Refrigeration in every dimension

The new generation of water-cooled QUANTUM chillers

ENGIE

QUANTUM Water FACTS

200 kW – **4** MW

Refrigeration capacity

4

refrigerants: R-515B, R-134a, R-513A and R-1234ze

3 – **57** °C

1 – **6**

compressors

47

models

Efficiency in refrigeration technology has a name: QUANTUM.

Know-how and experience for maximum technological performance.

ENGIE Refrigeration has been making its highly efficient QUANTUM chillers for more than 18 years; in this time, it has repeatedly created milestones with its capacity for technological innovation. Our ambition is to continue this tradition and satisfy our customers with the best possible refrigeration solutions in the future as well:

The new QUANTUM Water is the most efficient chiller of its type – anywhere in the world.

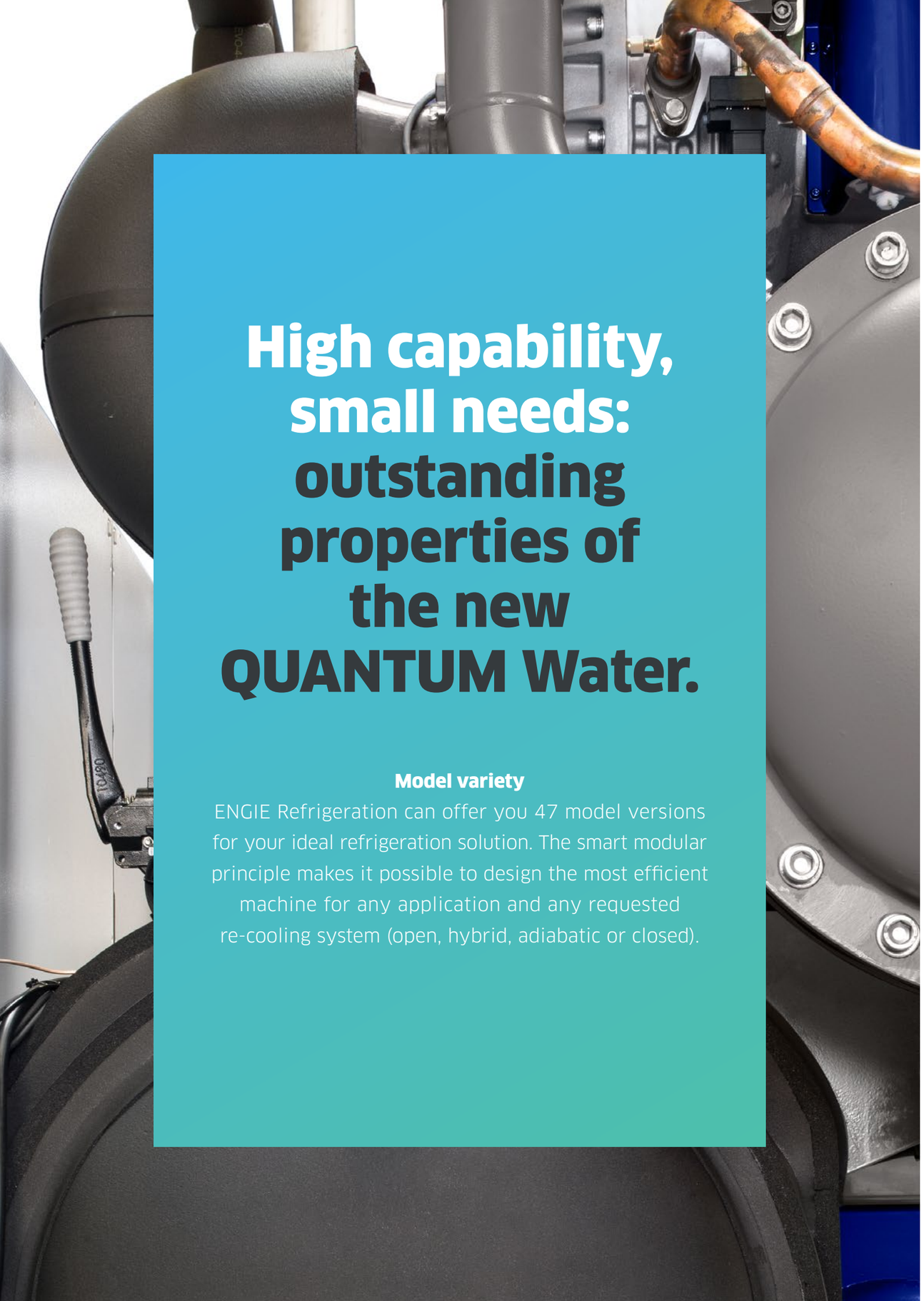
With a broad capacity range, a future-proof selection of refrigerants and the ability to be used as a heat pump, the QUANTUM Water is the right machine for almost any situation.

