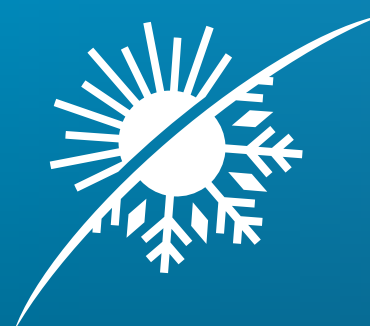


A detailed 3D rendering of a water heat pump system. It features three large, cylindrical compressor units mounted on a horizontal base. Each unit has a complex network of copper-colored pipes and valves. The background is a gradient from blue on the left to red on the right.

POWER BOOST

FOR YOUR HEAT

The new **SPECTRUM**
Water heat pump
from ENGIE Refrigeration



Excellence
IN COOLING & HEATING

The facts at a glance

Efficiency values

A focus on climate protection

Performance characteristics

USPs

Exploded view

Applications and industries

Contact and imprint

CONTENTS

WHAT MAKES THE **SPECTRUM WATER** UNIQUE?

100%
REGENERATIVE HEAT
GENERATOR

SCOP_{47/55}
to
6,18-

4
REFRIGERANTS
(R-1234ze, R-515B,
R-513A, R-134a)

CONDENSER
LEAVING WATER
TEMPERATURE OF
+65°C

up to
6
OIL-FREE TURBO
COMPRESSORS

RATED HEATING
CAPACITY OF
**350 to
3.100** kW

12
BASIC
MODELS

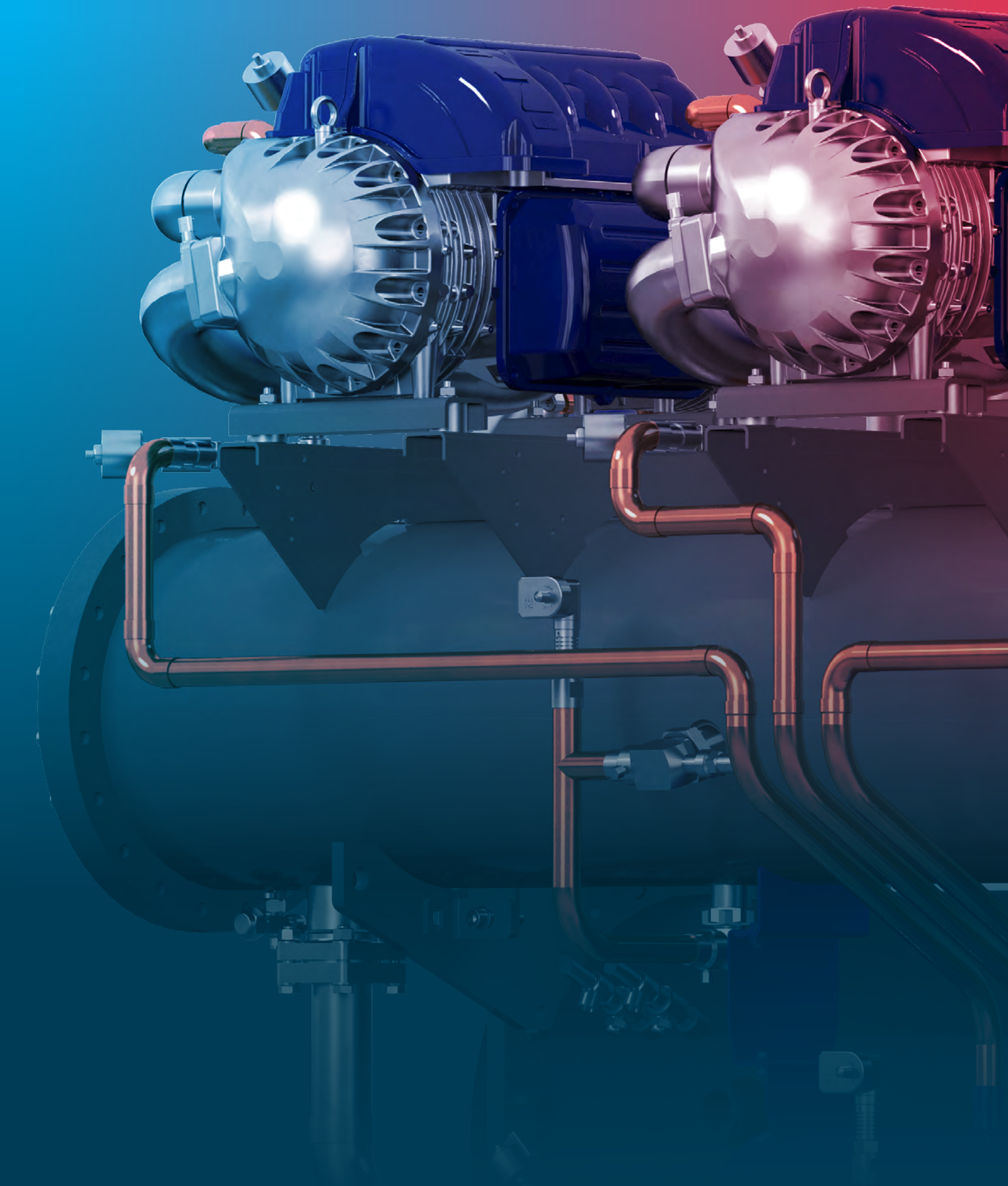
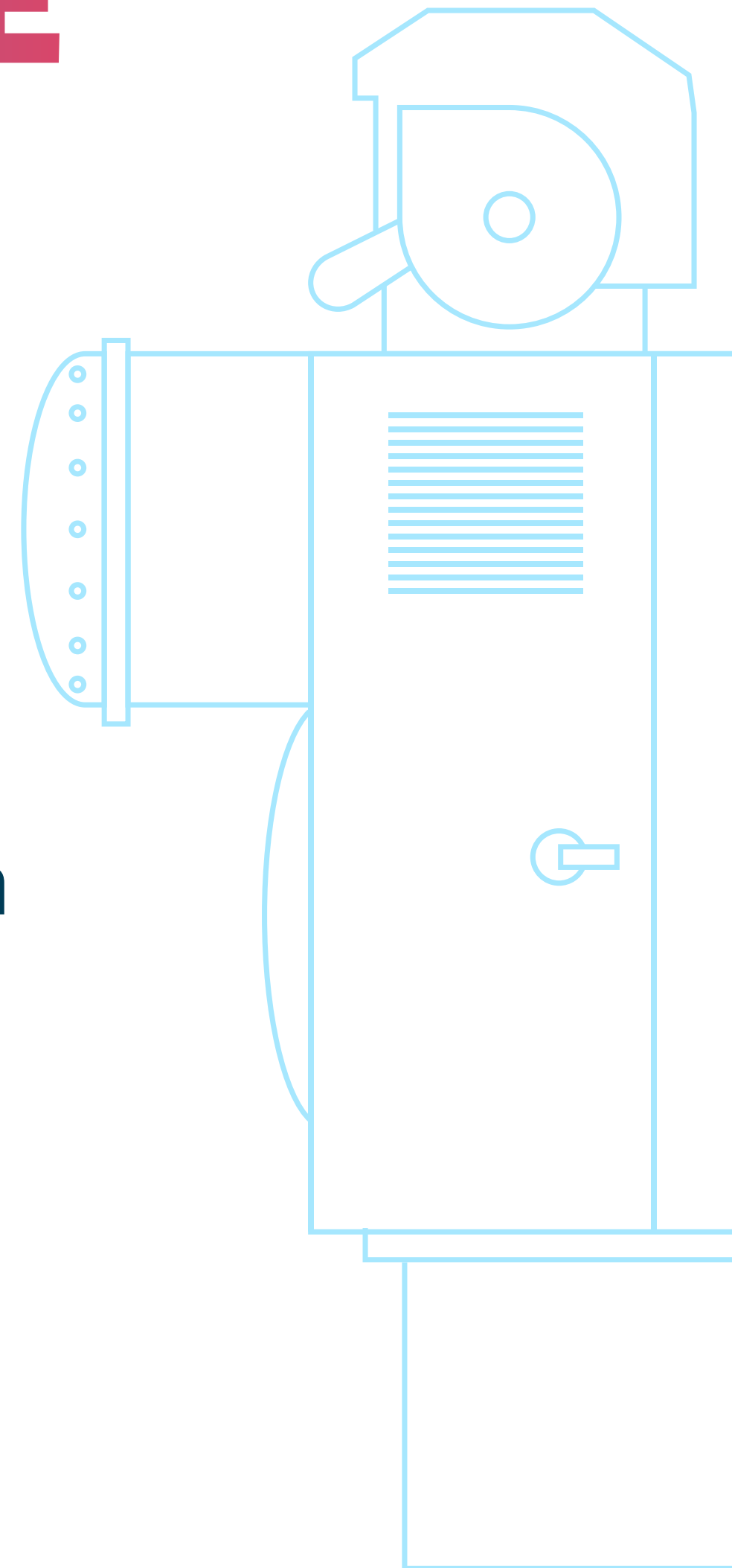


