



The GEA Grasso Blu series:

GEA Grasso BluAstrum, GEA Grasso BluGenium & GEA Grasso BluAir

A new generation of ammonia chillers

GEA Grasso BluAstrum, GEA Grasso BluGenium, and GEA Grasso BluAir form the product series of a new and especially compact generation of GEA chillers. This new generation includes a total of 16 ammonia chillers, advantageously balanced with each other and optimized in each model version for significant customer benefits. Whether for food and beverage industry, process industry, or office buildings: turnkey chillers from the GEA Grasso Blu series provide optimal refrigeration and air conditioning solutions for your needs.

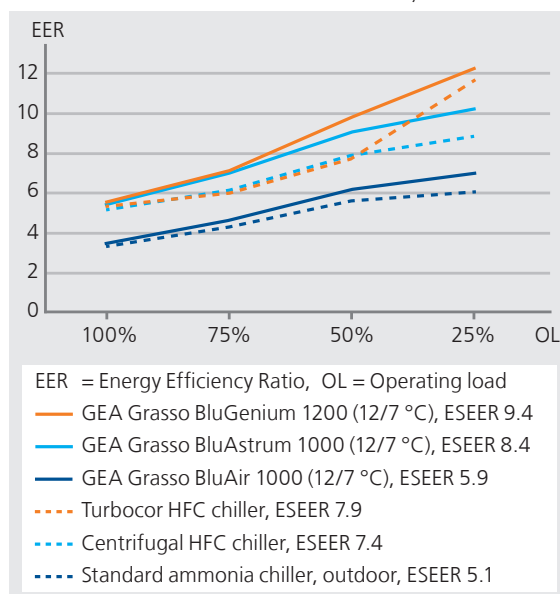
Setting benchmarks today that will be standards tomorrow

The new chillers from the GEA Grasso Blu series are based on more than 100 years of GEA experience in refrigeration technology, in combination with a great number and wide variety of technical innovations. With outstanding efficiency characteristics, great reliability, and not least the use of only ammonia as natural refrigerant, these models prove to be a safe and pioneering solution. Thanks to their unique and compact design, the models in the GEA Grasso Blu series are also highly effective for restricted machine rooms: e.g., for shifting of factory sites or for retrofit installations. These chillers are the solution of choice for secondary refrigerant outlet temperatures from -15 to +15 °C.

For efficiency, in a class of their own

- *Excellent ESEER up to 9.4*
- *Continuous speed control between 10 and 100 %*
- *Low discharge temperatures of the heat exchangers*
- *Minimal refrigerant charge*
- *Low operational and maintenance costs*

With its new GEA Grasso Blu series, GEA presents you with no fewer than three model ranges: all with outstanding efficiency that result in a European Seasonal Energy Efficiency Ratio (ESEER) up to 9.4. A sophisticated design has assured low discharge temperatures of the heat exchangers, with a smaller refrigerant charge at the same time. The GEA Grasso Blu series operate with frequency inverters as standard, which allow infinitely variable capacity control with high energy-efficiency. Advanced electronics also makes a key contribution here: the electronic condenser



drain system guarantees optimal capacity utilization of the evaporators. Variable speed control by the frequency inverter likewise provides great efficiency under part and full loads. The use of ammonia, with its great evaporation enthalpy, additionally allows energy advantages. These and other measures can reduce energy consumption by up to 30 % – a major benefit that pays off with appreciably lower operating expenses.

We take reliability very serious

The GEA Grasso Blu series offer a number of characteristics that ensure great availability and safety of a refrigeration system. GEA uses only industry-proven components with robust engineering design and first-class quality. The low vibration and noise emission levels are the results of minimal dynamic loading of the components and a highly stable base frame – which also assures long product lives. Fully welded plate heat exchangers, as well as 3D formed tube connections, assure hermetically closed joints and reduce leak risk to a minimum. With a chiller from the GEA Grasso Blu series, you not only have a product with a long product life, but also GEA as a reliable partner with a global sales and service network on your side.

