



Liquid Chillers Grasso BluGenium

Product Information (Translation of the original text)

L_141011_1

COPYRIGHT

All Rights reserved.

No part of this publication may be copied or published by means of printing, photocopying, microfilm or otherwise without prior written consent of

- GEA Refrigeration Germany GmbH

herein after called **manufacturer**. This restriction also applies to the corresponding drawings and diagrams.

LEGAL NOTICE

This product information is a part of the documentation for the Grasso scope of delivery and serves as product presentation and customer advisory service. It contains important information and technical data regarding the product.

The product information makes the technical, product related and commercial information available to the customer in detail before the sale of the product.

This product information serves as a support and technical advisory service for our partners and customers as well as for the marketing team. Apart from serving as the medium for transfer of product know-how, it also forms the basis for product demonstrations, the organisation and conduction of technical seminars as well as the technical support at trade fairs.

This product information should be supplemented with the information about the industrial safety and health related regulations at the site of installation of the product. The regulations vary from place to place as a result of the statutory regulations applicable at the site of installation of the product and are therefore have not been considered in this product information.

In addition to this product information and the accident prevention regulations applicable for the respective country and area where the product is used, the accepted technical regulations for safe and professional work must also be observed.

This product information has been written in good faith. However, GEA Refrigeration Germany GmbH cannot be held responsible for any errors that this document may contain or for their consequences.

GEA Refrigeration Germany GmbH reserves the right to make technical changes during the course of further development of the equipment covered by this product information.

Illustrations and drawings in this product information are simplified representations. As a result of the improvements and changes, it is possible that the

illustrations do not exactly match the current development status. The technical data and dimensions are subject to change. No claims can be made on the basis of them.

PREFACE

The figure on the front page shows the **chiller** with housing (optional equipment feature).

TABLE OF CONTENTS

1	SERIES OVERVIEW	9
1.1	Chiller with reciprocating compressors – BluGenium series	10
2	TECHNICAL SPECIFICATIONS	12
3	SCOPE OF DELIVERY	14
4	CASING	15
5	OPERATION LIMITS	16
6	DESCRIPTION OF DESIGN AND FUNCTION	18
6.1	Design, applications	18
6.2	Mode of operation	19
6.3	Main components	20
6.3.1	Reciprocating compressor	20
6.3.2	Compressor drive motor	21
6.3.3	Coupling	21
6.3.4	Evaporator	21
6.3.5	Condenser	22
6.3.6	Oil cooler	22
6.3.7	Safety devices	23
7	CONTROLLER	24
7.1	Switching cabinet/control/frequency inverter	24
7.2	TouchPanel	25
7.3	Monitoring and display of process values	26
8	DIMENSIONS, WEIGHTS, FILL QUANTITIES AND CONNECTIONS	27
8.1	BluGenium 300 series... BluGenium 1200	27
9	PERFORMANCE CHARACTERISTICS	29
9.1	BluGenium 300 performance parameters ... BluGenium 1200	29
10	SOUND PRESSURE LEVEL	30
11	MANUFACTURER INFORMATION	31

TABLE OF FIGURES

fig. 1	Chiller Grasso BluGenium _____	9
fig. 2	Housing, view _____	15
fig. 3	Standard chiller Grasso BluGenium _____	20
fig. 4	Position of the reciprocating compressor _____	20
fig. 5	Arrangement of the compressor drive motor _____	21
fig. 6	Arrangement of the coupling, _____	21
fig. 7	Arrangement of the evaporator _____	21
fig. 8	Position of the condenser _____	22
fig. 9	Arrangement of the oil cooler _____	22
fig. 10	Position of the switching cabinet _____	24
fig. 11	Communication options (interfaces) _____	25
fig. 12	General screen layout _____	25
fig. 13	BluGenium 300 ... BluGenium 1200 _____	27