The **FACTS** speak **03**
for themselves!

THE **DIFFERENCE** MATTERS!

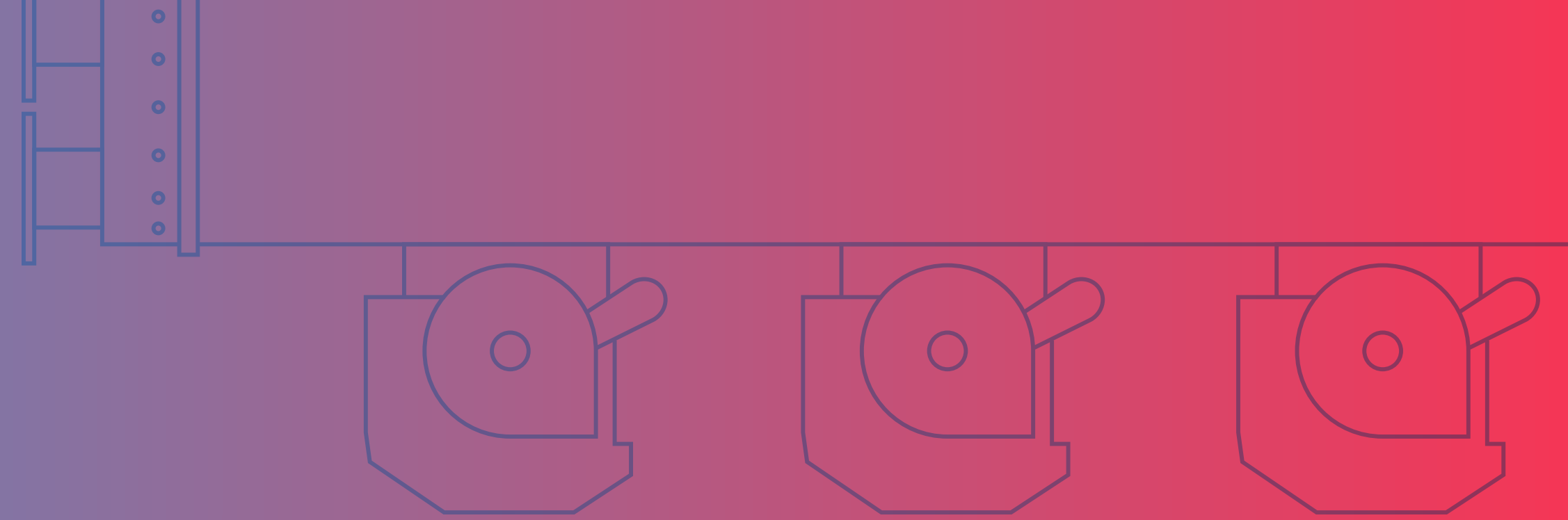
The SPECTRUM Water heat pump from ENGIE Refrigeration is economical and ecologically worthwhile.

