

Reach your potential. Select proven, real-world performance.



YORK[®] YK Centrifugal Chiller



The Leader In Advancing Conventional Limits

Your facility's challenges are unique and each day is different, whether your installation is in Dubai, Rio, Shanghai, or Moscow; whether your facility is a school, hospital, high rise building, or data center. Hot or cold, humid or dry – your facility must handle the challenges of your climate and the changes in climate during seasonal or even hourly variations.

That's why we created a centrifugal chiller that can handle your project's unique variables – the YORK® YK Centrifugal Chiller. The YK chiller delivers ultimate real-world performance thanks to an exclusive combination of benefits:

Lowest total cost of ownership

Lower installation, operating, and maintenance costs with system design choices that pay off in less than 1 year.

Advanced innovations for unrivaled real-world performance

To build a whole system that is greater than the sum of its parts, we engineered an unprecedented array of innovations into an integrated design that delivers superior performance. Competitive chillers may use a few of the same type of components, but only YORK® chillers offer this level of innovation, including our own chiller-specific variable-speed drive. The result: efficiencies as low as 0.20 kW/ton (17.6 COP) while running in weather conditions other chillers can't tolerate.

Sustainable chiller design

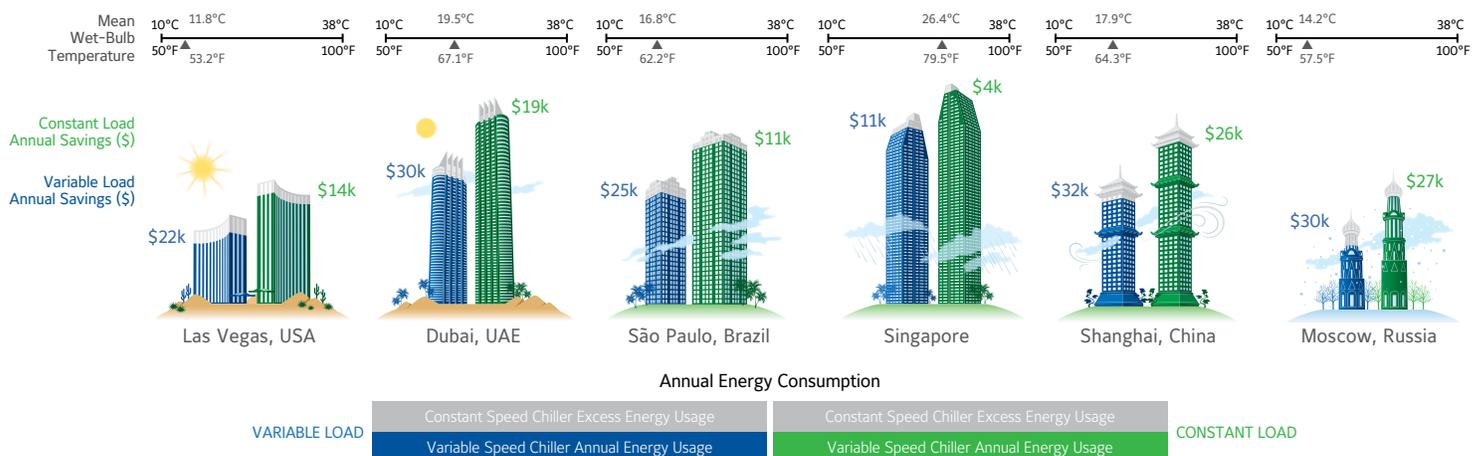
Refrigerant choice and flexibility for today and tomorrow with 30% lower refrigerant charge.

Proven experience in applications, service and support

From building the world's first ice-making machine in 1885 to introducing the first chiller-specific variable-speed drives in 1979, YORK® chiller experience spans over 130 years and more than 100 countries. By combining the highest level of application engineering support, controls software programming expertise, and mechanical system and building automation system support, our team has industry-leading resources to handle your unique challenges.

Learn how our real-world performance will give your project the ultimate advantage.

