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**YORK® YMC<sup>2</sup> Chiller:**  
The new standard in chiller technology



## YORK® YMC² chiller, a perfect example of how far Johnson Controls has advanced chiller technology

### The YMC² sets a new standard in chiller technology.

Incorporating years of YORK chiller advancements with the benefits of active magnetic-bearing technology enables the YMC² chiller to deliver lower overall cost of ownership, extraordinary efficiency, versatility, dependability and quiet operation. All in the widest fully integrated optimized chiller design on the planet.

The YMC² chiller offers the widest operational range on the market with a system design that minimizes downtime. And, because it can operate with evaporator and condenser temperatures inverted, the YMC² chiller can eliminate the water-to-water heat exchanger used for free-cooling, simplifying the system and saving money on operating and maintenance costs.

Innovations from Johnson Controls enable the YMC² chiller to define a new standard in chiller technology. The YMC² chiller has proven durability records in hospitals, chemical plants, gas processing plants, data centers and other applications, where minimal downtime is a crucial concern.



## The dawn of lower cost of ownership

It's a new day in the realm of chiller technology. The YMC² chiller's revolutionary design reduces both initial and long-term operating and maintenance costs.

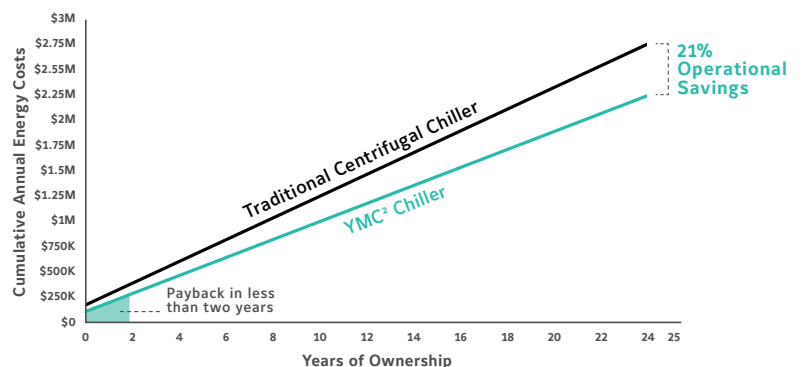
The proven integrated YORK chiller design offers an optimized initial purchase price for the YMC² chiller.

Because of its exceptional efficiency, the YMC² chiller uses less energy, which results in lower operating costs.

The YMC² chiller can also promise lower maintenance costs. With magnetic-bearing technology, there are fewer moving parts to wear down and require replacement.

When you take into account the YMC² chiller's competitive initial cost, plus its lower operating and maintenance costs, this means you get a truly exceptional lower total cost of ownership.

Lower operating costs save over \$500,000 with the YMC² chiller\*



\*Assumptions: 800 ton (2810 kW) chiller operating 24/7 with medium building load, at \$.10kW/hour with no demand charge.

## Designed to make the most of energy

Like satellites that make optimum use of every bit of energy available, the YMC² chiller is designed for maximum energy efficiency.

In the real world, nearly 99 percent of a chiller's time is spent in off-design conditions. That's when colder weather can reduce compressor workload by lowering the entering condenser water temperature (ECWT). The ability of YORK chillers to take advantage of ECWT as low as 36°F(2°C) reduces compressor speed during off-design conditions. This helps deliver over 30 percent more annual energy savings than fixed-speed oil chillers and 21 percent more annual energy savings than variable-speed oil chillers, regardless of how much time the chiller spends at full or part load.



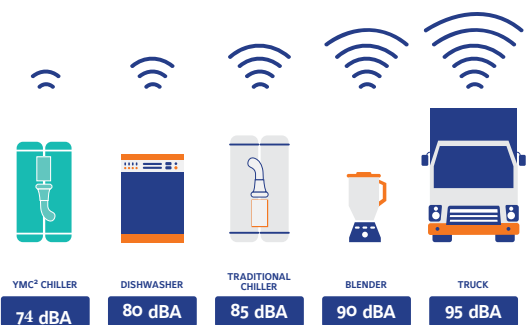
## Extraordinarily quiet

Space is known for the absence of sound and, thanks to a design that features fewer moving parts, so is the YMC² chiller.