See for yourself: we did the math and compared the efficiency values of our SPECTRUM Water heat pump with a large heat pump in line with the industry standard.



EFFICIENCY 04
VALUES

WE LET **FACTS** TALK!



SPECTRUM WATER HEAT PUMP

SCOP: 6,11

277,556 kWh_{el}/a

101,822 kg CO₂/a

73,941 €/a

LARGE HEAT PUMP IN LINE WITH THE INDUSTRY STANDARD

SCOP: 5,33

318,174 kWh_{el}/a

116,861 kg CO₂/a

84,762 €/a

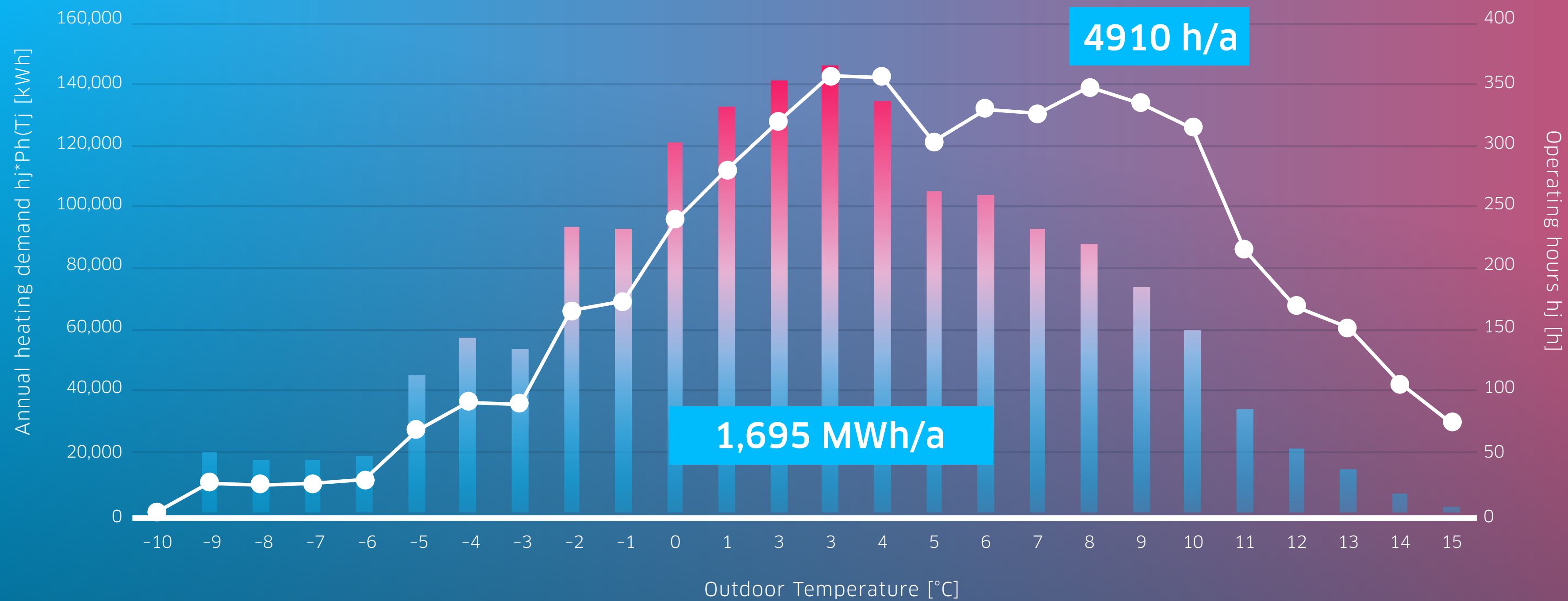
Calculated for a SPECTRUM W1080-T3R00 with refrigerant R-1234ze(E) (rated heating capacity at 10/7°C; 47/55°C: 825 kW); SCOP_{47/55} 6,11

Large heat pump in line with the industry standard R-1234ze(E): SCOP_{47/55} 5,33

EFFICIENCY 05
VALUES

WE LET **FACTS** TALK!

Calculated for the SCOP load profile as per VO (EU) 813/2013;
average climate



EFFICIENCY 06
VALUES

SPECTRUM WATER HELPS YOU SAVE!

