140.2.254, alt. IPv6: 2a01:4f8:c2c:3e7f::1)
In order to establish a secure connection to the server, the following requirements must be met:

- a DNS server must be accessible in your network
- the above IP address (IPv4: 128.140.2.254) must be enabled
- the following TCP-Port must be enabled for the VPN tunnel: TCP-Port 443
- the following TCP-Port must be enabled for the Cloud-function: TCP-Port 8883
- UDP port 123 should be open for synchronization

3. Cooling water data  **no city-water (drinking-water):**

- Intake/discharge connections: 3/4" R-AG
- Water flow rate: 2 m³/h
- Flow temperature min. / max.: 5/20 °C
- Water pressure min. / max.: 1.5 / 5 bar

Note on water quality:

Upon request, we can provide you with a guideline table of recommended water quality.

5.2 Set-up

- Unloading and bringing in of the components
- Container or similar for the disposal of the packaging material
- Free routes for bringing in
- If necessary floors should be protected (no warranty for damage)
- Fire safety measures
- Masonry, chiselling, earthworks, roofing and coating
- Lifting equipment such as cranes, scaffoldings, mobile working platforms, forklift trucks etc.
- Installation on level floor with flowing screed or tiles, max. 2 cm tolerance over a total length of 6 m
- Breakthrough as hole for condenser/dry cooler incl. drain line: 200 mm diameter (for all variants).

Breakthrough between machine and cell:

single Vaultz: 200 x 500 mm

All breakthroughs must be sealed by the customer after our installation according to local fire standards.

In order to guarantee problem-free function of V1 lux, the following points must be taken into account:

5.3 Ambient conditions

1. Cell and treatment room:

- At least 5-fold air exchange of the room volume according to DIN EN 16798 part 3.
- Temperature range: 18–23 °C
- Rel. humidity: under 50%
- If a dehumidifier is used, please ensure automatic water drainage.
- It is possible that moisture (e.g. condensation or water due to snow formation) may escape from the cell. The manufacturer accepts no liability for any damage to the substrate and/or parts such as walls or drywall components. Please take appropriate precautions here.

2. Machine room:

Sufficient intake and exhaust ventilation and, possibly, air conditioning of the machine room, to make sure that an ambient temperature of min./max.: 5 / 25 °C is maintained.

Please note that

- a) the heat emission of the cooling unit and control cabinets is: 2.5 kW without consideration of the installation location.
- b) Other heat sources and a reserve must be taken into account in calculations
- c) We expressly point out that the machine may transmit disturbing vibrations and noises to the building during operation. If necessary, precautions against the transmission of vibrations and noises to the building must be organized by the customer. This is not the responsibility of the manufacturer.

6. General provisions

- Design and documentation of the machine according to the L&R standard and CE certification
- The limit values specified in EN 50160 must be observed for supply voltage

Note on water quality:

Various processes can take place in water-bearing systems, which can lead to corrosion, mineral deposits and also biological problems. We reject any claims for malfunctions or damage to systems or system components caused by insufficient water quality. In order to achieve proper and trouble-free operation of water-bearing systems, the water quality must therefore be checked and, depending on system-relevant data, water treatment and water treatment must be carried out.

On request, we can provide you with a reference value table for the recommended water quality.

Technical changes:

Our systems, machines and components are state-of-the-art. We reserve the right to introduce technical changes that do not impair the performance and functions of the system.

