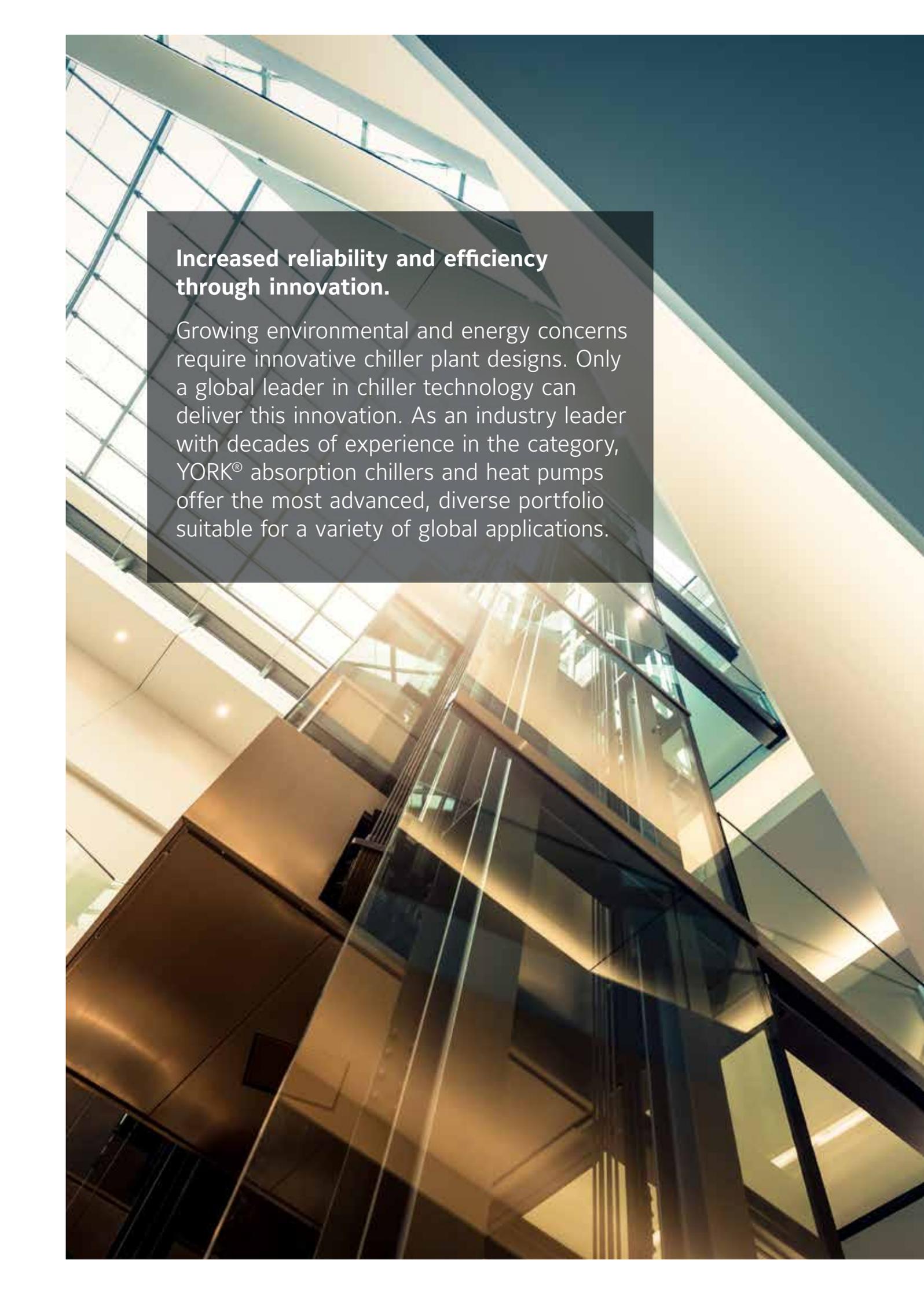




# York® absorption chillers and heat pumps sales guide



Europe  
February 2020



**Increased reliability and efficiency through innovation.**

Growing environmental and energy concerns require innovative chiller plant designs. Only a global leader in chiller technology can deliver this innovation. As an industry leader with decades of experience in the category, YORK® absorption chillers and heat pumps offer the most advanced, diverse portfolio suitable for a variety of global applications.

# York<sup>®</sup> absorption chillers and heat pumps

## Absorption



### What is an absorption chiller?

Absorption chillers use waste heat and a chemical solution (Lithium Bromide Solution) to produce chilled water. Recovered waste heat in the form of hot water, low or high steam pressure or exhaust gas can be used to power an indirect-fired absorption chiller (they use electricity for solution pumps, but only a small fraction of the electricity that electric motor driven chillers require). Absorption chiller can be direct fired through natural gas or oil driven burner.