-10,820 €

energy cost savings per year (operating costs), assuming a 2022 industrial energy price of 26.64 ct/kWhel* including energy tax (German Association of Energy and Water Industries - BDEW)

-13 %

energy savings (relative) per year for 4,910 h operating hours in heating mode per year and SCOP load profile as per VO EU 813/2013

-15 t CO₂

CO₂ reduction per year for an emission factor of 0.366 kg CO₂/kWhel (German electricity mix)

825 kW

rated thermal output
(10/7°C, 47/55°C)

~ 5 cars'
worth

of **CO₂ reduction** corresponds to the carbon emissions of ~5 petrol cars for a fuel consumption of 6 l/100 km and a mileage of 20,000 km per year

~ 41 MWh

energy savings (absolute) per year for 4,910 h operating hours in heating mode per year and SCOP load profile as per VO EU 813/2013

EFFICIENCY 07
VALUES

YOUR **HEATING** WITH A FUTURE!

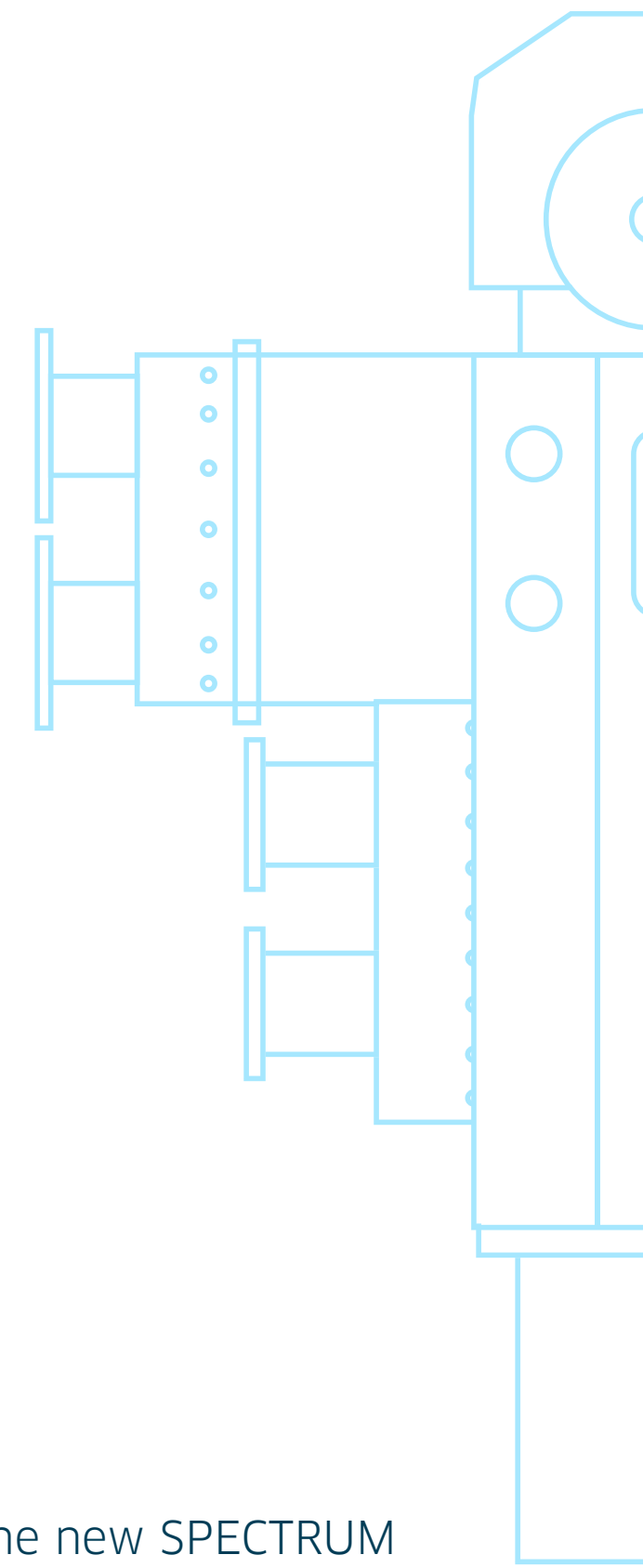
THE CHALLENGE:

requirements for heating supplies are constantly increasing.

Heating transition, decarbonisation and climate neutrality – never before have businesses faced such huge challenges. And it has never been more urgent to act. Our aim here at ENGIE Refrigeration is to provide the best possible support for users on this path of transformation and help them become less dependent on rising commodity prices.

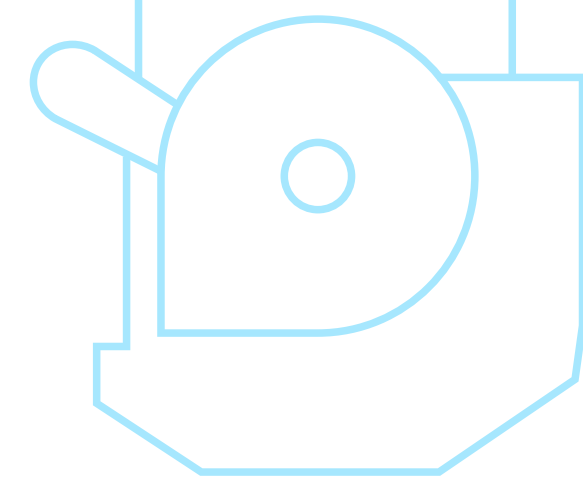
That is precisely why we developed the new SPECTRUM Water, a water-water heat pump that provides the highest levels of economy, energy efficiency and sustainability.

In short: the SPECTRUM Water will help achieve the European Green Deal of the European Union and the climate targets of the German government.