- *Great facility and investment security from long product service life and low operating expenses*
- *Industry-proven components*
- *GEA expertise: over 100 years of experience with ammonia refrigeration components*
- *On-site service*
- *“Made in Germany”*

Shaping the future with sustainability

In the development of environmentally friendly solutions for refrigeration technology, GEA plays a pioneering role – for which the GEA Grasso Blu series are further evidence. With its outstanding efficiency data and long-life components, GEA offers a resource-saving series of chiller models for universal application.

An additional factor for the sustainability of our solutions is the exclusive use of ammonia (R717) as refrigerant. Since the end of the nineteenth century, ammonia as natural refrigerant has already been used to cool food. GEA can also look back to more than 100 years of experience in the production of ammonia refrigeration components. With a global warming potential (GWP) of zero and an ozone depletion potential (ODP) of also zero, ammonia – in contrast to synthetic refrigerants – has

| Refrigerant | GWP |
|-------------|------|
| R717 | 0 |
| R134a | 1300 |
| R404A | 3300 |
| R507 | 3300 |
| R22 | 1700 |

no potential for greenhouse effects or harm to the ozone layer. Within the context of the F-Gas Regulation and increasingly strict official stipulations for synthetic refrigerants, ammonia as natural refrigerant is in any case the right choice for a future-oriented, environmentally compatible solution that assures planning safety.

- *Resource-saving by impressive efficiency data and components with long life cycles*
- *No potential for greenhouse effects or ozone depletion with ammonia as natural refrigerant*

GEA Grasso BluAstrum

Driving performance

This series enables an economical entry into the GEA Grasso Blu series, without any compromises with the technological concept. The range includes six model sizes, which cover cooling capacities from 550 to 1730 kW (R717, +12/+6 °C). These models are especially characterized by minimal maintenance requirements and an extremely slim model design that fits through standard door-sizes. If required, the chiller can be delivered with a casing to further reduce the already low noise emission level.

- *Cooling capacity of 550 – 1730 kW*
- *Six model sizes*
- *Screw compressor chiller*
- *Minimum maintenance requirements*
- *Extremely compact equipment size*
- *Remote version available*

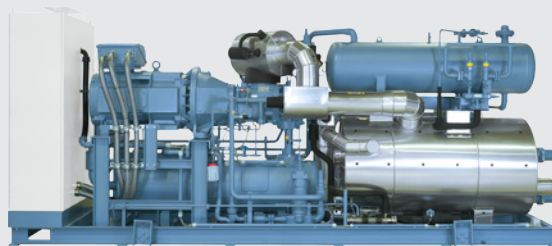
Compact and low-maintenance

The little dynamic movements of the chiller components contribute to low maintenance requirements. This benefit is the result of the latest screw compressor technology and of design features such as the elimination of an oil pump and the directly flanged motor-compressor connection.

In addition, the width of only 1.0 to 1.2 m, and the resulting small footprint of approx. 5 m² for 1000 kW cooling capacity allows simple transport as well as relocation of the chiller and installation in cramped machine rooms. In many cases, this means the possibility of using already existing installation areas – which in turn means significant cost savings. GEA engineers have consequently achieved astonishing results with great cooling capacity and a minimum footprint.

GEA Grasso BluAstrum (R)

With the remote edition of the GEA Grasso BluAstrum (R), the chiller comes without a condenser. In the event that a suitable water supply is not possible, this version can therefore also be connected to an external air-cooled condenser.