The YMC² chiller's permanent magnetic motor eliminates the noise that comes from mechanical contact. This results in a sound level lower than any water-cooled centrifugal or screw chiller on the market – as low as 74 dBA at AHRI-575 full-load standard conditions, the volume of a typical vacuum cleaner.

In fact, the human ear perceives the YMC² chiller as about half as loud when compared to competitive chillers. Our permanent-magnet motor with active magnetic-bearing technology eliminates driveline sound. Variable speed drive and our OptiSound™ also help reduce noise, making the YMC² chiller ideal for sound-sensitive locations such as museums, theaters or auditoriums.

Sound levels as low as 74 dBA



Although the typical traditional chiller has impressive sound levels, the YMC² chiller is one of the quietest chillers available.



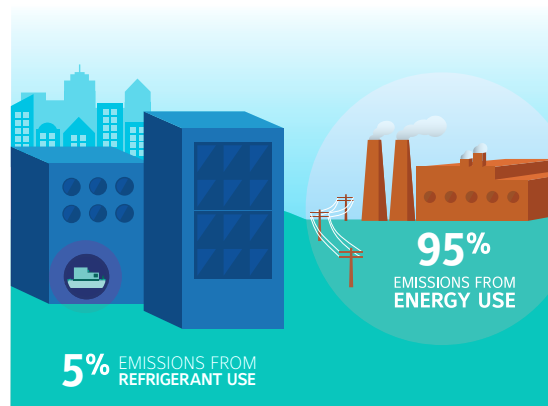


## Helping to keep the “Blue Planet” green

The YMC² chiller was created with sustainability in mind. It was carefully designed to minimize emissions that could negatively impact the environment.

The YMC² chiller takes a holistic approach to the lowest net carbon footprint.\* To minimize the direct effect global warming potential, the YMC² chiller has a minimal amount of charge and is designed for leak-tight operation. The YMC² chiller uses R-134a and is future-compatible with R-513A, a low GWP and nonflammable refrigerant, which eliminates any concerns customers may have about uncertain regulations. The largest impact to GWP is seen through the indirect effect; the YMC² chiller requires less energy consumption, reducing the necessary energy production and the resulting carbon emissions.

\*95 percent of the global warming potential of a centrifugal chiller is from the indirect effect – or the greenhouse gases generated in the production of electricity to run the chiller. Five percent of the GWP is from the direct effect or if the refrigerant is completely released into the atmosphere – which is an unlikely occurrence, thanks to the YMC² chiller’s leak-tight technology.



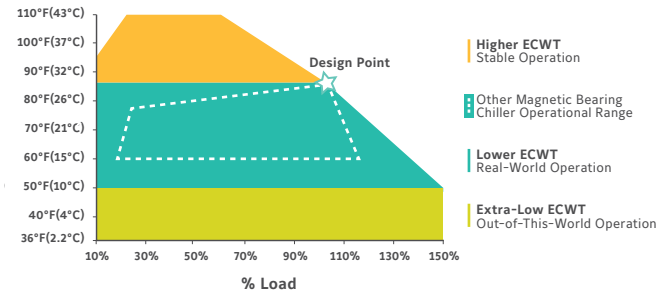
What makes the biggest impact on total CO<sub>2</sub> emissions from air conditioning? Refrigerant choice or energy efficiency.

A YMC² chiller offers out-of-this-world efficiency that will reduce your carbon footprint.

## The versatility to perform under demanding conditions

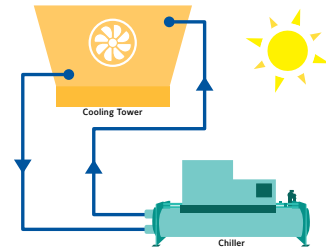
The YMC<sup>2</sup> chiller features an unequaled range of operation, allowing continuous performance under conditions that would normally shut down other chillers.