### What is Lithium Bromide?

Lithium Bromide has similar chemical characteristics to cooking salt. The LiBr molecule compound is 8% Lithium and 92% Bromide. It looks like colorless crystal grain. It is non-toxic, odorless, very stable. Salt is highly corrosive to the metal (carbon steel), specially under the presence of air, inside the chiller is always near vacuum condition. That is why LiBr-Solution contains the Corrosion inhibitor - Lithium Molybdate -> (Li<sub>2</sub>MoO<sub>4</sub>) and the Surfactant 2-Ethyl-1-hexanol. It constitutes about 2% of all solutions. The cycle works because of the strong affinity (absorption ability) that these two substances (refrigerant and absorbent) have for one another.



### What are single- and double-effect absorption chillers? What are the main differences?

Without getting technical, the number of "effects" in a chiller reflects the number of times energy is used. A single-effect machine uses heat just once to produce chilled water. A double-effect machine contains heat exchangers to recover left-

over heat from the first stage of cooling to produce additional refrigerant vapor and more cooling. Double-effect is more efficient than single-effect. Triple-effect chillers are under development.



### What are the main advantages of use an Absorption Chiller?

The process can use either low-grade steam or hot water heat to drive the absorption process. The use of waste heat for thermal compression means near free-waste heat. Absorption chillers have minimal moving parts. This means that they make less noise and have fewer vibrations than mechanical chillers. Absorption chillers typically only use approx. 2% of the electricity that is usually required for mechanical chillers. This means that facilities can avoid peak demand charges and high time-of-use electricity rates (if they are on that type of electric rate schedule). Saving electrical energy leads to a reduction of operating costs, which is economically reasonable. Our system utilizes thermal energy from the flue gases or industrial processes. It has a long lifetime, at least 20 years. There is no risk of fire and explosion. It is ecologically safe as water is a natural refrigerant.





### Where are absorption machines manufactured?

Absorption machines are manufactured entirely in the Wuxi factory in China. The engineering team for Absorption chillers is based in Japan. They are designed for at least 8000h operating hours per year. Supplier address: 302 YORK (WUXI) AIR CONDITIONING AND REFRIGERATION CO LTD NO.32 CAHNG JIANG ROAD NATIONAL HIGH-TECH INVESTMENT DEVELOPMENT ZONE 214028 WUXI, CN China. Tel: +8651085224265



### Where can I get correct rating, pricing and drawings of the absorption unit?

Change: Standard absorption units (YHAU-CL/CH/C/CW/CG-L and YHAP-CL/CH) units can be selected and can be quoted in YorkWorks (GCSS). All available drawings in GCSS are static – without correct Nozzle Arrangement. Dynamic drawing for some YHAU-CL units are already available in GCSS. All SQ absorption units (not included in GCSS) should be requested at Application Engineering or Product Management.



### What is the warranty from Wuxi factory in China?

Wuxi factory in China provides 12 months from start up or 18 months after delivery. For every additional year, you need to add 2% of total unit cost. A maximum 5-year warranty is possible.



### Who are the contact persons in the Wuxi factory in China?

Lead time, ocean freight etc. can be requested at CSD Wuxi EU: Alice.Chunxia.Wang@jci.com Zhuan.WZ.Wang@jci.com



### What is the ordering process?

Oracle order process: PR to Bratislava team -> PO from Bratislava to CSD Wuxi. Direct order process: Please send these 4 pdf files to CSD Wuxi (1) Original data sheet from GCSS (2) Nozzle arrangement from ICOM (3) Internal Pricing Report from GCSS (4) Prchase Order. You should put a full breakdown of all options and SQs on the PO as text. (PR means Purchase request; PO means Purchase order, CSD means Customer Service Department).



### Who provides the completion date of the order?

CSD Wuxi will provide you with a Purchase Order Acknowledgment, with completion date just after receiving Purchase order.



### What need to be considered for correct pricing of absorption unit?

For standard absorption units you should consider Control valve (Samson or JCI), Hot and Cold insulation on site, Ocean freight (can be offered from CSD Wuxi), Land transport within Europe, Warranty 12/18 (add 2% for each additional year, max 5 years), 2.2% import duty in the calculation and project management working hours (approx. 5% of project value).



### What is the currently accepted by Wuxi factory? What value do you need to enter into PO?

Accepted currency in Wuxi factory is Renminbi. Renminbi (RMB) is equal to the Chinese Yuan (CNY). CNY and RMB are the same



### Who can I hedge exchange rate during BOD/BID process?

You order at a certain exchange rate, but until you get the invoice (after shipment), currency might go up or down. Please contact Alain van Loon <alain.van.loon@jci.com> from Europe finance for hedging RMB.



### What is the lead-time of absorption chiller?

Delivery time needs to be requested at CSD Wuxi factory directly. Typical delivery time could be 8-22 weeks depending on size of the unit and included options. Some option will cause additional lead time of 1 to 4 weeks.



### What is the transport time of absorption chiller?

Transport time from the Wuxi factory to a European harbor is around 6 weeks (dependent on vessel availability) and needs to be requested at CSD Wuxi factory directly. There is no need for further costs of packaging for freight of the unit. Absorption chillers are packed and the incoterm which could be practiced with Wuxi factory is EX-WORKS or CRF, which means container or flat rack.



### Who can organize the shipment?

Shipment can be organized (optional) organized from Wuxi factory to European harbor and invoiced afterwards.