1 SERIES OVERVIEW

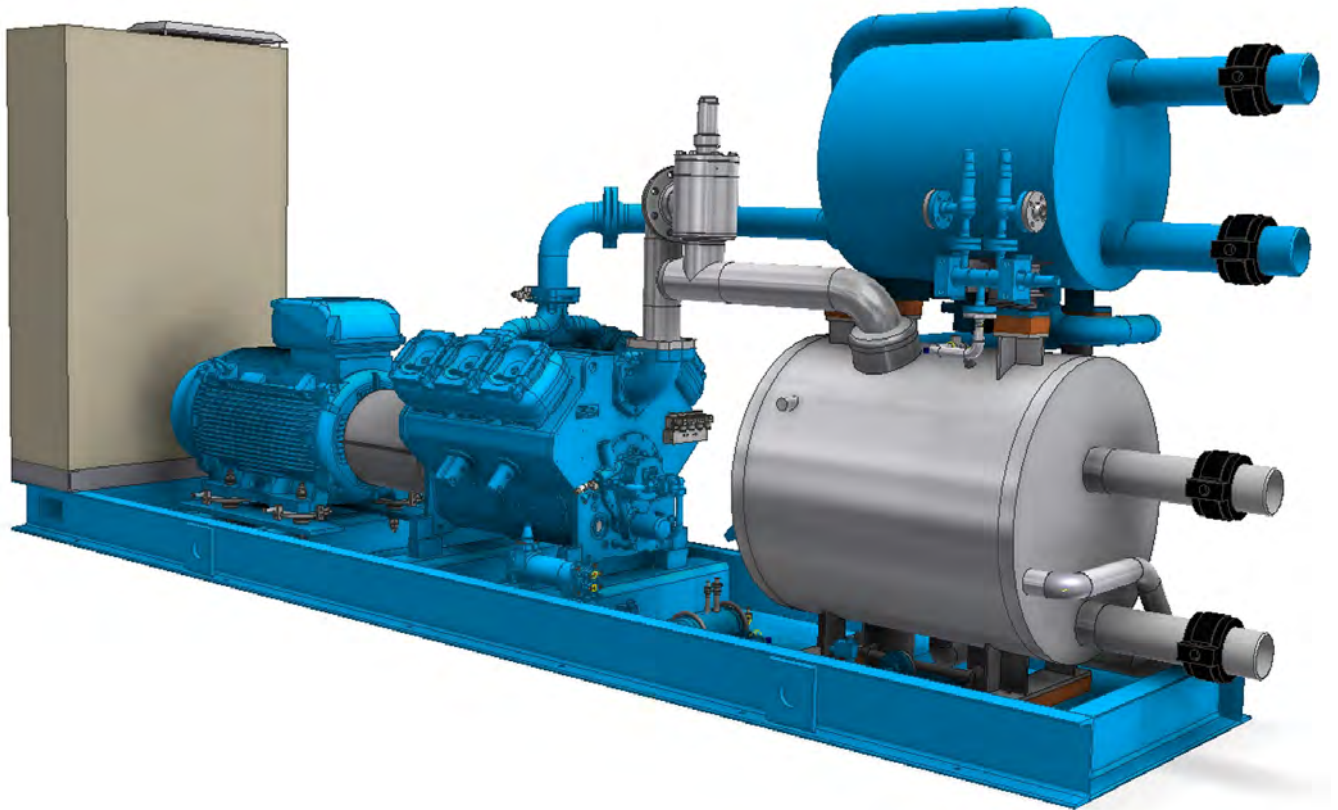
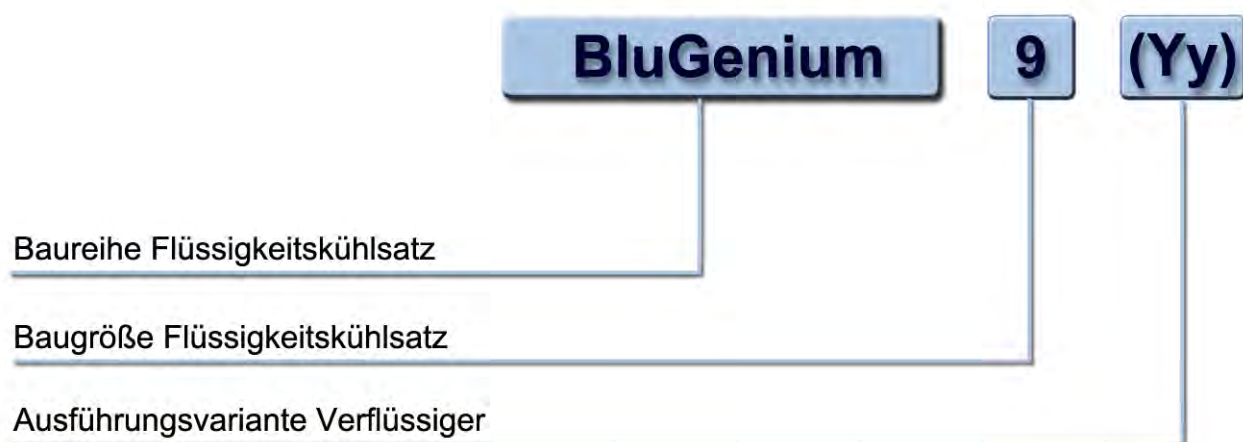


fig.1: Chiller Grasso BluGenium

Capacity range	280 - 1210 kW 12/ 6 °C (coolant temperature) / 30/ 35 °C (cooling medium temperature)
Grasso reciprocating compressor	Grasso series V300–V1100 $V_{th} = 290 \dots 1194 \text{ m}^3/\text{h}$
Chiller	BluGenium
Evaporator type	Fully welded plate heat exchanger with integrated separator
Working principle	flooded evaporation
Liquid separator	integrated
Condenser type	Fully welded plate heat exchanger
Transport	1 part

1.1 Chiller with reciprocating compressors – BluGenium series



BluGenium	Chiller series
9	Nominal chiller capacity (kW) related to cold water operation 12 °C/ 6 °C
Y	Condenser version

BluGenium = Chiller series**9 Nominal chiller capacity 1500 min⁻¹ kW related to cold water operation 12 °C / 6 °C**

Compressor type	Nominal capacity in kW
V300	300
V450	450
V600	600
V700	900
V1100	1200

(Yy) = Condenser version

(W)	Water/liquid-cooled plate heat exchanger (fully welded), Chiller for indoor installation
(Wx)	Water/liquid-cooled plate heat exchanger (fully welded), Chiller for outdoor installation

Naming example


BluGenium 900 (W)	Chiller with reciprocating compressor, flooded evaporation with integrated separator (BluGenium) Nominal capacity of the chiller 900 kW (900) Evaporator and condenser designed as fully welded plate heat exchanger Chiller for indoor installation (W)
--------------------------	--

2 TECHNICAL SPECIFICATIONS



Hint!

The chillers are manufactured and delivered according to technical specifications. On the basis of the standard equipment, optional equipment variants can be considered.

Standard equipment	
Operating pressure:	max. 25 bar
Intended environment:	closed machine rooms
Ambient temperatures:	+5 °C to +40 °C
High above sea level:	≤ 1000 m above sea level
Secondary refrigerant temperature: 1	-15°C/ 6°C/ 15°C
Electric motor:	Default scope of delivery IP 23
Refrigerant:	R717
Type of oil:	Reflo 68A  Caution! please contact the manufacturer in case of other types of oil
Oil cooling: (BluGenium 900 to BluGenium 1200)	liquid cooled (internal piping)
Oil heater (in compressor crankcase)	scope of delivery
Oil filter:	Single stage filter
Spare oil filter:	Oil pressure filter cartridge, delivered separately (included)
Oil level switch:	without
Pressure sensors:	on sensor block compressor
separate push-button switch:	without
Overflow valve:	scope of delivery

1 temperature difference secondary refrigerant maximum 10K / standard 5K

Standard equipment	
Safety valve HP / LP:	Safety shuttle valve combination
Flow switch:	Mechanical
Control:	GSC TP
Power current and frequency inverter:	Default scope of delivery, cable entry from below
Colour:	RAL 5014 (dove blue), switching cabinet RAL 7035
Housing:	without (standard)
Vibration isolators:	without (standard)
Approval pressure equipment:	CE-PED, Module H (piping)
Documentation:	1x paper form + 1 CD ROM

Optional equipment	
Spare oil filter:	can be delivered
Housing:	can be delivered, colour: RAL 7035 (pebble grey)
Communication:	Profibus DP Modbus RTU Modbus TCP
Electric motor:	IP 55
Flow switch:	electronic
Vibration isolators:	can be delivered
Approval pressure equipment:	CE-PED, Module H1 (complete chiller)

3 SCOPE OF DELIVERY

The chillers of the **BluGenium** series consist of the following components:

- Reciprocating compressor,
- Evaporator with integrated separator
- Condenser
(design type (R): not included in scope of delivery),
- Electric motor with coupling
- Automatic oil return system,
- Oil cooler (BluGenium 900 and 1200),
- Oil filter,
- Suction filter
- Speed-dependent capacity control,
- Monitoring and safety devices,
- Frequency inverter
- Low-voltage installation with control GSC TP,
- HP-receiver (for condenser design type (R) only).