It has never been easier to choose the right chiller: performance characteristics of the new QUANTUM Water series.

If a chiller is up to any task, it is simply always the right one. Like the new QUANTUM Water. Its capacity range reaches from 200 kilowatts to four megawatts. The QUANTUM Water replaces the previous water-cooled QUANTUM W, QUANTUM B, QUANTUM X and QUANTUM G series. Capacity ranges up to 11.5 megawatts are covered by the QUANTUM Power, which will of course remain available for customer-specific requirements.

Today, when you say refrigeration, you should also think of heat. That is because heat pumps provide an interesting alternative to conventional heating systems. As the heating capacity requires no additional energy such as electricity or fossil fuels, overall energy demand drops considerably. The QUANTUM Water is an excellent heat pump; no modification of its hardware is required.

Things that were good will remain good: the typical properties that turn a chiller into a QUANTUM have been retained in the new QUANTUM Water. The new QUANTUM Water features exceptional efficiency throughout its service life, durability, and low expenditure on maintenance and service – thanks to oil-free operation and contact-free magnetic bearings – as well as a high level of operational reliability and gentle starting behaviour.



High capability, small needs: outstanding properties of the new QUANTUM Water.

Model variety

ENGIE Refrigeration can offer you 47 model versions for your ideal refrigeration solution. The smart modular principle makes it possible to design the most efficient machine for any application and any requested re-cooling system (open, hybrid, adiabatic or closed).

SUSTAINABILITY

Achieve more with less: the new QUANTUM Water needs even less refrigerant than its predecessor series. You can choose your refrigerant: R-515B, R-134a, R-513A or R-1234ze.

A newly developed compressor generation is available for R-1234ze, which has an especially low greenhouse potential. As a result, the QUANTUM Water provides efficient and high-performance refrigeration while reducing direct and indirect emissions.

HIGH-END TECHNOLOGY

Fewer components, more quality: every new QUANTUM generation features innovation down to the smallest detail. In the QUANTUM Water, new inner tube technology ensures an excellent heat transfer performance and an especially high level of efficiency with a low input of materials. All installed components are state of the art and of high quality.

INTELLIGENT CONTROL AND REGULATION

Precise control and regulation of your chillers has a major effect on efficiency. With ultra-modern control and regulation technology, the QUANTUM Water achieves even greater efficiency than its predecessor models, especially under partial load. QUANTUM Water chillers can thus help you reduce your company's carbon footprint.

INTUITIVE OPERATION

More freedom for operating companies: a new intuitive operating concept now offers even more ways for you to operate your QUANTUM Water and check individual functions. You can do this on the machine display – or your own tablet. The new smart-control function via a Wi-Fi access point significantly increases ease of use, as you can move freely around the machine and view the relevant components at all times.

OPEN-FLASH ECONOMIZER

All QUANTUM Water chillers are equipped as standard with an original ENGIE Refrigeration open-flash economizer. This increases the EER value of the machine at all operating points, as well as the maximum potential refrigeration capacity of the entire machine – and you benefit from reduced operating costs.