YMC<sup>2</sup> Operating Envelope



### Higher ECWT – Stable Operation

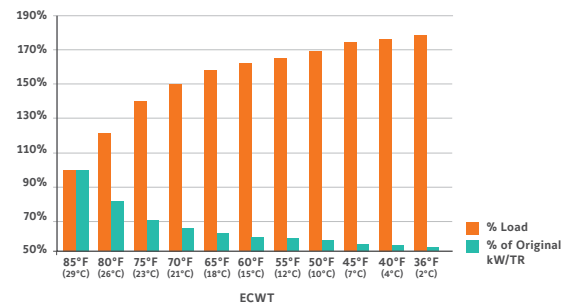
The YMC<sup>2</sup> chiller is prepared to handle unforeseen transients. This ability is valuable for almost any application. The YMC<sup>2</sup> chiller is designed so that if temperatures rise from the tower water, it will continue to stay online and won't surge and shut down. Competitive units in a similar situation require the equipment to cycle, potentially losing temporary control of the needed cooling.



### Lower ECWT – Real-World Operation

The YMC<sup>2</sup> chiller can accept lower entering condenser water temperature and, in turn, produce more tons of cooling. In less versatile chillers, this situation of lower ECWT may require a long wait before the unit can be turned back on. An example of this capability in practice is in a multiple-chiller plant where you have a less efficient chiller that you want to keep off-line as long as possible to keep your plant efficiencies as high as possible. The YMC<sup>2</sup> chiller can produce more tons to keep the other chiller off-line longer.

Chiller Max Capacities and kW/TR at Reduced ECWT

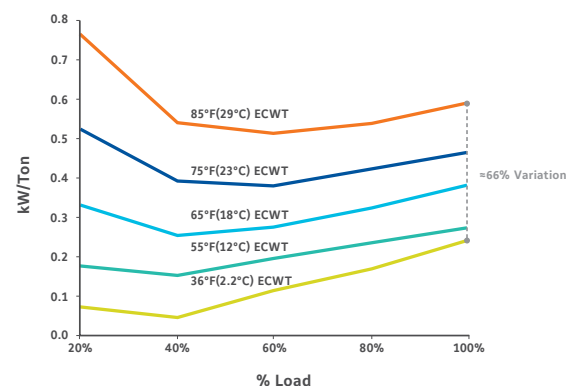


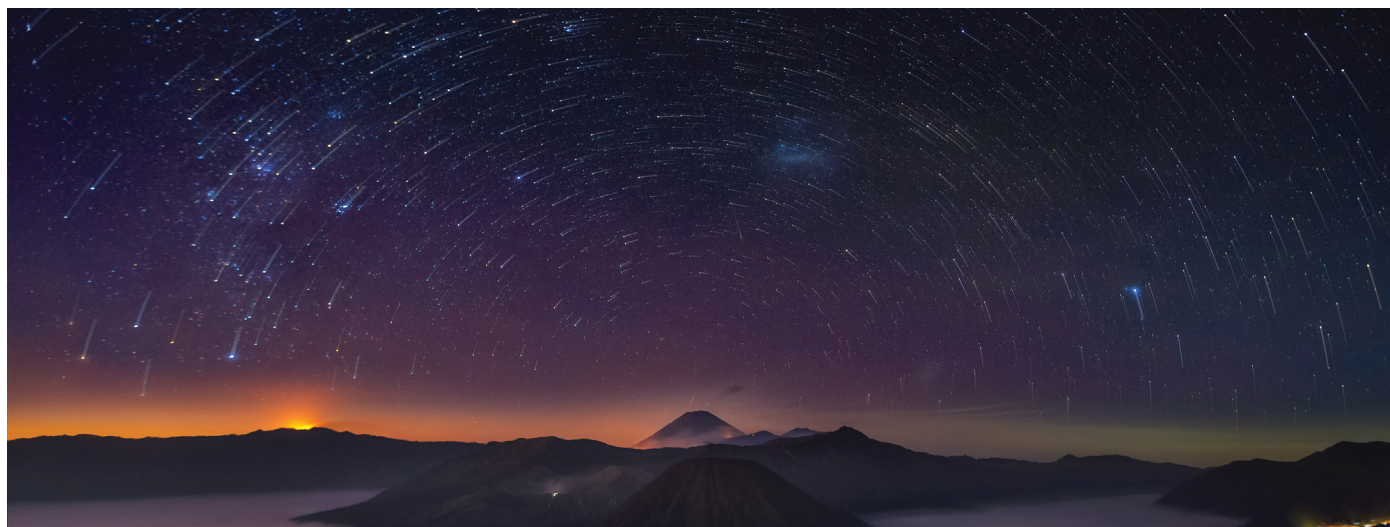
### Extra-Low ECWT – Out-of-This-World Operation