All components are fully mounted. Low-voltage installation with frequency inverter and control are wired.

The oil cooling (BluGenium 9-- and 1200) takes place via a water cooled oil cooler.

By default, a rigid installation on the foundation is intended. If necessary (e.g. installation on suspended ceilings), an installation insulated against structure-borne sound shall be carried out. The vibration isolators required for the installation are optionally available.

When installing on vibration isolators, the piping connections on the secondary refrigerant and cold water side should be coupled isolated from vibrations using rubber expansion joints.

All connections are closed tight.

Service fluids

The chillers of the **BluGenium** series are delivered without refrigerants and oil. They are filled with dry nitrogen (0.2 bar ... 0.5 bar overpressure).

When commissioning a start-up or a factory acceptance test (FAT) the refrigerating machine oil is included in the scope of delivery.

Insulation

Specification without housing:

The insulation is done using polyurethane foam 50 mm with aluminium cladding.

Specification with housing:

The insulation is done using Armaflex 18 mm.

Painting

The painting is done with 2 component EP paint RAL 5014 with a coating thickness of 120 µm.

Approval

After acceptance, the chillers of the **BluGenium** series get a CE label in accordance with the Pressure Equipment Directive 97/23/EC.

Documentation

Each chiller of the **BluGenium** series is delivered with user documentation. The user documentation contains:

- Drawings and part lists,
- Safety Instructions,
- Operating manual
(with the description of the refrigerant and oil circuits, the instructions for installation, start-up and maintenance),
- Documentation of the main components (electrical motor, control),
- Maintenance schedule
- Acceptance certificate for components requiring acceptance

4 CASING

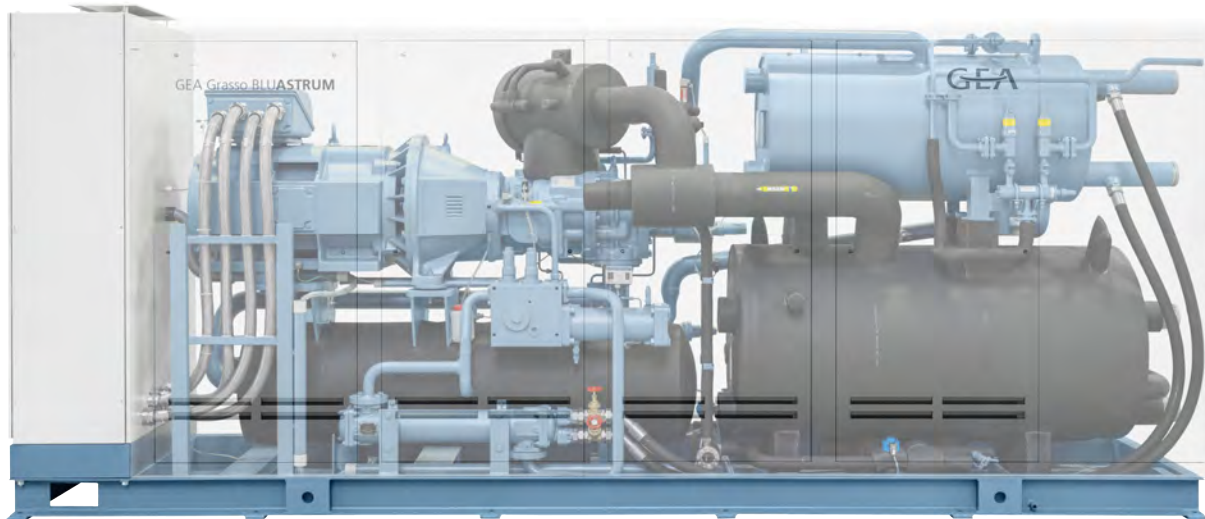


fig.2: Housing, view

As an additional option GEA Refrigeration Germany offers sound insulation for your machine room using a newly developed casing.

The double-walled and down-closed housing construction with insulating material reduces the sound pressure level measured outside by around 5 dB(A) and thereby achieves a significant noise reduction.

In addition the housing also serves as protection against physical contact.

An ventilation system keeps the temperatures in the interiors within limits and simultaneously prevents heat losses on the unit.

Individual wall elements can be quickly and easily dismantled, so that the access for maintenance work is ensured. Alternatively the entire housing can be removed completely by loosening a few screws in the base frame.

Last but not the least, the filigree design combines the functional requirements with modern, high-quality optics.

5 OPERATION LIMITS

The chillers from the BluGenium series can be operated within the specified operation limits according to the respective specifications under diverse work conditions. The operation limits listed below are based on the operational principle of the reciprocating compressor, thermodynamic relationships, the vessels and safety devices in use, and the practical operating conditions.

Refrigerant				NH ₃
Speed	n	min ⁻¹	min	500
			max	1500
Suction pressure	p ₀	bar (a)	min	1.9
			max	7.0
Outlet temperature of water as secondary refrigerant	t _{k2}	°C	min	+ 2.5
			max	+15
Outlet temperature with frost-resistant secondary refrigerants	t _{k2}	°C	min	- 15
			max	+ 15
Discharge pressure	p _{dis} = p _c	bar (a)	max	22.5
Condenser inlet temperature of cooling medium	t _{w1}	°C	min	12
			max	45
Condensing temperature	t _c	°C	min	18
			max	52
Discharge temperature at compressor outlet	t _{dis}	°C	max	150
Pressure ratio (p _c /p ₀)	j	-	min	1.5
			max	10
Pressure difference (p _c /p ₀) *	delta p	bar	min	4
			max	19.0

Notes

- When considering a specific application, all the conditions specified in the table must be taken into account and adhered to.
- If the specified limits are exceeded for a specific application, the manufacturer must be consulted.
- In addition to the operation limits given in the tables, consider the operating conditions which must be observed for the compressor (e.g. start-up regime, oil pressure, oil quantity, type of oil etc.).
- The specified data refer to the operating conditions of a cooling or air-conditioning system. During downtime or start-up, the limiting values may be exceeded or fallen short of for a short (never long-term) period of time.