High-performance control unit

- User-friendly touch panel
- Ensures high plant availability
- All common communication protocols
- Remote access via Ethernet
- Maintenance logs and full data history

Infinitely variable capacity

- Capacity control via frequency inverter
- Variable speed range of 1000 - 4500 rpm

Enclosure

- Optionally available for touch protection or noise reduction
- Available for indoor and outdoor installations
- Noise reduction of up to 5 dB(A) (indoor)

Water-cooled condenser

- Fully-welded plate heat exchanger

High efficient screw compressor

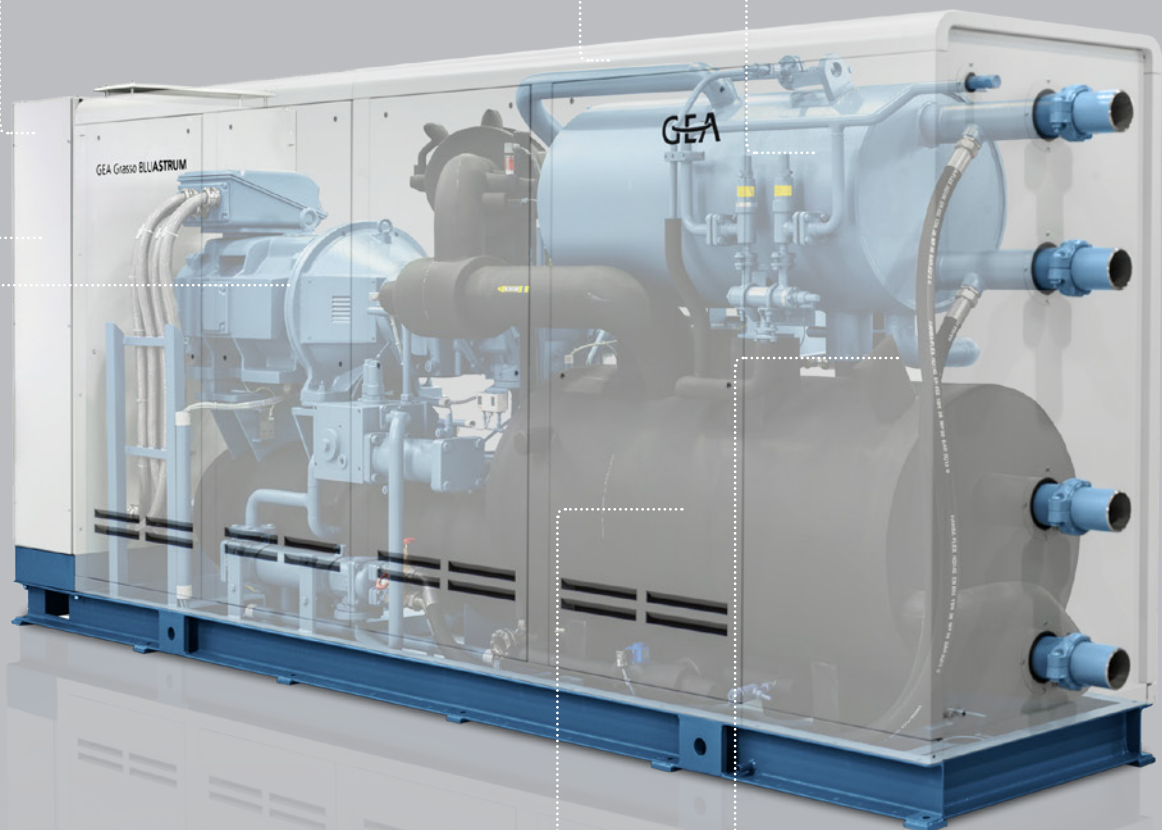
- GEA designed rotor profile for industry leading EER
- Extended and variable internal volume ratio (V_i) for better part load efficiency
- Roller bearings with long service life and inherently quiet operation
- Extended product life of all moving parts due to inverter operation

Expansion control system

- Control for optimal refrigerant injection in regard to the refrigerant mass flow to maximize the efficiency

Combined evaporator-liquid separator

- Fully-welded plate heat exchanger
- Low approach temperatures for minimum energy costs
- Suitable for all common fluids
- Flooded expansion, safe drain operation
- Integrated liquid separator for liquid-free suction gas
- Simple connection with detachable VICTUAULIC connections on the water side



GEA Grasso BluGenium

Efficiency at its best

In this line of chillers, GEA has fully exploited the potential of the technological concept employed in the GEA Grasso Blu series. The cooling capacity of the five available water-cooled chillers ranges from 280 to 1210 kW (R717, +12/+6 °C). With an ESEER above 9, these models offer maximum energy-efficiency under full and part load.