Pipe lengths:

Machine to cell = up to 10 m included in order

Machine to cell = maximum 20 m

Machine to condenser = up to 10 m included in order

Machine to condenser = maximum 30 m

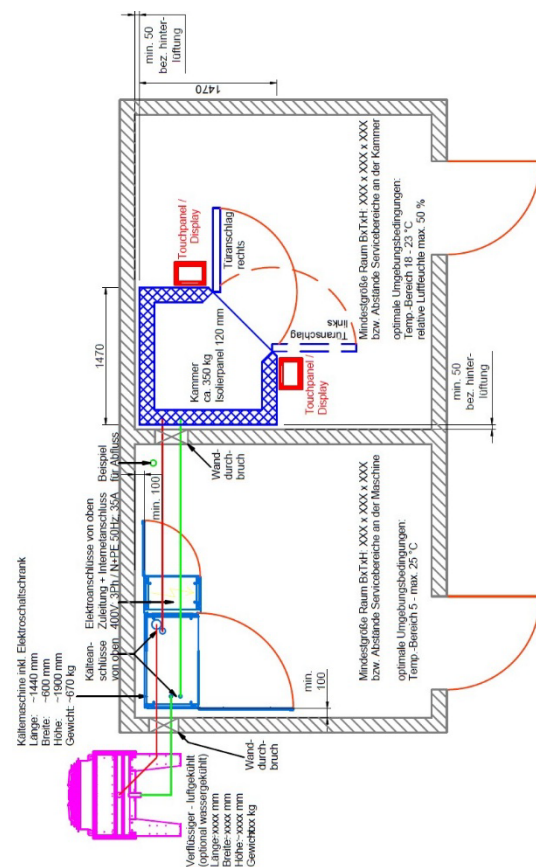
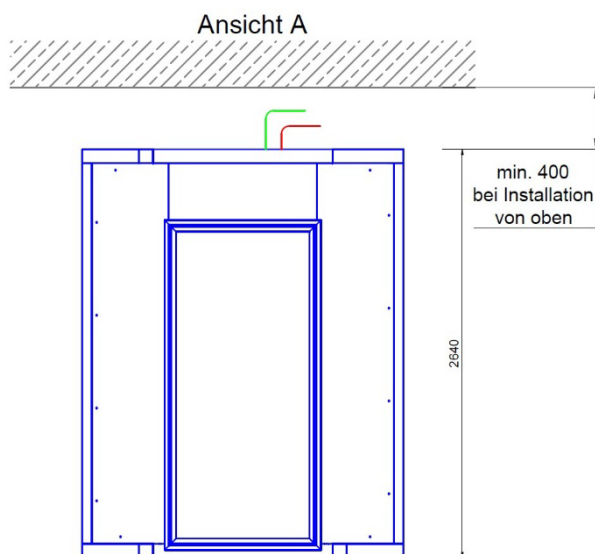
Machine to dry cooler = up to 10 m included in order

Machine to dry cooler = maximum 20 m

General note:

The shorter the pipes between the machine and the cell, the more energy-efficient the machine.

7. Drawings & Pictures



8. Certificates

ZERTIFIKAT • CERTIFICATE • CERTIFICAT • CERTIFICATO • CERTIFICADO • 認証証書



ZERTIFIKAT

gültig bis: 07.05.2034

CERTIFICATE

valid until: 07.05.2034

EU-Baumusterprüfung (Modul B) - Baumuster - nach Richtlinie 2014/68/EU

EU Type examination (module B) - production type - according to Directive 2014/68/EU

Zertifikat-Nr.: Z-IS-TAK-MUC-24-05-3337919-08094822

Certificate No.:

Name und Anschrift des Herstellers: L & R Kältetechnik GmbH & Co. KG
Hachener Straße 90a-c
59846 Sundern, Germany

Name and address of manufacturer:

Hiermit wird bescheinigt, dass das unten genannte Baumuster die Anforderungen der Richtlinie 2014/68/EU erfüllt.
We herewith certify that the type mentioned below meets the requirements of the Directive 2014/68/EU.