Annual energy consumption in real-world conditions



From desert to tundra-like climates, YK chillers can take advantage of off-design conditions to save energy for comfort cooling applications with variable loads—even for data centers with constant heavy load. That's because the flexible control logic of our variable-speed drive (VSD) maps exact performance curves at every condition to minimize speed and still deliver the required cooling capacity.

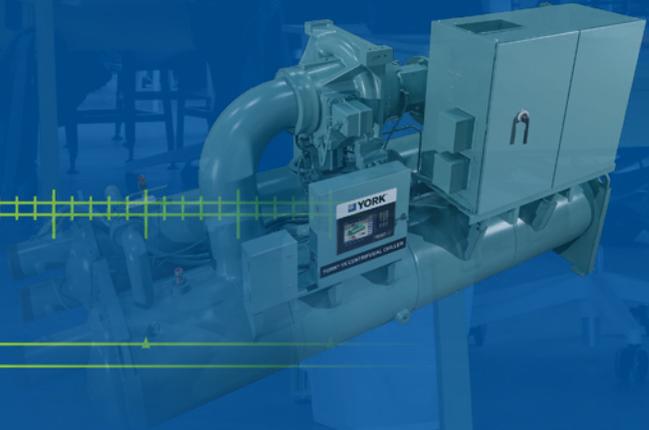
Data is for a 500 ton (1760 kW) chiller operating at 44°F (6.67°C) leaving chilled water temperature and design condenser water temperature based on the maximum wet-bulb temperature for the particular city plus a 7°F (4°C) cooling tower approach and an electricity rate of \$0.10 per kWh. Savings will vary depending on conditions and electricity rates. For example, electricity rates in Singapore could be as much as \$0.30 per kWh leading to savings that are triple those displayed on the graph. Another example is in Dubai, where electricity rates can be \$0.12 per kWh with no demand tariff.

SAVINGS

30%
Operating Savings

TIME

EVAP SHELL CODE	CONDENSER SHELL CODE			MARINE WATER BOXES - 150 PSI ROUND									
	NOZZLE PIPE SIZE (IN)			C	1-PASS		2-PASS		3-PASS		R	P ²	Q ²
	1	2	3		P ¹	Q ¹	P ²	Q ²	P ³	Q ³			
A	1	8	4	274	9573	9573	307	216	9573	307	216	9573	307
C,D	95	1	8	44	9974	9974	3-4	405	9974	3-4	405	9974	3-4
E,F	94	95	1	47	937	937	307	-48	937	307	-48	937	307
G,H	94	95	1	895	9450	9450	380	-70	9450	380	-70	9450	380
J,K,L	98	93	95	849	9-24	9-24	380	802	9-24	380	802	9-24	380
M,N	91	94	93	034	9045	9045	2-8	802	9045	2-8	802	9045	2-8
P,Q	91	94	93	047	9123	9123	218	00	9123	218	00	9123	218
Q,T,QV	35	98	93	047	9123	9123	467	00	9123	467	00	9123	467
R,S	35	91	94	192	9701	9701	6-0	791	9701	6-0	791	9701	6-0
W	35	91	94	192	9701	9701	6-0	791	9701	6-0	791	9701	6-0
X,Z	35	91	94	753	3987	3987	-45	722	3987	-45	722	3987	-45



Built With Total Cost of Ownership In Mind

All your direct and indirect costs add up over a chiller's lifetime, so it pays to consider your total cost of ownership.

That's why we based our YK chiller design on the total system, rather than a single technology. The benefits show up across your entire bottom line – lowering your installation, operating, and maintenance costs without short-changing your comfort or peace of mind.