* The given pressure difference ensures reliable compressor operation. Furthermore, allowance must be made for the pressure difference necessary for the control valves fitted in the refrigerating plant.

6 DESCRIPTION OF DESIGN AND FUNCTION

6.1 Design, applications

The **BluGenium** Chiller Programme provides proven components as complete refrigeration systems for medium and large refrigeration and/or air conditioning requirements.

Main fields of application:

- cold water for air conditioning
- cold brine for air conditioning with combined ice storage operation
- cold water for industrial processes
- cold brine for industrial processes
- (cold) and warm water for heat pump operation

In principle, these refrigeration systems use ammonia as refrigerant which is characterized by a high refrigerating capacity, low energy consumption and a favourable price and are completely neutral towards the environment.

Equipped with the reciprocating compressor series, the **BluGenium** chillers cover the refrigeration range of 300 to 1200 kW for cold water.

The output ranges are defined by 7 sizes of the reciprocating compressor series.

The **BluGenium** chillers work with flooded evaporator systems on the basis of gravity recirculation and can be fitted with a variety of condenser types.

The chillers have a modular design and comprise the following main modules:

- Standard compressor unit
- Heat exchanger subassembly with integrated liquid separator and de-oiling system
- Low-voltage installation with frequency inverter and control

The arrangement of the components ensures the extremely compact design of the chillers.

Only flat plate evaporators with integrated separator are used as evaporators.

On the condenser side, the following versions are used:

- Plate type condenser

The **BluGenium** chillers are supplied, as a standard, ready for connection, fully piped and wired.

The heat exchangers are designed according to the parameters of a project, taking into account a maximum energy efficiency on the evaporator and the condenser side.

The standard version of the chillers is equipped with a freely programmable control.

All operating and fault signals as well as the process variables can be read from a display.

The control device is operated via a Touch Panel.

The chillers are delivered without refrigerant and refrigerating machine oil. They are filled with dry nitrogen (0.2 bar ... 0.5 bar overpressure).

When commissioning a start-up or a factory acceptance test (FAT) the refrigerating machine oil is included in the scope of delivery.

Each chiller is supplied with user documentation containing a description of the refrigeration cycle, commissioning instructions, an operating manual and the maintenance instructions.

Separate installation instructions are provided for detailed information about the reciprocating compressors.

6.2 Mode of operation

The reciprocating compressor draws refrigerant vapour from the liquid separator integrated into the evaporator and compresses it to condensation pressure.

The refrigerant is condensed in the condenser under heat extraction.

The expansion and injection of the refrigerant in the evaporator takes place using an electronic injection system.

As result of liquid refrigerant absorbing heat the refrigerant evaporates and the secondary refrigerant is cooled down.

Despite the very low oil discharge from the reciprocating compressor, oil goes into the low pressure side of the chiller.

A special automatic and maintenance-free oil returning system developed by GEA Refrigeration Germany GmbH returns the oil from the evaporator back to the compressor.

This is a basic precondition for fault-free operation of the evaporator system.

The capacity control of the reciprocating compressor takes place continuously using the frequency transformer control of the compressor drive motor in the speed range between 500 and 1500 n/min.

Further adjustment in the lower performance area is realised at 500 n/min via a stepped switching on and off of the cylinders.

Through this optimal and efficient capacity control of the chiller is possible.

6.3 Main components

The chillers of the Grasso BluGenium series consist of the following components:

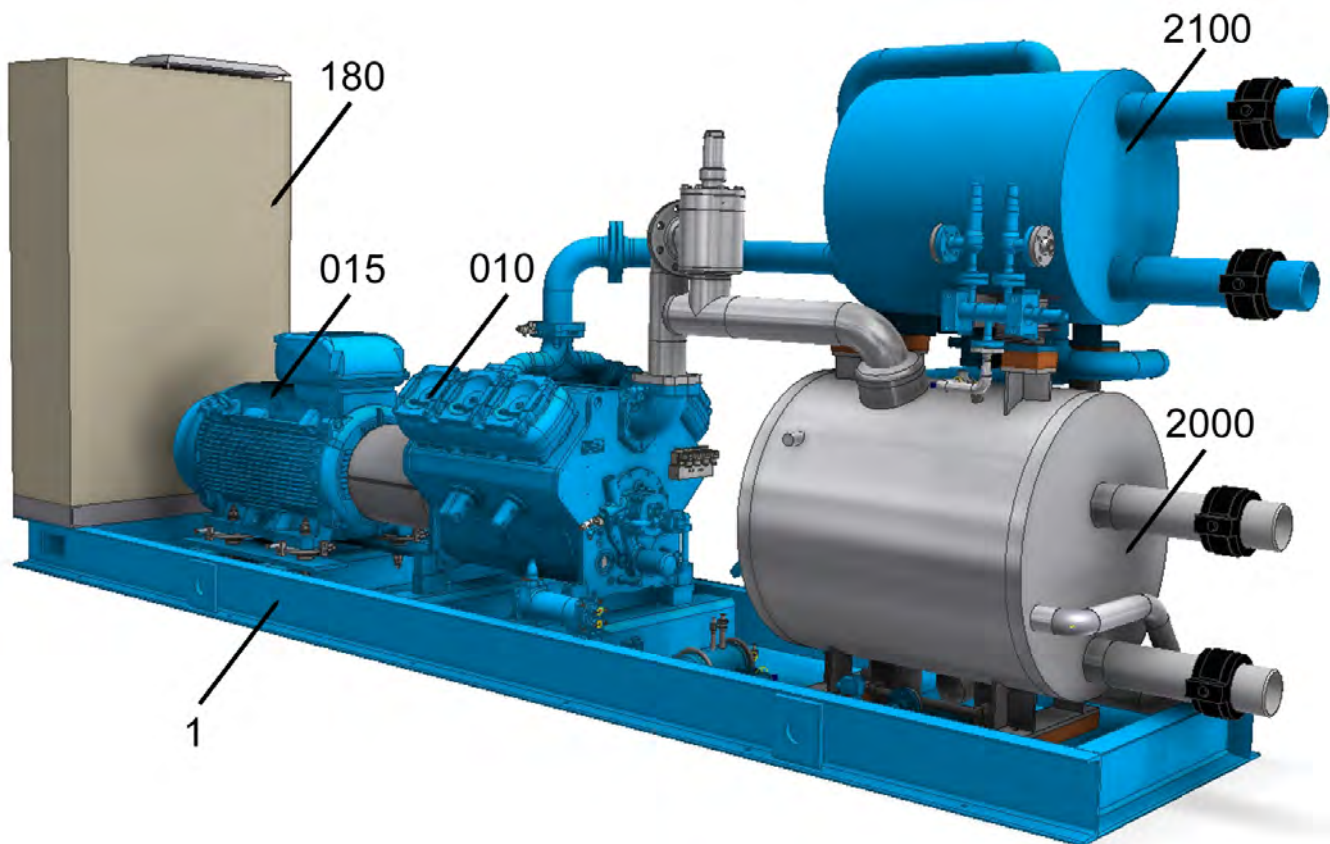


fig.3: Standard chiller Grasso BluGenium

1	Common base frame for all components
010	Reciprocating compressor
015	Compressor drive motor
180	Switching cabinet, control and direction of control
2000	Evaporator with integrated liquid separator
2100	Water cooled condenser

6.3.1 Reciprocating compressor

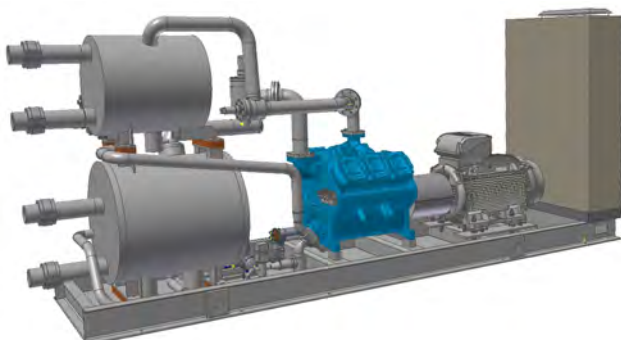


fig.4: Position of the reciprocating compressor

The BluGenium uses open, single-action, multi-cylinder reciprocating compressors for the refrigerant ammonia (R717) in the rated capacity range of 290 to 1194 m³/h.

The reciprocating compressors are characterized by a compact design, a high reliability, high quality components and the ease of maintenance.

The compressors are operated with ammonia (NH₃) as the refrigerant. Reflo 68A is approved as the refrigerating machine oil.

Please contact the manufacturer in case of other types of oil.

With the compressor the suction of the ammonia vapour and its compression created in the evaporator takes place at condensing pressure.

The pressure and temperature transmitters installed on the compressor are used to monitor the operating values of the compressor. With the compressor the individual cylinders can be switched off either by bypass valves or suction valve relief devices.

The compressors have the following equipment features:

- Start-up load relief
- Capacity control by cylinder switch-off
- Monitoring oil difference pressure
- Oil heater
- Monitoring discharge pressure
- Monitoring suction pressure
- Monitoring crankcase pressure
- Monitoring discharge temperature
- Monitoring oil temperature
- Monitoring suction temperature

Safety equipment on the pressure generators is standard in compliance with EN 378 and accident prevention regulations BGV D4 by current linkage valves combined with DBK safety pressure limiters.



Hint!

The documentation of the compressor (installation and maintenance instruction) is a part of the product documentation.

6.3.2 Compressor drive motor

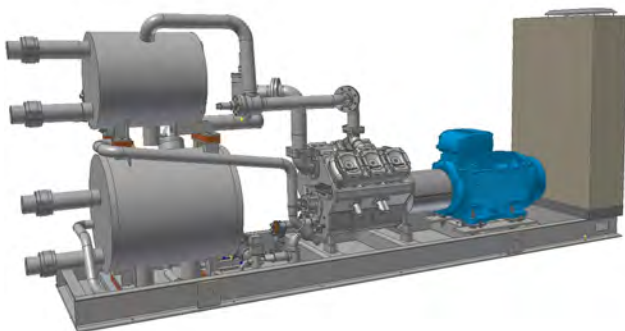


fig.5: Arrangement of the compressor drive motor

Standard: The compressor is directly driven by an air-cooled 4-pole electric motor IP23 with an operating voltage of 400 V; 50 Hz using a coupling.

The BluGenium series is equipped as standard with a motor which is rpm regulated via a frequency inverter (500 to 1500 rpm).

Optional: Motor version with degree of protection IP55 (in the version with housing degree of protection IP55 is standard)



Hint!

The documentation of the electric motor (operating manual) is a part of the product documentation.

6.3.3 Coupling

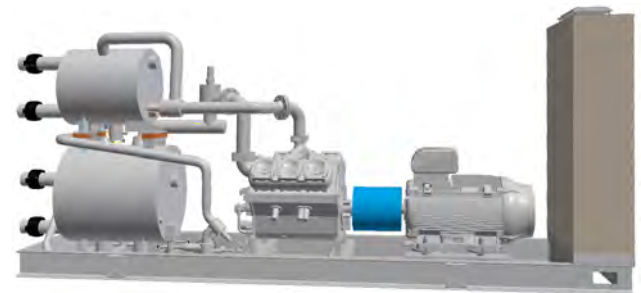


fig.6: Arrangement of the coupling.

The coupling helps in transmission of torque between compressor and compressor drive motor. The non-clutch design of the coupling brings about the neutralisation of the otherwise disturbing influences such as axial or radial forces, vibrations or offset. Speed fluctuations and speed shocks are damped and cushioned, torsional vibrations are reduced.