- *280 - 1210 kW cooling capacity*
- *Five model sizes*
- *Piston compressor chiller*
- *Excellent part-load efficiency*

Part load excellence

If your refrigeration plant operates primarily in part load mode, the GEA Grasso BluGenium offers special energy benefits that have noticeably positive effects on operational costs. The low specific power consumption is based on the structural characteristics of the piston compressor. The generously dimensioned suction chamber, which enables unimpeded inflow of gas into the compression chambers, ensures very slight pressure drops at the compressor that enhance system efficiency. A frequency inverter, which enables speed control between 500 and 1500 rpm, in turn, infinitely variable output matching over an extensive load range. GEA Grasso BluGenium is the first choice if it comes to great efficiency even with high part load operation periods.



Expansion control system

- Control for optimal refrigerant injection in regard to the refrigerant mass flow to maximize the efficiency

Water-cooled condenser

- Fully-welded plate heat exchanger
- Low approach temperatures for minimum energy costs
- Suitable for all common fluids
- Flooded expansion, safe drain operation
- Simple connection with detachable VICTUAULIC connections on the water side

Enclosure

- Optionally available for touch protection or noise reduction
- Noise reduction of up to 5 dB(A)

Capacity control

- Capacity control via frequency inverter, stepless variable from 500 to 1500 rpm
- Capacity control via cylinder switch off