Lowering installed cost with a selection that's right for you

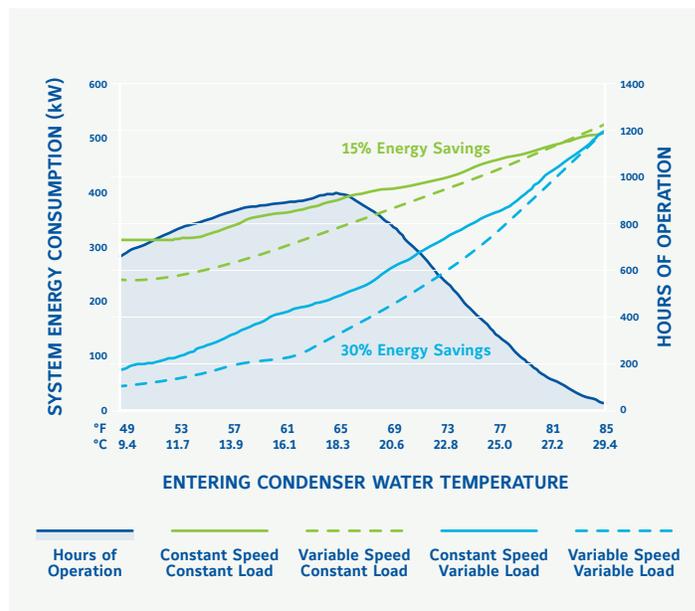
"Right-sizing" your chiller selection means you reduce your installation costs right from the beginning. The YK chiller has virtually infinite combinations of heat exchangers, gears, and open-drive motors that deliver the exact required capacity, minimizing the need for a costly step up to a larger-size chiller package.

Employing a variable-speed drive (VSD) designed specifically for YK chillers means fewer internal components in the VSD to create the optimal balance between cost and performance. Engineering and factory-mounting our VSD provides unparalleled economies of scale.

Commissioning costs are minimized thanks to faster startup and control/building automation system (BAS) integration, which includes programming, hardware, and software that are installed and configured at the factory.

Lowering operating costs with real-world energy efficiency

In the real-world, nearly 99% of a chiller's time is spent at off-design conditions. That's when colder weather conditions can reduce compressor workload by lowering the entering condenser water temperature (ECWT). The ability of YK chillers to take advantage of ECWT as low as 50°F (10°C) reduces compressor speed at off-design conditions. This helps deliver up to 30% more annual energy savings than fixed-speed chillers, regardless of how much time the chiller spends at full or part load.



The power of weather to produce real energy savings

About 99% of the time, weather conditions are cooler than the outdoor temperatures for which the chiller was designed. These "off-design" temperatures allow YK chillers with a VSD to slow down even at full loads and use 15% less electricity than conventional fixed-speed chillers. And with variable building loads, energy savings increase up to 30%.

Lowering maintenance costs by design

The industrial-style, open-drive motor never comes in contact with refrigerant, providing an added layer of protection against refrigerant contamination in the event of a motor burnout.

Both R-134a or R-513A can be used in the YK chiller for lifetime chiller operation, eliminating the uncertainty of refrigerant availability.

VSDs are available in a wide range of voltages to ensure low in-rush currents to YK chillers, reducing the risks of overheating and wiring deterioration over time for a more dependable motor life.



Centrifugal Design Focused On Sustainability

You benefit from chiller technology that has reached the top of its class, because it delivers all the advantages of continual advancements in sustainability.

In fact, we inspired the evolution in modern chiller design by pioneering the use of all commercially viable refrigerants in the widest range of chillers. Our goal was and always will be to let customers, not a marketing agenda, decide the most viable chiller design.

Dedicated to being a good customer steward

The YORK® YK allows for customer choice in refrigerant. The YK chiller comes standard with R-134a, a chlorine-free refrigerant with zero ozone depletion potential and no servicing phase-out date. A YK chiller can be shipped from the factory with R-513A, a refrigerant that has no phase-out date and lower refrigerant global warming potential. R-513A can also be switched in the field, offering increased flexibility and choice.

Dedicated to minimizing total climate impact

We are mindful of and account for a refrigerant's total global warming potential (GWP). Less than 5% of a chiller's carbon footprint is related to refrigerant emissions in the atmosphere, known as the "direct effect." The remaining percentage is due to greenhouse gases emitted by utilities when generating power for the chiller, known as the "indirect effect."