THE SOLUTION: **08**

SPECTRUM Water takes your heating supply to the next level. And that's guaranteed!



“ENGIE Refrigeration developed the SPECTRUM Water heat pump series in response to international climate targets and rising market demand for highly efficient large heat pumps. We are the first company to offer an oil-free machine design that is ready for production, as well as absolute peak efficiency in the field of heating.”

Jochen Hornung
CEO of ENGIE Refrigeration

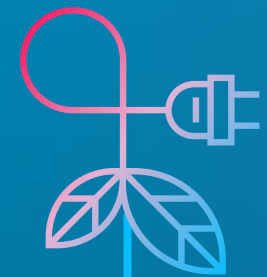
THE **FUTURE** HAS A NAME: SPECTRUM!

What will the heating supply of tomorrow look like? The SPECTRUM Water is already showing how it's done.

Our water-water heat pump is characterized by an innovative combination of properties and features that no competitor offers in this form. It has never been easier to choose the future!

PERFORMANCE- 10
CHARACTERISTICS

POWERFUL IN 6 WAYS!



1. CLIMATE-FRIENDLY

The SPECTRUM Water is the ecologically sustainable alternative to heat generators run on fossil fuels and is ideal for green building architecture and for forward-looking cities and local authorities.

There are many sources of energy: groundwater, seawater, river water, deep geothermal energy, and waste heat from industrial processes and server rooms. If you use green energy to power the compressor, system operation can be almost completely carbon-neutral. The combination of top seasonal efficiency (SCOP) and refrigerants with a low global warming potential has a positive effect on the direct and indirect emissions of the system and yields an unbeatably low ecological balance (TEWI: Total Equivalent Warming Impact). Another advantage: the oil-free design means no synthetic machine oils hazardous to water.

This will bring you a good step closer to your target of climate neutrality, and help you provide suitable protection for water as a resource.

2. FUTURE-PROOF

The SPECTRUM Water is built for the future. And good is not good enough for us: the model greatly exceeds the requirements of the Ecodesign Directive (EU) 813/2013 and makes your company future-proof in regard to the F-gas Regulation (EU) 517/2014 thanks to refrigerants with a low global warming potential (GWP value).

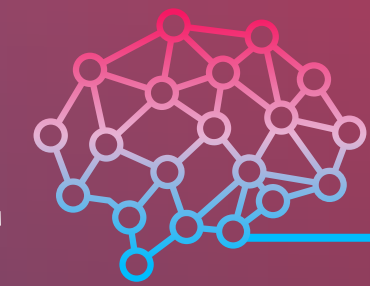
By the way, the government agrees that our heat pump is groundbreaking: because of its very high seasonal energy efficiency in heating mode, you can take advantage of attractive funding opportunities.

The SPECTRUM Water heat pump is eligible for subsidies covering up to 45 per cent of investment costs.

And it's worth it!



3. SMART



Digitalisation is spreading to the heating industry. That is why the SPECTRUM Water contains a range of highly innovative features. The machine's brain is provided by an intelligent Siemens S7 PLC – for maximum control quality, computing speed and IT security.

You can also choose how to control the system: conveniently via smart control on your own mobile end device or optionally via a 10-inch touch panel installed at an ergonomic operating height. The system also contains an interface for the CoolCare remote maintenance software and a lead and lag chiller control.

That is maximum intelligence and convenience!

PERFORMANCE- 11
CHARACTERISTICS

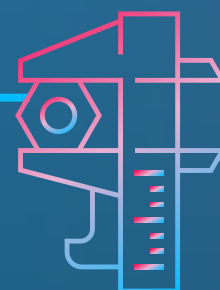
POWERFUL IN **6 WAYS!**

4. CUSTOMISED

Every application is different. Thanks to its smart modular principle, the SPECTRUM is available in 12 basic models with a rated heating capacity of 350 to 3,100 kilowatts, and for condenser leaving water temperatures of up to +65 degrees Celsius.

You can also choose between the R-1234ze A2L low-GWP refrigerant and the high-efficiency A1 safety refrigerants R-515B, R-513A and R-134a. The condenser comes in two versions to suit market demand for different cooling medium spreads. You can also choose your desired features from an extensive range of options and accessories.

This is what a contemporary heating supply looks like!



5. RELIABLE

Everything hinges on the foundation. The SPECTRUM Water contains up to six redundantly connected and separately protected turbo compressors. Thanks to the oil-free machine design, there is also no need for malfunction-prone oil management peripherals.

How do you benefit? Overall capacity is split among multiple compressors, and there are fewer moving components, which ensures maximum operational reliability.

This is the quality we know from ENGIE!

6. POWERFUL

ENGIE Refrigeration has always stood for superior high-end technology. Our SPECTRUM Water is based on the unique concept of the QUANTUM Water, which is currently the most efficient water-cooled chiller series on the international market.

The SPECTRUM Water is setting a new milestone in its performance class – with top quality made in Germany.

For heat with no compromises!