6.3.4 Evaporator

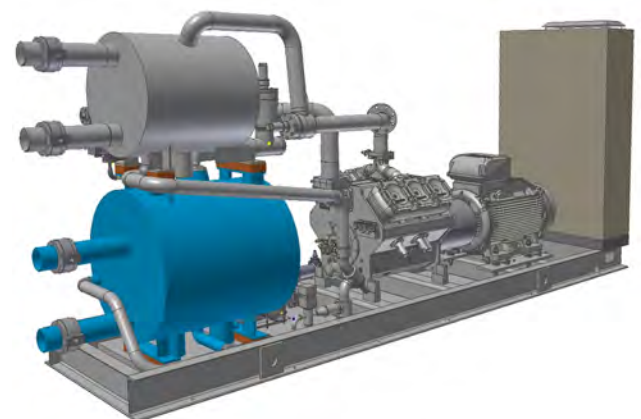


fig.7: Arrangement of the evaporator

In the evaporator heat is absorbed from the secondary refrigerant (which is thereby cooled) by way of evaporation of the refrigerant. The evaporator works by the principle of overflowed evaporation.

Liquid drops are effectively separated in the liquid separator integrated into the evaporator.

Design, manufacture and acceptance of the evaporator with integrated liquid separator comply with the requirements of the Pressure Equipment Directive.



Hint!

The documentation of the evaporator (operating and maintenance instructions, acceptance certificate) is a part of the product documentation.

6.3.5 Condenser

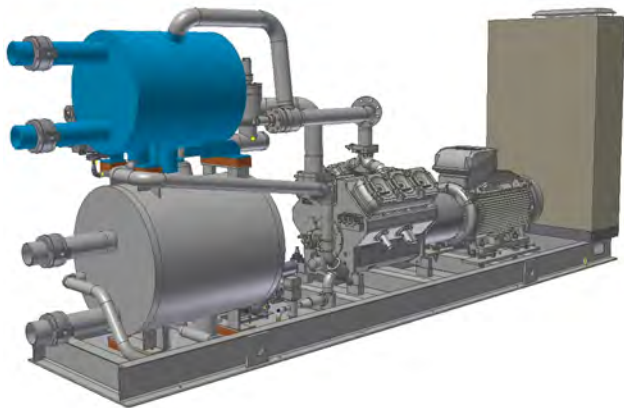


fig.8: Position of the condenser

In the condenser the compressed refrigerant vapour is desuperheated and liquefied by dissipating the energy absorbed in the evaporator and compressor to the cooling medium (heating).

Design, manufacture and acceptance of the condenser comply with the requirements of the Pressure Equipment Directive.

Condenser designed as a plate heat exchanger (included in the scope of delivery)



Hint!

The documentation of the condenser (operating and maintenance instructions, acceptance certificate) is a part of the product documentation.

6.3.6 Oil cooler

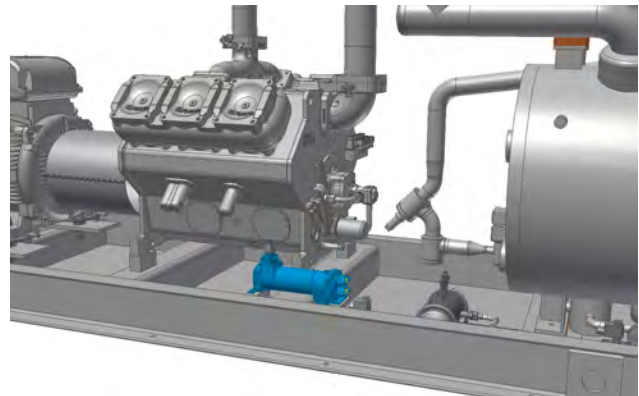


fig.9: Arrangement of the oil cooler

The BluGenium 900 to 1200 chillers are equipped with a liquid cooled oil cooler.

(The BluGenium 300 to 600 types are designed without an oil cooler.)

The oil cooler is used for cooling the oil heated in the compressor in order to ensure sufficient oil viscosity for supplying to the compressor.

The oil cooler is complete piped on water side.



Hint!

The documentation of the oil cooler (acceptance certificate) is a part of the product documentation.

6.3.7 Safety devices

The chiller is equipped with a comprehensive software safety chain preventing too high pressures, temperatures and the hazard of freezing.

A suction as well as condenser pressure control and a rated current limitation control cause an adjustment of the rating classes of the compressor whenever the adjustable limit values are exceeded.

Due to the applicable laws and regulations, various certifying bodies require a vast range of auxiliary equipment with independent safety devices.

Following safety equipment is included if the chiller is delivered with CE label according to EN 378.

- Overflow valve (integrated into the compressor) from discharge to suction side
- Double safety valve with pressure relief connection



Hint!

The contractors must guarantee that the pressure relief connection is safely operated to the outside.

- Safety pressure limiter (2 independent switching positions with manual internal and external reset)
- Pressure relief device for each closable container which can contain liquid refrigerant. This applies to all containers with a diameter > 152 mm and a volume > 100 litres barring oil separator and oil filter.

The scope of delivery for the chiller does **not** include the following safety devices in relation to escaping ammonia:

- Protective equipment (health and industrial safety)
- Gas warning device

In case of delivery according to EN 378 with CE label, all parts of the documentation mentioned in the regulation are also delivered in the national language of the place where the chiller is installed.

All other approvals have to be agreed upon separately.

7 CONTROLLER

7.1 Switching cabinet/control/frequency inverter

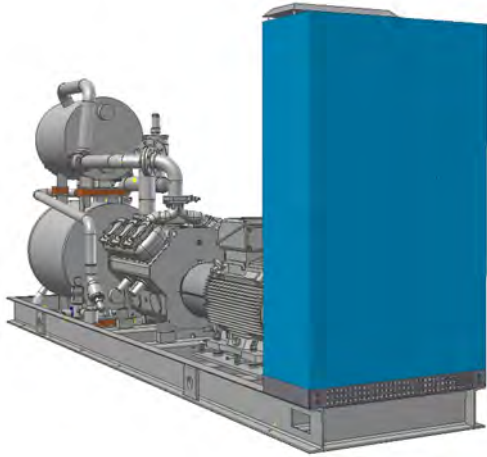


fig.10: Position of the switching cabinet

The control consists of the power current with frequency inverter and control unit with operator keypad and display unit, indicator lights for "Running", "Warning" and "Alarm", the emergency stop button, the output relays and the housing.