Committed to minimizing refrigerant emissions

YK chillers are designed and tested to ensure refrigerant stays inside the chiller. Because R-134a and R-513A operate slightly above atmospheric pressure, outside air containing non-condensable moisture cannot enter the chiller, eliminating the need for a purge unit to evacuate water vapor and refrigerant into the atmosphere. All these YK features lower the direct effect, which earns points under the Leadership in Energy and Environmental Design® (LEED) program for Enhanced Refrigerant Management (EAc4).



3 = **CARBON SEQUESTERED BY**
YEARS OF CO₂ SAVINGS **3,000,000 TREES ANNUALLY***

Significantly reducing our carbon footprint
Cutting CO₂ emissions by over 1,250 metric tons per chiller annually

*Based on U.S. E.P.A.'s Greenhouse Gas Equivalencies Calculator

Minimize indirect effect by simply using less electricity

YK chillers with VSD are 15% to 30% more energy efficient in the real world than chillers optimized for a single, full load efficiency. That additional efficiency can be equivalent to cutting CO₂ emissions by over 1,250 metric tons or removing nearly 300 passenger vehicles from the road each year, per chiller. That's why YK chillers can frequently earn LEED points for the Optimize Energy Performance (EAc1) credit.



EPA Climate Protection Award

The ground-breaking innovation and energy savings of YORK® electronic variable-speed technology for chillers were recognized by the prestigious U.S. Environmental Protection Agency (EPA) Climate Protection Award.



Innovation For Real-World Performance

You want to produce more cooling using fewer kilowatts. By looking into our thought processes, you'll see why the YK design gives you a whole new perspective into what a chiller can do.

Reduce energy costs with variable-speed innovations

It is impossible for chillers with an off-the-shelf VSD to attain optimum energy performance. For this reason, we developed our own VSD technology – which is integral to our chiller design – to take advantage of real-world operating conditions. The YORK® VSD includes chiller-specific capacity control logic to continuously monitor chilled water temperature, hot gas temperature and pressure, motor speed and other variables. By learning how the chiller operates and mapping exact performance curves at every condition, the YK chiller always runs at the most efficient speed while delivering the required cooling capacity. Our control interface empowers you with intelligent plant-operating strategies to increase your energy savings.

Engineer a compressor that goes with the flow

To handle high-velocity refrigerant gas, we use precision-balanced, high-strength aluminum alloy with backward curved vanes in a shrouded impeller design. These features provide superior aerodynamics versus unshrouded impellers.

Withstand lifetime wear and tear

Specially engineered helical gears with hardened crown teeth ensure even load distribution and quiet operation. The impeller shaft is supported by insert radial sleeve bearings and hydro-dynamic thrust bearings using an oil film, oil pressurized design that prevents metal to metal contact. Tear down for bearing replacement is almost never required on a YK compressor.



Actual OptiView™
Control Center screens.



Run smarter with real-time performance data and a full-color control panel for operators

Smart Equipment provides robust and reliable unit operation with easy-to-use information, fast setup and real-time reports 365 days a year, 24 hours a day using your smartphone or other remote device. The OptiView™ Control Center features a full-color, interactive display with over 100 setpoints, readouts, alerts, reports, and trends at your fingertips. You're in total control and able to make fast, confident decisions to save energy or fix an issue to enhance chiller performance. Use the OptiView™ Control Center panel on its own or integrate it with a BAS interface. It operates seamlessly with Johnson Controls Metasys® Building Management Systems and other open-protocol based building management systems.

Limit interruption with fast restarts

If electrical supply to the chiller is ever interrupted, the Quick Start feature restarts and reaches the specified chilled-water temperature faster than other centrifugal chillers. A YORK® YK chiller can restart in as little as 45 seconds after

a 15 second power failure. This is especially important for mission-critical cooling applications. In addition, reaching the setpoint faster enables the use of smaller buffer tanks, which further reduces installation costs.

Optimize heat exchangers for peak efficiency and endurance

We squeeze more performance into our heat exchangers by using advanced tube alloys and cutting-edge enhancements to improve heat transfer through the tube walls. In fact, our proprietary falling-film evaporator boosts heat transfer and reduces refrigerant charge by as much as 30% compared to conventional designs.