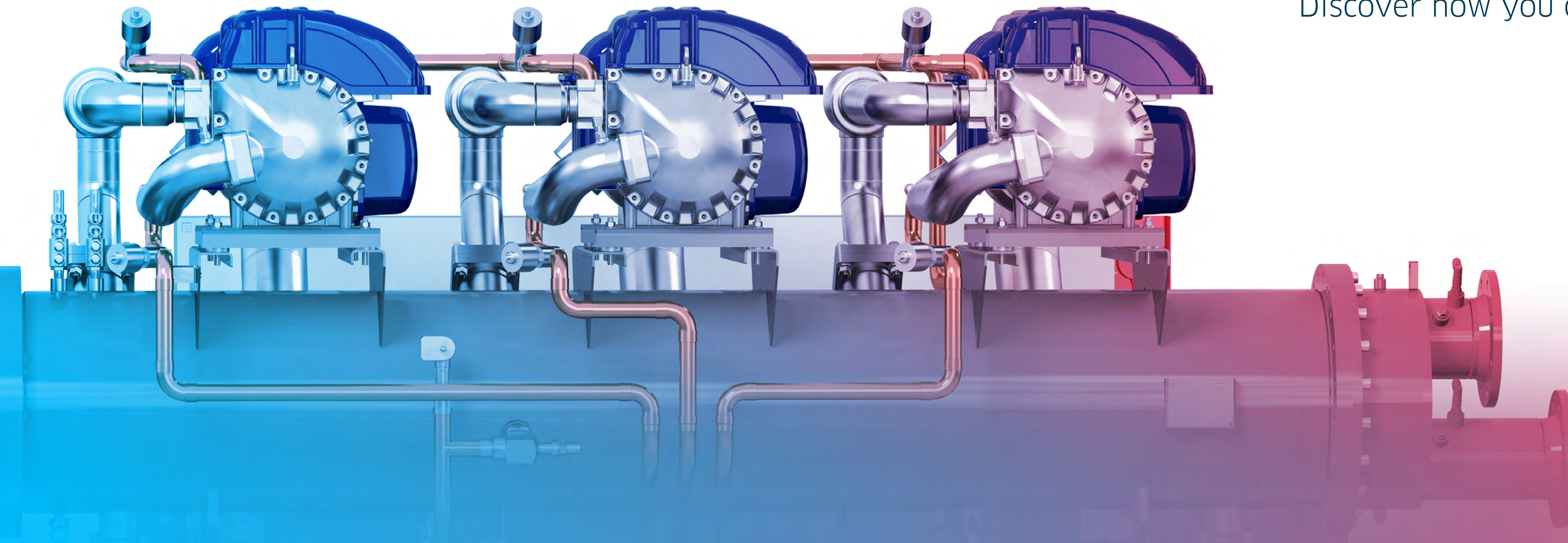


PERFORMANCE- 12
CHARACTERISTICS

A UNIQUENESS THAT IS WHOLLY PERSUASIVE

Our SPECTRUM Water heat pump has no equal on the industrial and commercial heating market. Why?

Among other things, because it features an oil-free design with turbo compressors with magnetic bearings and thus offers many benefits that oil-lubricated systems do not. Discover how you can benefit!



Outstanding efficiency

Due to the magnetic contact-free bearing of the shaft, the SPECTRUM Water suffers no mechanical friction losses and no oil deposits in the heat exchangers that impair efficiency and performance (referred to as oil fouling).

Your advantage: higher efficiency and lower operating costs! Efficiency and power remain stable throughout the system's service life.

Eco-friendly design

The SPECTRUM Water operates without synthetic lubricant oils with a Water Hazard Class (WHC) that are hazardous to water

Your advantage: no need for measures such as capture and retention systems to prevent contamination of the groundwater!

Low noise and vibration

Due to the magnetic shaft bearings, the vibration and structure-borne noise levels of the SPECTRUM Water are very low.

Your advantage: fewer vibration-related leaks on the components and a low noise level!

High level of operational reliability

The SPECTRUM Water has no need for malfunction-prone oil management peripherals.

Your advantage: fewer fault-related failures and increased operational reliability!

Low maintenance costs

The SPECTRUM Water does not require any time- and cost-intensive service deployments for oil changes, oil filter replacements and oil pump maintenance.