ENCLOSURE

Providing an enclosure for your chiller has many advantages – it can serve as an additional machine room, or as a noise-insulating unit for noise-sensitive set-up conditions. It also increases your flexibility as a tenant: you can easily set up your QUANTUM Water outside and take it with you when you move. All enclosures are of course tailored to your requirements and designed to make service and maintenance easy.

Sophisticated in every detail: the innovative design principle of the new QUANTUM Water.

SMART CONTROL

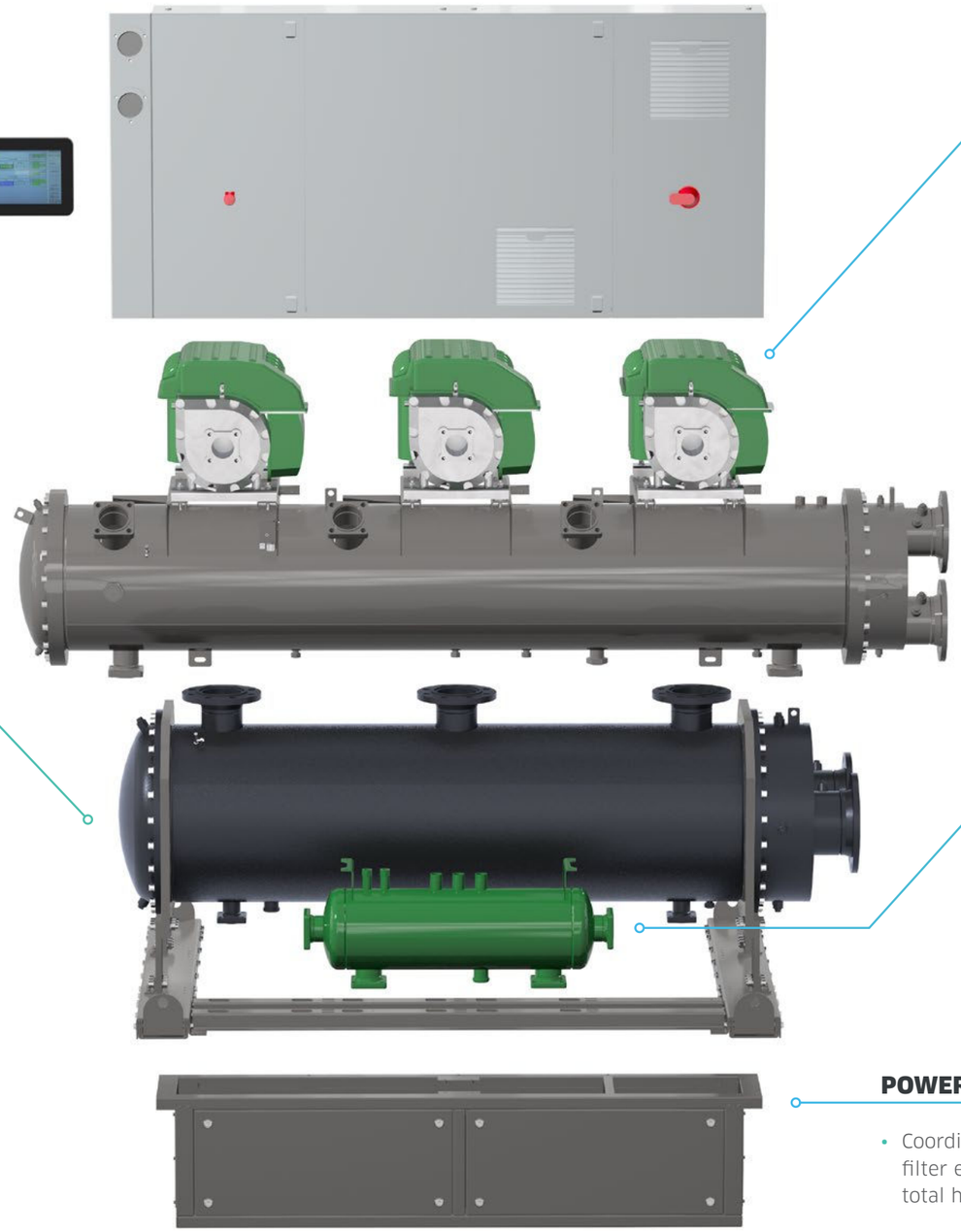
- New intuitive operating concept on a 10.1-inch display
- Web-based visualisation allows operation from any end device with a web browser
- Smart control: Wi-Fi access point enables flexible operation, for example via tablet