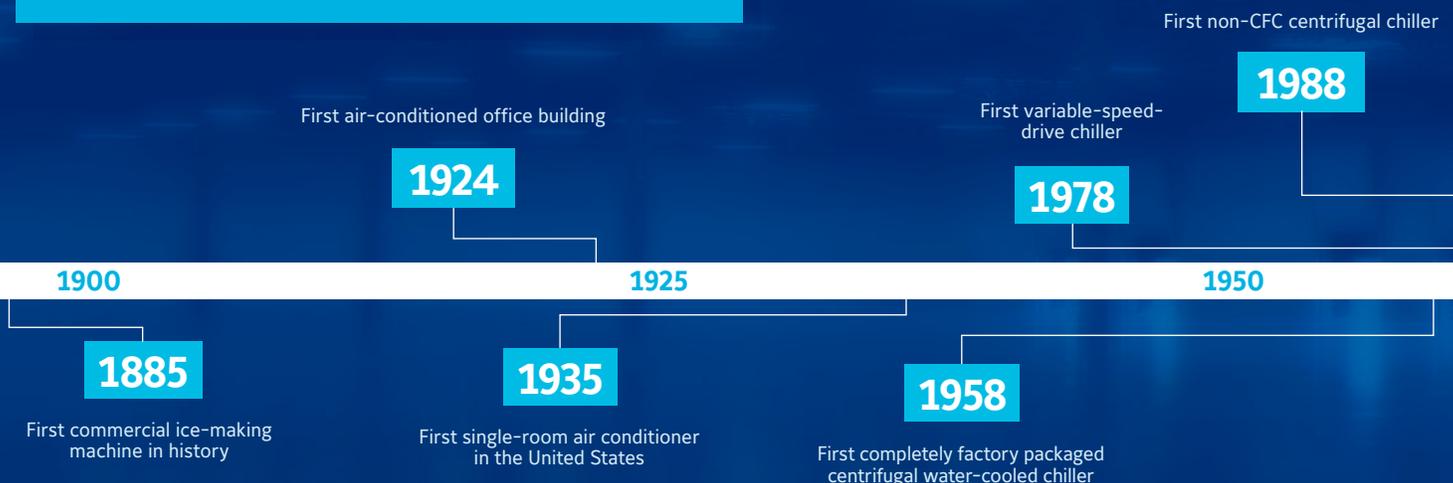
Install in more locations

During nighttime hours or other off-design times, a typical centrifugal chiller gets loud. That's why the YK chiller combines innovative OptiSound™ Control and VSD technology to minimize gas-flow disruptions that cause noise. Plus, the chiller's extended operating map allows the system to operate under conditions that would cause other chillers to stall or surge.

Performance From a Trusted Leader

You can't afford to risk your building being somebody's beta test site. Trust the brand that built the world's first ice-making machine in 1885, and the first variable-speed drive chillers in 1978. The revolutionary design of the YK is continually optimized to incorporate cutting-edge technology and building requirements, providing real performance year after year across the globe.

Our Innovations are backed by experience



Today, the legacy of YORK® innovation extends to an installed base of YK chillers with VSDs that spans tens of thousands of installations providing millions of refrigeration tons of cooling in over 100 countries – real-world experience you can rely on for your application.

Count on a leader in technology for a competitive advantage

From cooling the deepest gold mines in South Africa, to the tallest high rises in China and the UAE, Johnson Controls has the engineering expertise to create the system configuration and operating routines to satisfy your unique objectives. The result: optimum performance now and throughout the lifecycle of your installation. These results create comfortable environments around the globe for YORK® chiller owners from the largest university campuses of Saudi Arabia, to the finest watchmaking facilities in Switzerland; from the highest storage capacity data centers in America, to the largest fish farms in Chile.

Whether you're cutting energy consumption, improving system monitoring and control or shrinking your facility's carbon footprint, count on us for the technological expertise to satisfy your priorities.