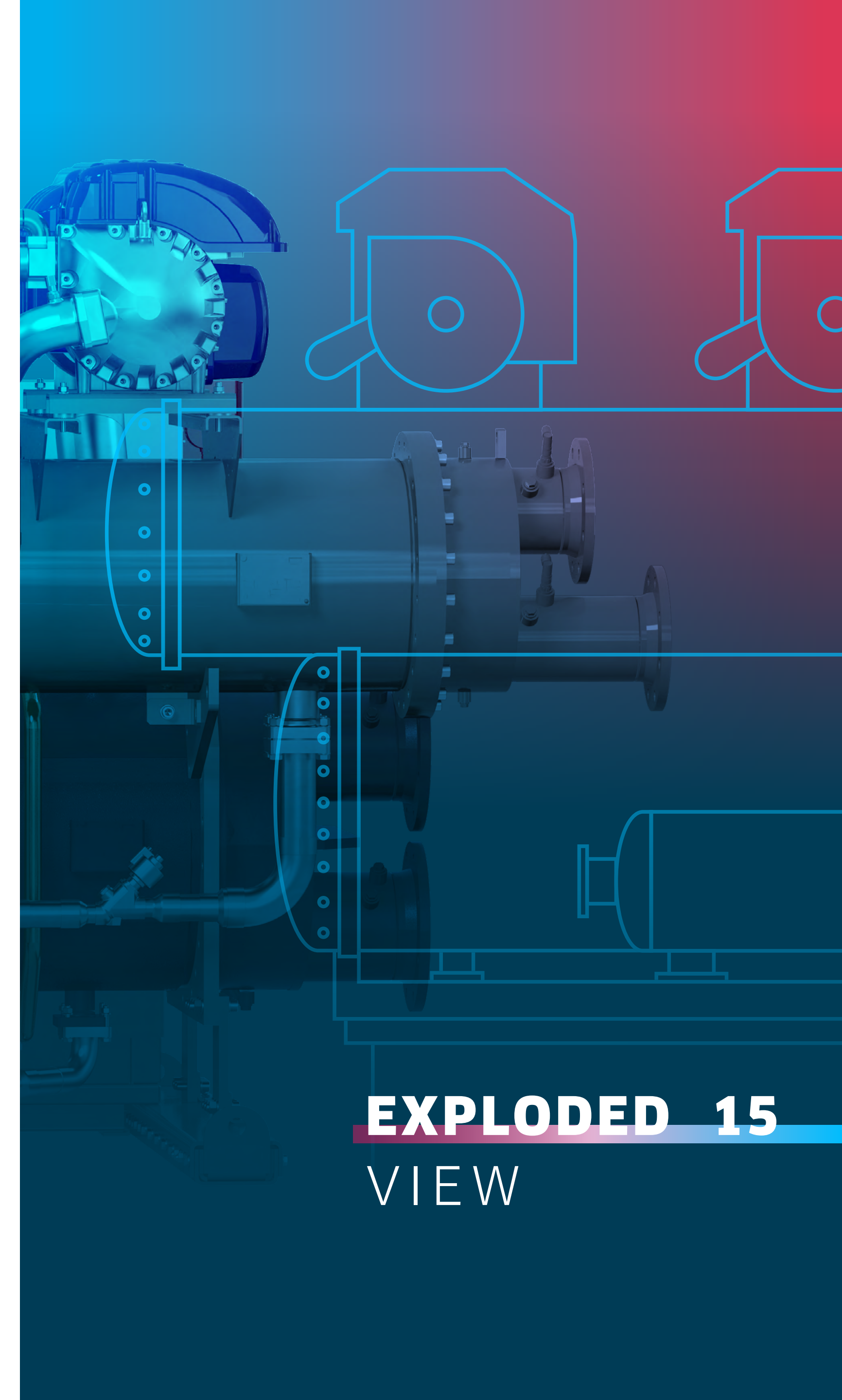
Your advantage: lower maintenance costs and fewer service-related downtimes of the system!



RELY ON THE
ORIGINAL -
RELY ON THE
SPECTRUM WATER!

Sophisticated to the smallest detail:

the SPECTRUM Water heat pump contains our expertise and experience gained in around 20 years of QUANTUM refrigeration technology. So it's hardly surprising that the innovative design principle of the SPECTRUM Water is setting a new milestone!



EXPLODED 15
VIEW

Smart control (standard)/control panel (optional)

- WLAN Access Point and web-based visualisation enable flexible operation via a mobile end device (smart control)
- Optional 10- or 15-inch touch display with revised and intuitive operating concept

Compressor

- Oil-free turbo-compressor technology with magnetic bearings with outstanding energy efficiency, especially under part load
- Highly condensing for condenser leaving water temperatures of up to 65 °C
- Maximum reliability due to redundant compressor layout
- Integrated soft start-up function for starting currents < 5A

Evaporator

- Flooded tube bundle evaporators with ultra-modern inner tube technology for maximum efficiency during heat transfer – accompanied by low pressure loss
- Integrated drift eliminator to prevent fluid damage in the compressor
- Compact design with optimised refrigerant filling capacity

Refrigerant

- 4 refrigerant versions with low global warming potential (GWP) are available for use in oil-free refrigerant circuits:
- R-1234ze: Low-GWP refrigerants (GWP<1)
- R-515B, R-513A, R-134a: A1 safety refrigerants

Power quality unit

Coordinated solution with high-quality power-loss-optimised filter elements that increase the service life of the compressors while reducing total harmonic distortion (THDI) and circuit feedback.

Switch cabinet

- Quality made in Germany
- Maximum control quality, computing speed and IT security thanks to integrated Siemens S7 PLC
- Compact design with a versatile range of options
- Connectivity with standard BMS protocols
- Integrated lead and follower machine PLC
- Optional connection to CoolCare remote maintenance software

Condenser

- Flooded tube bundle condensers with ultra-modern inner tube technology for maximum efficiency during heat transfer – accompanied by low pressure loss
- Condenser concept with two or four water channels offers maximum flexibility for various heating applications
- Compact design with optimised refrigerant filling capacity

Open-flash economizer

- Increased system efficiency (COP), especially in heat pump mode with high pressure ratios (PR)
- Lower operating costs (€/kWh)
- Low specific investment costs (€/kW)

Frame

- Compact footprint and enormous power density (kW/m²), ideal when space is scarce
- Easy transport due to integrated eyelets
- Easy maintenance and accessibility due to optimised positioning of components