Prüfbericht Nr.: P-IS-TAK-MUC-24-05-3829363-3
Evaluation report No.: vom 07.05.2024

Geltungsbereich: Baugruppen Kaskaden Kälteanlagen und Baugruppen Kaskaden Wärmepumpen
Scope of examination: zusätzliche Angaben siehe Anlage

Fertigungsstätte: L & R Kältetechnik GmbH & Co. KG
Hachener Straße 90a-c
59846 Sundern, Germany

München, 08.05.2024
(Ort, Datum)
(Place, date)

Einhaltsprüfung durch App TÜV SÜD Verify
Verification of Certificate by TÜV SÜD App Verify

Notifizierte Stelle, Kennnummer 0036 Dokument ID: 3337919VH06
Notified Body, No. 0036
TÜV SÜD Industrie Service GmbH
Westendstr. 109
80586 München
GERMANY

TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Druckgeräte

Johannes Steiglechner
Johannes Steiglechner



Seite 1 zum Zertifikat Nr. / Page 1 of the certificate No. Z-IS-TAK-MUC-24-05-3337919-08094822

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CERTIFICATE



International Certification Management GmbH



L & R Kältetechnik GmbH & Co. KG
Innovative Kältetechnik
D-59846 Sundern Hachen, Hachener Str. 90a

Standard: DIN EN ISO 9001:2015

Scope:
Development, installations, distribution of refrigeration systems, switch and control cabinets, refrigeration and cryogenic systems for process engineering and manufacturing operations in industry

With this certificate it is confirmed, that the L&R Kältetechnik GmbH & Co. KG Innovative Kältetechnik applies a management system which meets the requirements of DIN EN ISO 9001:2015

Jutta Deinbeck
Jutta Deinbeck, Leiterin Zertifizierungsstelle
Überschneidung, 17.11.2025




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International Certification Management

Approved

Certificate No. 10171/GM/10.25
Issue date 02.12.2025
Valid until 01.12.2028

Translation of the German original

International Certification Management GmbH
Straubinger Straße 19
94363 Oberschneiding
Germany

info@ic-management.com
www.ic-management.com

FACHUNTERNEHMERBESCHEINIGUNG

KÄLTE KLIMA FACHBETRIEB



L & R Kältetechnik GmbH & Co. KG

Hachener Str. 90a-c

59846 Sundern

Ein Unternehmen wird mit dem Vollhandwerk „Kälteanlagenbauer“ in die Handwerksrolle eingetragen, wenn der Betriebsleiter die Voraussetzungen für dieses Gewerbe erfüllt. Dem Betriebsleiter eines solchen Unternehmens ist die entsprechende Sach- und Fachkunde zur Installation, Prüfung und Wartung von Kälteanlagen insbesondere im nachfolgenden Sinne zuzurechnen:

- Er erfüllt die persönlichen Voraussetzungen zur Erlangung von Zertifikaten gemäß der Chemikalien-Klassifizierungsverordnung / Durchführungsverordnung (EU) 2024/2215, Folgende Tätigkeiten: darfen gemäß Artikel 3 Abs. 2 a) i. V. m. Artikel 2 Abs. 1 dieser Durchführungsverordnung an ortsfesten und mobilen Kälteanlagen, Kälteanlagen und Wärmepumpen, in Bezug auf fluorierte Treibhausgas und Kohlenwasserstoffe durchgeführt werden: Dichtheitskontrolle, Kältemittelrückgewinnung, Installation, Reparatur, Instandhaltung und Wartungen.
- Er besitzt die erforderliche Sachkunde im Sinne des § 5 Abs. 2 Nr. 2 i. V. m. § 5 Abs. 1 Satz 1 Nr. 1 der Chemikalien-Ordnungsverordnung.
- Er weist die notwendige Berufsausbildung einer zur Prüfung befähigten Person im Sinne des § 2 (6) Betriebsstättenverordnung auf.
- Er besitzt die notwendige Fachkunde zur Durchführung einer energetischen Inspektion an Kälteanlagen gem. § 77 Nr. 3 des Gebäudeenergiegesetzes und zur Betriebsprüfung an Wärmepumpen gem. § 65a Abs. 4 Nr. 3 des Gebäudeenergiegesetzes.

Das Kälteanlagenbauhandwerk ist ein zulassungspflichtiges Handwerk gem. § 1 Abs. 2 i. V. m. Anlage A Nr. 18 der Handwerksordnung.