The YMC<sup>2</sup> chiller is able to operate with minimum entering condenser water temperatures below the leaving chilled water set point, sometimes referred to as inverted or upside down. It can operate stably with entering condenser water temperatures 30°F (16.7°C), below the leaving chilled water set point. Ratings are available down to a minimum of 36°F (2.2°C) entering condenser water.

Because free-cooling isn't so free anymore, the YMC<sup>2</sup> chiller lowers costs by eliminating the need for a water-to-water heat exchanger and its accompanying expenses, such as piping controls and operation and maintenance costs.

YMC<sup>2</sup> Chiller Performance Below 0.1 kW/Ton





## Few things are as dependable as the YMC² chiller

Just as you can count on the North Star to invariably take its appointed place in the sky, you can count on the YMC² chiller to stay online in situations that would shut down less-resilient chillers.

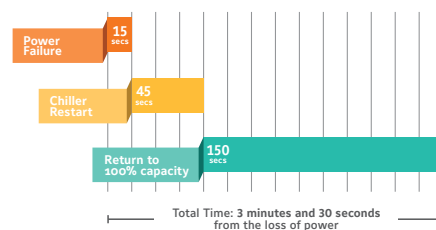
The YMC² chiller's fully integrated oil-free design has set a new standard in chiller dependability. The YMC² chiller can also promise lower maintenance costs. With magnetic-bearing chiller technology, there are fewer moving parts to wear down and require replacement.

The YMC² chiller's magnetic-bearing technology features a single moving assembly, suspended in a magnetic field, enhancing its durability and eliminating the problems that can come from continuous contact. This translates into the kind of exceptional dependability that reduces downtime and promotes fast starts and restarts. No wonder it's been chosen for use on naval ships and submarines — places where you can't just open a window.

The YMC² chiller does not require scheduled maintenance after a set number of run hours, such as timely and costly compressor teardowns. All oil maintenance requirements are removed, meaning no motor lubrication, checking of oil levels and return system, or the replacing of an oil filter or oil filter/dryer.

To maintain the efficiency and performance of the YMC² chiller, Johnson Controls factory service technicians can provide all necessary on-site service. Johnson Controls can even enhance service agreements with embedded Smart Connected Chiller technology. Through a secure connection, this cloud-based analytics platform combines remote monitoring and predictive diagnostics, allowing our service technicians to proactively diagnose issues before they become problems.

### YMC² restart and capacity recovery time, in seconds



Restart and capacity recovery times for a typical YMC² chiller after a 15-second power failure.

## Everything you need in a chiller. Everything you want in a chiller.

Low overall cost of ownership. Highly efficient. Exceptionally versatile.  
Very dependable. Reduced direct and indirect environmental impact.  
Quiet operation. In short, the YMC² chiller sets a new, higher standard  
of performance and announces the arrival of a whole new world of  
advanced chiller technology.



  
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For more information on the YMC² chiller, call your sales representative or visit [york.com/ymc2](http://york.com/ymc2).

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