EXPLODED 16

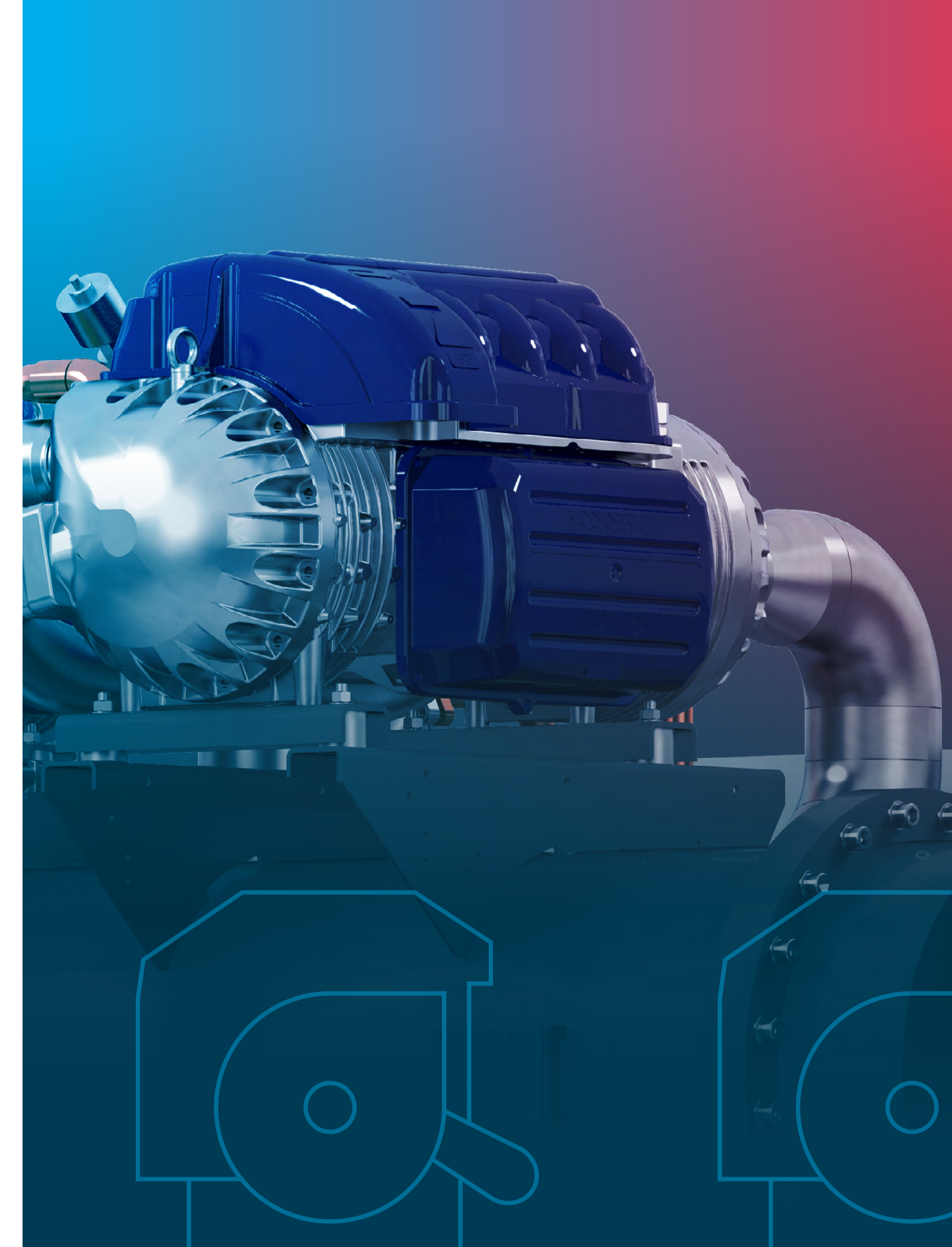
VIEW

OUR PROMISE: ALWAYS THE RIGHT CHOICE!

Smarter. More efficient. More sustainable.

The SPECTRUM Water heat pump offers everything that users around the world need. Thanks to its specific product characteristics, it is perfect for use in numerous applications and various industries. Thanks to its smart modular principle, it can be perfectly adapted to your individual conditions.

This means that you always benefit from the best possible solution for your application!



The SPECTRUM Water heat pump supplies condenser leaving water temperatures of up to 65 degrees Celsius and can thus replace or supplement conventional boilers for the following applications:

	SPACE HEATING	WARM WATER PREPARATION	PROCESS HEAT	HEATING NETWORKS
YOUR APPLICATION	Hotels, shopping malls, furniture stores, office buildings, airports, logistics buildings, hospitals, swimming pools, industrial buildings		Chemical and pharmaceutical industry, automotive industry, food industry, tobacco industry, breweries	Heating networks, districts, housing estates
YOUR ADVANTAGES	Monovalent in new builds and during renovation of existing buildings with heating systems <70 degrees Celsius design temperature (low-temperature heating)	Monovalent or bivalent to meet the hygiene regulations for the heating of warm drinking water as per TrinkwV (Drinking Water Ordinance)	Monovalent in the area of low-temperature process heat Bivalent for process heat in the medium-temperature range	Supplementary as a base load in the energy mix with other heat generators (CHP, biomass, high-temperature heat pump such as thermeco ₂ from ENGIE Refrigeration) In the long term also monovalent in the context of network temperature lowering (low-ex networks)

READY FOR THE **HEAT** OF THE **FUTURE?**

ENGIE Refrigeration ensures the right temperature for every building and every process. Around the world, our heat pumps and chillers stand for maximum technical expertise, economy, efficiency and sustainability.

Our aim: to provide our customers with the best solutions for their path towards climate neutrality. To achieve this, we rely on individual consultation, customised concepts and comprehensive services.

As a member of the worldwide ENGIE Group, we have a global network of specialists at our disposal and can realise our refrigeration and heating solutions for you, both at home and abroad.

The experts at ENGIE Refrigeration are here for you:

National/International Service

National/International Sales

With eleven branch offices and around 130 service employees, we are always nearby and available around the clock, anywhere in Germany:



We are happy to
ADVISE YOU!

ENGIE Refrigeration GmbH | Josephine-Hirner-Str. 1 & 3, D-88131 Lindau am Bodensee | Phone + 49 8382 706-1 | Fax + 49 8382 706-410