Bescheinigung gültig bis:



(Befristungszeitraum)



Verband Deutscher Kälte-Klima-Fachbetriebe e.V.

Der VDKF e.V. ist mit über 1000 Mitgliedsbetrieben seit 1962 der führende deutsche Wirtschaftsverband der Kälte-, Klima- und Wärmepumpenbranche und Partner des Kälteanlagenbauhandwerks (40.000 Mitarbeiter, Umsatz 6,8 Mrd. Euro). Der VDKF ist Mitglied in vielen nationalen und europäischen Organisationen und versteht sich als Schnittstelle zwischen Politik, Verbänden, Industrie, Handel und Handwerk.

Verband Deutscher Kälte-Klima-Fachbetriebe e.V. • Josef-Bauer-Haus • Kaiser-Friedrich-Straße 7 • 53103 Bonn
Telefon: +49 (0)228 - 2 49 80 • Fax: +49 (0)228 - 2 49 89 • E-Mail: info@vdkf.de • www.vdkf.de

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L & R Kältetechnik GmbH & Co. KG
Hachener Str. 90c
D-59846 Sundern-Hachen





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EU Konformitätserklärung / EU Declaration of conformity
DGRL 2014/68/EU Anhang VII / PED 2014/68/EU, Annex VII

Hiermit erklären wir, dass die benannte Baugruppe/Maschine allen einschlägigen Bestimmungen dieser Richtlinie entspricht / We hereby declare that the machine assembly complies with all relevant provisions of this Directive.

Bezeichnung / Designation: Kryo-Kältekammer / Cryo cold chamber
Kältemittel / Refrigerant: R 448 A / R508B
Typ / Type: Vault V1
Projekt-Nr. / project-no.:
Baujahr / Year of manuf.: 2024

Kategorie II, Modul B (Baumuster) / Category II, Module B (type examination) / C2
Notifizierte Stelle / Notified body: TÜV Süd Industrie Service GmbH
Rickenstraße 75
80036 München

Zertifikat Nr. / Certificate no.: Z-IS-TAK-MUC-24-05-3337919-08094822
Modul B (Baumuster) / Module B (type examination): Z-IS-TAK-MUC-24-05-3337919-08113505

Dokument mit der Baugruppenbeschreibung und den angewandten Konformitätsbewertungsverfahren / Document with description of assembly and the applied conformity assessment procedures: 0010685 Vers. 1

Angewandte Richtlinien / Other applied directives:
Maschinenrichtlinie 2006/42/EG, Anhang II A
Machinery Directive 2006/42/EG, Annex II A
Richtlinie 2014/53/EU Elektromagnetische Verträglichkeit
Directive 2014/53/EU Electromagnetic Compatibility

Angewandte harmonisierte Normen / Applied harmonized standards:
EN 378-2 : 2018, Kälteanlagen und Wärmepumpen / Refrigerating systems and heat pumps
EN ISO 12100 : 2011, Sicherheit von Maschinen / Machinery safety
EN 61000-6-1 und 2 : 2019, Störfestigkeit / Immunity

Angewandte nationale technische Spezifikationen, insbesondere:
Applied national technical specifications, in particular:
DIN 8901 : 2002, Schutz von Erdreich, Grund- und Oberflächenwasser / Protection of soil, groundwater and surface water
DIN 2805 : 2023, Rohrleitungen in Kälteanlagen und Kälteversorgungs, Kälteanordnung / Piping in refrigeration systems and cooling equipment, labelling

Bei einer Änderung der Baugruppe/Maschine, die nicht mit uns abgestimmt ist, verliert diese EU-Konformitätserklärung ihre Gültigkeit.
This declaration of EU conformity shall become null and void when the assembly is subjected to any modification that has not met with our approval.

Sundern, 25/04/2024

Bevollmächtigte Person: *Andreas Köttemann*
Andreas Köttemann
Technischer Geschäftsführer

L & R -Anforderung CC - V23-0010 - 3448
Modell-Nr. - IS-Nr.

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www.artofcryo.com