The switching cabinet with the control is directly mounted on the chiller.

The control performs the following functions as standard:

- Display of all important physical and technical parameters, e.g. pressure, temperature, motor current, capacity, number of operating hours, operating mode and status signals

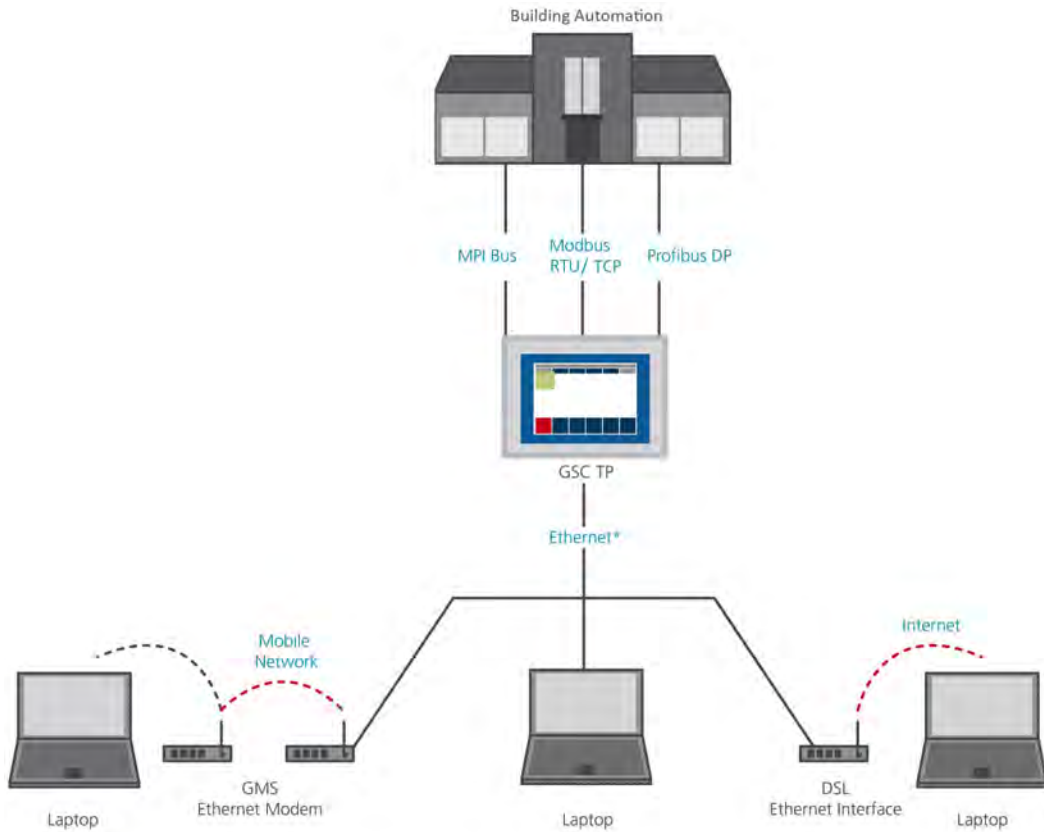
- Automatic start-up and shutdown of the chiller as well as capacity regulation depending on the water (brine) outlet temperature
- Monitoring of all operating parameters
- Compressor capacity limitation, in case the measured discharge pressure, suction pressure, secondary refrigerant outlet temperature or motor current indicate overload
- Fault memory with date and time
- Wire failure detection for all analogue input signals
- Password protection for preventing unauthorised access to important parameters
- Non-volatile saving of program
- Possibility of communication with master controller via MPI
(optionally via Profibus-DP, Modbus RTU or Modbus TCP)
- Remote access (optional via Ethernet)



Hint!

The communication guideline offers detailed information about communication of the control. The communication guideline can be made available before a planned installation.

The documentation for the control is a part of the product documentation.



* currently only for remote service by GEA Grasso

fig.11: Communication options (interfaces)

7.2 TouchPanel

The TouchPanel is the interface between the man and the machine.

All switching, operating and control actions are carried out via this TouchPanel.

The TouchPanel is available in different languages.



fig.12: General screen layout

1	Information bar
2	Navigation bar with "Pull down" menus
3	Main display with selection areas
4	Function key bar

7.3 Monitoring and display of process values

The following operating parameters are continuously monitored and displayed by the control:

Name	Remark
Suction pressure	Suction pressure in bar (a) and the corresponding evaporation temperature in °C
Discharge pressure	Discharge pressure in bar (a) and the corresponding condensation temperature in °C
Oil pressure	Oil pressure in bar(a)
Oil diff. pressure	Oil differential pressure in bar
Suction temperature	Suction temperature in °C
Discharge temperature	Discharge temperature in °C
Oil temperature	Oil temperature in °C
External temperature	Secondary refrigerant temperature in °C
Secondary refrigerant inlet temp. ¹⁾	Secondary refrigerant inlet temperature in °C
Outlet temperature	Secondary refrigerant outlet temperature in °C, freeze protection
Secondary refrigerant flow	Secondary refrigerant flow
Motor current	Motor current in A
Motor speed	Motor speed in rpm
Heating agent inlet temperature ¹⁾	Cooling medium inlet temperature into the condenser in °C
Heating agent outlet temperature ¹⁾	Cooling medium outlet temperature from the condenser in °C
Run hours	Running hours
Auto start delay	Remaining time for auto start delay in sec.
Auto stop delay	Remaining time (auto) for auto stop delay in sec.
Start to start	Start to start, remaining time between two starts of the compressor in sec.
Stop to start	Stop to start timer, remaining time in sec.

¹⁾ optional

8 DIMENSIONS, WEIGHTS, FILL QUANTITIES AND CONNECTIONS

8.1 BluGenium 300 series... BluGenium 1200



Hint!

The data is applicable to the following standard conditions:

1. Temperature of the secondary refrigerant +12°C / +6°C
2. Heating agent temperature +30°C / +35°C

Deviant data can be the result of other conditions.