Combined evaporator-liquid separator

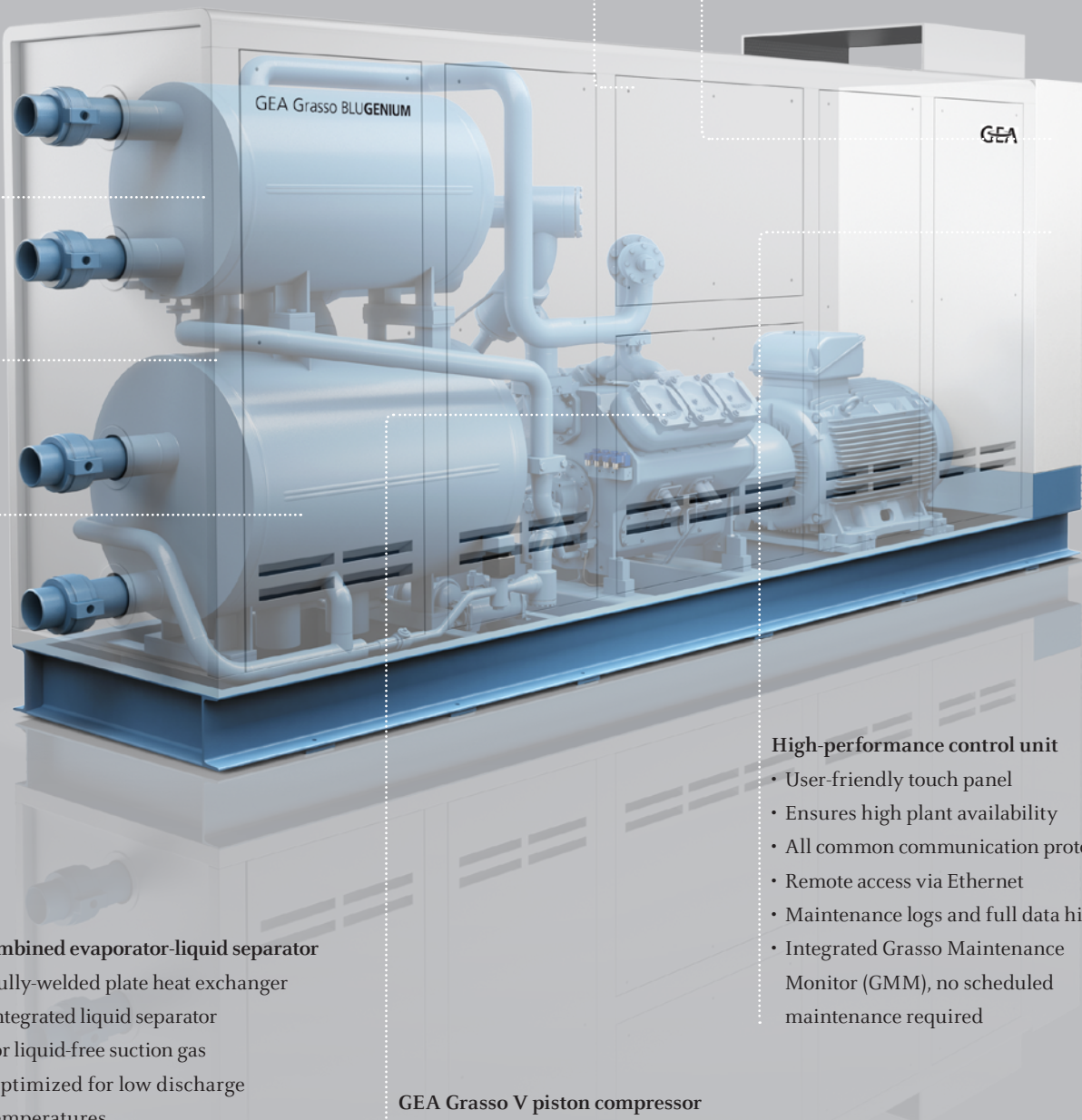
- Fully-welded plate heat exchanger
- Integrated liquid separator for liquid-free suction gas
- Optimized for low discharge temperatures

GEA Grasso V piston compressor

- The latest in piston compressor technology
- Welded housing with air-cooled cylinder heads
- Minimum oil carry-over and low discharge temperature
- Extended product life of all moving parts owing to inverter-operation

High-performance control unit

- User-friendly touch panel
- Ensures high plant availability
- All common communication protocols
- Remote access via Ethernet
- Maintenance logs and full data history
- Integrated Grasso Maintenance Monitor (GMM), no scheduled maintenance required



GEA Grasso BluAir

Driving outdoor performance

This product line enables employment of GEA Grasso Blu series technology in outdoor applications. The product portfolio includes five models that can supply cooling capacities of 520 to 1270 kW (R717, +12/+6 °C). They are highly effective for use in ambient temperature from -15 to +40 °C. Designed for outdoor operation, these models are characterized by a very low noise level. Thanks to effective insulation by the advanced weatherproof enclosure, noise reduction of up to 20 dB(A) has been achieved. The condensers, equipped with EC fans, are efficient and quiet.

Amazingly simple in installation

GEA Grasso BluAir is especially created for outdoor installations. Whether as roof top unit or on level ground, these models offer customers a greater flexibility for the installation site and for operation. The chillers – completely factory-assembled with air-cooled condensers – allow simple installation and are especially suitable at sites without cooling water management.

- *Cooling capacity of 520 – 1270 kW*
- *Five model sizes*
- *Screw compressor chiller*
- *For outdoor installation*
- *Low noise level*
- *Remote edition available*



GEA Grasso BluAir (R)

The remote edition of the GEA Grasso BluAir (R) is delivered without a condenser and enables connection of the chiller to an external customer-specific condenser.