EVAPORATOR

- Modular evaporator concept
  - > Precise assignment with ultra-modern inner tube technology for maximum efficiency during heat transfer – accompanied by low pressure loss
  - > With integrated drift eliminator
  - > Refrigerant filling capacities optimised through compact design

REFRIGERANT

- 4 refrigerant versions available for use in the oil-free refrigerant circuit
- R-134a, R-513A, R-515B: [A1 safety refrigerant]
- R-1234ze: [low-GWP refrigerant (<1)]



SWITCH CABINET

- Quality “made in Germany”
- Compact design with a versatile and modular range of options
- Data archiving for measurements and messages
- Remote control via DSL/4G possible

COMPRESSOR (with magnetic bearing)

- Tried-and-tested compressor technology
- Intelligent connection
- Finely graded capacity range
- Optionally available with sound-insulating enclosure for maximum reduction in noise emissions

CONDENSER

- Modular condenser concept
- Precise assignment with ultra-modern inner tube technology for maximum efficiency during heat transfer – accompanied by low pressure loss
- Refrigerant filling capacities optimised through compact design

ECONOMIZER

- Original ENGIE Refrigeration open-flash economizer
  - > Increased EER value
  - > Increased maximum refrigeration capacity at all points of operation
  - > Lower operating costs
  - > Lower specific investment costs (€/kW)

POWER QUALITY UNIT

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

QUANTUM Water – Facts

– 7,300 €

Energy savings per year (operating costs)

Energy costs (operating costs) approx. € 7,300 lower on average **than for the predecessor model (under full load operation with 8,760 operating hours per year) – between € 1,000 and € 25,000, depending on model size.**

– 20 t CO_2

CO_2 emissions per year

Annual CO_2 emissions approx. 20 t lower on average **than the predecessor model (due to lower energy consumption (under full load operation with 8,760 operating hours per year) – between 3 t and 60 t, depending on model size.**

– 20 %

Refrigerant filling capacity

On average approx. 20% refrigerant filling capacity [kg] **of the predecessor model.**

– 2.8 %

Energy demand

On average approx. 2.8% less electricity consumption (energy demand) **than the predecessor model (average).**

Savings achieved by the new QUANTUM W compared to the Tier 2 specifications in the Ecodesign directive [SEER Profile], calculated for two selected models

Annual savings based on:	W0940-T2O00-0505	W1410-T3O00-0808
Power consumption [kWh]	58,547	67,913
Relative power consumption [%]	34.2	28.5
Electricity costs [€]*	11,124	12,903
CO_2 emissions [kg]**	27,810	32,259

* at 0.19 €/kWh ** at 0.475 kgCO_2/kWh

ENGIE Refrigeration offers the right refrigeration for every process: from efficient chillers and eco-friendly heat pumps to modular re-cooling systems and turnkey solutions such as refrigeration containers or modules. Every project completed by ENGIE Refrigeration is efficient, sustainable, economical and demonstrates superlative technical problem-solving expertise. Our individual consultation and our comprehensive services are centred around customers and their needs. As part of the global ENGIE Group we have access to a global network of specialists and can implement our refrigeration solutions at both the national and international levels.

With 11 subsidiaries and some 130 service personnel nationwide we are close at hand and always on the job for you around the clock.

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