Keeping you running at your peak—every day, everywhere

YORK® chillers are designed to provide the ultimate in serviceability, which begins in the world's largest test

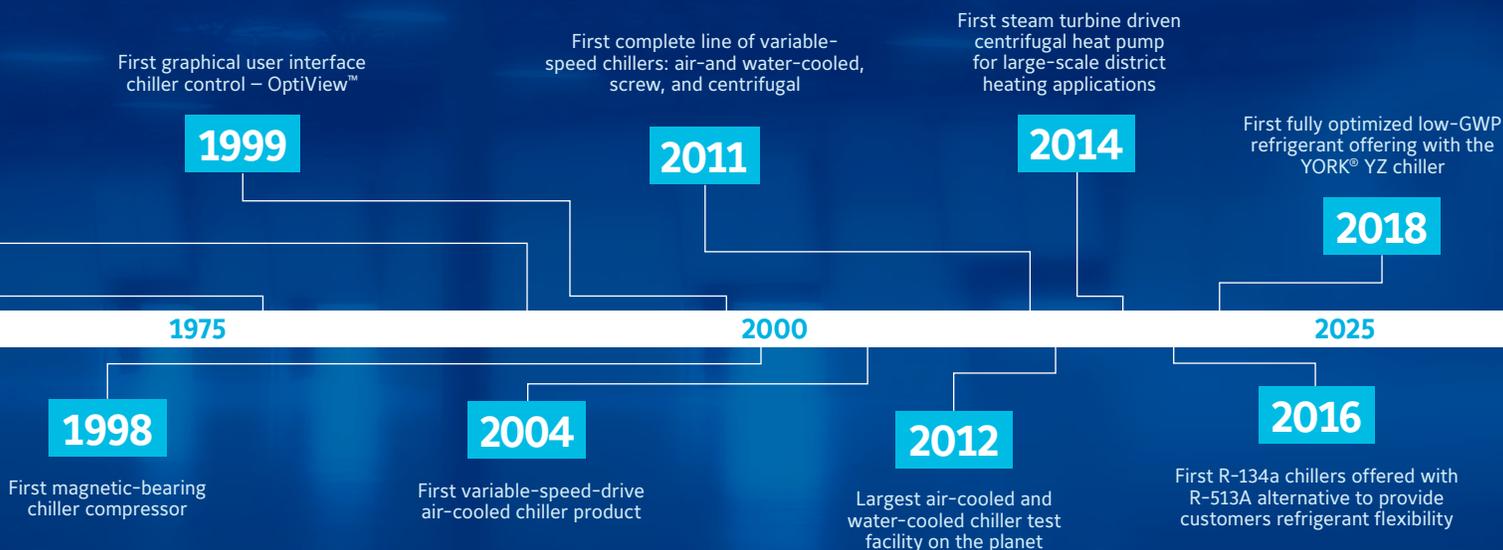
facilities where innovations are nurtured and performance is proven time and again. Then in daily operation, the need for service is minimized thanks to stable chiller operation over a wider operating map along with advanced controls and components that practically run the chiller in "autopilot." Serviceability continues for a lifetime with open-drive technology and infinite bearing life design that almost never requires a system tear down.

Leading experts in service help you be your best

When help is needed, you can count on Johnson Controls. With over 15,000 technicians operating from 500 branch offices in 150 countries, we're the world's leading provider of HVAC equipment, services, and controls. We can ensure your equipment always performs at its full potential. Your local Johnson Controls team offers on-site training and extended service warranties that safeguard system performance and minimize downtime.

Yesterday. Today. Tomorrow.

In a changing world, YORK® YK Centrifugal Chillers combine the lowest total cost of ownership with the most sustainable, efficient, and serviceable design – all delivered by a world-class partner equipped to provide ultimate system performance for a lifetime.





Why install anything but YORK[®]?

You want high performance. You expect efficiency.
And you need a chiller that gives you confidence.

When your reputation is at stake, it's smart to demand nothing less than YORK[®] technology and Johnson Controls factory service. That's because we provide local service and parts to keep your equipment operating at peak performance year after year. Enjoy the peace of mind knowing that trained service experts and Original Equipment Manufacturer parts are available from Johnson Controls – the largest HVAC service and preventative maintenance organization in the world.

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