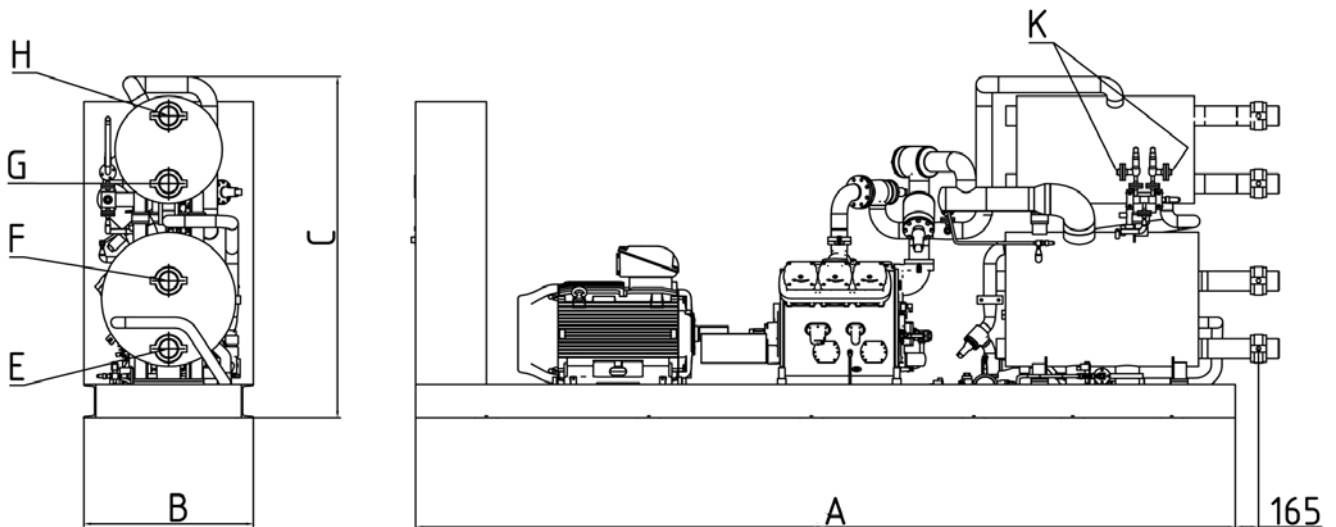


fig.13: BluGenium 300 ... BluGenium 1200

Characteristics							
Code			Chiller BluGenium				
			300 ¹	450 ¹	600 ¹	900 ¹	1200 ¹
A	Length	mm	4600	4600	5300	5300	5600
B	Width	mm	1200	1200	1200	1200	1200
C	Height ²	mm	2140	2220	2270	2340	2460
E	Connection Cold water IN	DN	80	100	100	100	125
F	Connection Cold water OUT	DN	80	100	100	100	125

Characteristics							
Code			Chiller BluGenium				
			300 ¹	450 ¹	600 ¹	900 ¹	1200 ¹
G	Connection Cooling water IN	DN	80	80	100	100	125
H	Connection Cooling water OUT	DN	80	80	100	100	125
K	Connection of blow-off line to safety valve	DN	25	25	25	25	25
	Unladen mass ²	kg	4010	4740	5900	6270	8600
	Operating mass ²	kg	4270	4950	6360	6690	9100
	Filling quantity (Oil)	l	17	24	35	23	32
	Fill amount (Refrigerant NH ₃)	kg	40	42	65	76	91

¹ subject to technical changes

² without housing

9 PERFORMANCE CHARACTERISTICS

9.1 BluGenium 300 performance parameters ... BluGenium 1200

Secondary refrigerant inlet temperature = 12 °C

Secondary refrigerant outlet temperature = 6 °C

Q_0 : refrigerating capacity

P_e : driving power (clamping performance)

Q_c : Condenser capacity at cooling medium inlet / outlet temperatures = 30/35 °C

Type	Q_0 in kW	P_e ¹ in kW	Q_c in kW
BluGenium 300	280	54	330
BluGenium 450	420	81	495
BluGenium 600	560	106	660
BluGenium 900	810	149	949
BluGenium 1200	1210	220	1419

¹ clamping performance (including motor / frequency inverter power losses)

10 SOUND PRESSURE LEVEL

Measuring-surface sound-pressure level

At a distance of 1 m from the machine surface (A-close range sound level at open air conditions on reflecting surface) for chillers (1 compressor and 1 drive motor)

Determining the measured values:

- Without secondary sound insulation.



Hint!

Measuring-surface sound-pressure level strongly depends on the type of the chiller and especially on the type of the drive motor (manufacturer, type, protection type).

Because of this the values are guide values, which have to be confirmed by the technical specifications of the project.

Measuring-surface sound-pressure level (without housing)					
Motor	Chiller				
at 40 °C P _e in kW	BluGenium 300	BluGenium 450	BluGenium 600	BluGenium 900	BluGenium 1200
75	78	-	-	-	-
110	-	78	-	-	-
132	-	-	79	-	-
160	-	-	-	81	-
250	-	-	-	-	87
315	-	-	-	-	-

The values in the table are verified by actual measurement. If no values are specified, these are not yet available or not applicable for the chiller size.



Hint!

Reduce the measuring-surface sound-pressure level (1 m) by 5 dB(A) for BluGenium with housing.

11 MANUFACTURER INFORMATION

GEA Refrigeration Germany GmbH is a company within GEA Refrigeration Technologies, the Refrigeration Technology Segment of the GEA Group and provides its customers around the world with high-quality components and services for refrigeration and process technology applications.

Locations:

GEA Refrigeration Germany GmbH

Holzhauser Str. 165

13509 Berlin, Germany

Phone: +49 30 43592-600

Fax: +49 30 43592-777

Web: www.gearefrigeration.de

E-Mail: info@grasso.de

GEA Refrigeration Germany GmbH

Werk Halle

Berliner Straße 130

06258 Schkopau/ OT Döllnitz, Germany

Phone: +49 345 78 236 - 0

Fax: +49 345 78 236 - 14

Web: www.gearefrigeration.de

E-Mail: info@grasso.de



We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

GEA Refrigeration Technologies

GEA Refrigeration Germany GmbH

Holzhauser Str. 165, 13509 Berlin, Germany
Phone: +49 30 435 92 600, Fax: +49 30 435 92 777
refrigeration@gea.com, www.gea.com