High-performance control unit

- User-friendly touch panel
- Ensures high plant availability
- All common communication protocols
- Remote access via Ethernet
- Maintenance logs and full data history
- Automatic shutdown of the chiller in case of ammonia leak

Infinitely variable capacity

- Capacity control via frequency inverter
- Variable speed range of 1000 - 4500 rpm

Weatherproof enclosure

- Noise reduction up to 20 dB(A)
- Integrated ventilation and heating system
- Ammonia detection system

Air-cooled condenser

- EC fans for great part-load efficiency and speed reduction at night if needed
- V-shaped cooling coil for compact design, even at high performance
- Corrosion-resistant, high-quality coatings



High efficient screw compressor

- GEA designed rotor profile for industry leading EER
- Extended and variable internal volume ratio (Vi) for better part load efficiency
- Roller bearings with long service life and inherently quiet operation
- Extended product life of all moving parts due to inverter operation

Evaporator-liquid separator

- Fully-welded plate heat exchanger
- Low approach temperatures for minimum energy costs
- Suitable for all common fluids
- Flooded expansion, safe drain operation
- Integrated liquid separator for liquid-free suction gas
- Simple connection with detachable VICTAULIC connections on the water side

Technical data

| Technical data | | | | | | | | | |
|-----------------------------------|------|--------------------------|-----------------------------|-----|------------------------------------|----------------------------|------|------|----------------------------|
| Model | | Cooling capacity (kW) | Condensing capacity (kW) | EER | Refrigerant charge ¹ | Dimensions (mm) | | | Weight (kg) |
| | | R717 +12/+6 °C | Air in +35 °C | | kg | L | W | H | |
| GEA Grasso BluAstrum ² | 500 | 550 | - | 5.0 | 50 | 4700 | 1000 | 2100 | 5500 |
| | 800 | 740 | - | 4.8 | 57 | 5000 | 1000 | 2100 | 6000 |
| | 900 | 880 | - | 5.1 | 65 | 5000 | 1000 | 2100 | 6500 |
| | 1000 | 1100 | - | 5.1 | 78 | 5000 | 1000 | 2100 | 7000 |
| | 1500 | 1450 | - | 5.5 | 88 | 6500 | 1200 | 2400 | 8000 |
| | 1800 | 1730 | - | 5.4 | 110 | 6800 | 1200 | 2400 | 8500 |
| GEA Grasso BluGenium ³ | 300 | 280 | - | 5.2 | 44 | 4600 | 1200 | 2140 | 4010 |
| | 450 | 420 | - | 5.2 | 48 | 4600 | 1200 | 2140 | 4740 |
| | 600 | 560 | - | 5.3 | 50 | 5300 | 1200 | 2220 | 5900 |
| | 900 | 810 | - | 5.5 | 54 | 5300 | 1200 | 2340 | 6270 |
| | 1200 | 1210 | - | 5.5 | 66 | 5600 | 1200 | 2460 | 8600 |
| GEA Grasso BluAir | 500 | 520 | 660 | 3.1 | 83 | 3000 ⁴ 8400 | 2400 | 2850 | 5100 ⁴ 8700 |
| | 800 | 680 | 865 | 3.1 | 100 | 3000 ⁴ 9500 | 2400 | 2850 | 5900 ⁴ 9900 |
| | 900 | 795 | 1010 | 3.2 | 120 | 3000 ⁴ 10700 | 2400 | 2850 | 6700 ⁴ 11300 |
| | 1000 | 1010 | 1265 | 3.1 | 160 | 3500 ⁴ 12500 | 2400 | 2850 | 7600 ⁴ 12800 |
| | 1500 | 1270 | 1600 | 3.2 | 170 | 3500 ⁴ 15000 | 2400 | 2850 | 8500 ⁴ 14000 |

1 for climate conditions, 2 double control cabinet with access on the long side of the chiller from 355 kW motor size up, 3 double control cabinet with access on the long side of the chiller from 315 kW motor size up, 4 without condenser





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