### Where the spare parts list can be request?



Please check the spare parts list (amount and prices) with HVAC-EasyParts. Spare parts manuals are available on Virtual Branch site. Contact: HVAC-EasyParts@jci.com or Robert.Coleman@jci.com;

### Where the reference list can be request?



Please request the reference list for each model type and each market segment at product management team. Please contact Dmitrij Gorlovsky <dmitrij.gorlovsky@jci.com>

### Where EG, ICOM and sales brochure can be find and download?



See all available documentation, which is accessible via the link below. Documentation and sales related literature is available in different languages. Click on this link: <https://be-ebusiness.eu.johnsoncontrols.com/vb/catalog/HVAC-Equipment/6/Absorption-Chillers-and-Heat-Pumps>

### Who can give me advice about the optimization of absorption selection and competitive pricing insights at ongoing bidding cycles or BOD?



CMPO will help you to define Strategic Market Price (SMP) and make competitor analysis. The CMPO will accomplish this by becoming the go-to source of market information, analyses of historic trends or bids, and technical insights. Enable Sales teams to make fact-based decisions when bidding to improve win rate and capture margin. Please contact BE-CMPO-EU <BE-CMPO-EU@jci.com> or Dmitrij Gorlovsky (email: dmitrij.gorlovsky@jci.com), CMPO for Absorption chillers.



If you need additional information related to Absorption Chillers, including marketing collateral, case studies, whitepapers, etc. please contact: Dmitrij Gorlovsky (email: dmitrij.gorlovsky@jci.com).

# Topics and questions need to be clarified for ABS project



## Absorption Chiller Project Check List

Whether you're bidding a new project with Absorption chillers or working to place your order, we can help.

This check list provides an overview of the most common items required to place your order.

If you need help, please contact your product manager or Application Engineer..

### Before placing the order

- Check all available Documentation (Guide spec., ICOM and EG): [be-ebusiness.eu.johnsoncontrols.com/vb](http://be-ebusiness.eu.johnsoncontrols.com/vb)
- Explain to customer "How absorption unit works?" (Principles of operating) using available animations and customer presentation (PPT).
- Creating rating and pricing sheet in GCSS
- Optimize the type of the abs unit and size of the unit: finalizing operating points by customer
- Creating Part Load ratings to cover all possible operating conditions (Abnormal conditions). Please contact Application Engineering Team.
- Improve rating with high-efficiency selection? For steam- or direct-fired units
- Checking water quality of HW, CoW and ChW. If necessary, choosing other tube material and find criteria to compare in ICOM.
- Check max. Working pressure: PN10 or PN20? Or higher?
- Taking Drawings from GCSS (Outline and Foundation, Multi-Section Shipment). Reference drawing. Correct drawing request Application Engineering.
- Request 3D model
- Request Dühring Diagram or ptx - diagram
- Request Reference List based on market segment (Automotive, Hospital etc.)
- Request Spare Parts List > Spare Parts center > Easyparts
- Request List of advantages for our units (Sales brochure)

- Request arguments against competitors
- Check internal pricing including all costs (Transport, Maintains, Start-up, Project Management, etc.)
- What is the conversion factor RMB to EUR? Simply Google it to find out!
- Request actual multiplier from MLP to BTP by product manager.
- Consider 2.2% import duty in the calculation
- Check Control Valve selection / price and installation (Inlet/Outlet? – Mixing-Diverting?)
- Check special rigging dimension of the unit.
- Is it enough place in machine room for maintains? Is there enough space to enter the machine room?
- Check all available options like outdoor installation, Explosion proof etc. (More than 30 spacial options available)
- How to place the order in Wuxi? What documents are needed? (Nozzle arrangement, Passes etc.)
- Check transport cost at CSD Wuxi
- Check Delivery Time at CSD Wuxi
- Check Insulation price of the unit: Hot/Cold side (external company)
- Check Warranty (12/18 months; 2% for each additional year; 5 years maximum)
- Check Maintains issues (Who will do the Start-Up? Training needed? Service contract?)

### After placing the order

- Participate at unit delivery to customer side. Make pictures. NO transport damage?
- Which kind of unit test is included in the price?
- Storage method? Wet or dry?
- Where to do analysis of LiBr-solution? Check maintenance list in ICOM.

# YORK® Absorption Chillers and heat pump

With innovative 2-step evaporation and absorption-cycle technology

DRIVING HEAT SOURCE	MODEL AND DESCRIPTION	
<b>HOT WATER</b>	<p><b>Single Effect Hot Water</b>  <b>Model:</b> YHAU-CL/CH  <b>Capacity:</b> 105 - 7,034 kW / 30 - 2,000 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling, industrial process cooling</p>	
<b>LOW TEMPERATURE HOT WATER</b>	<p><b>Single Effect Double Lift Hot Water</b>  <b>Model:</b> YHAU-CL-DXS  <b>Capacity:</b> 176 - 4,395 kW / 50 - 1,250 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling, industrial process cooling</p>	
<b>LOW PRESSURE STEAM</b>	<p><b>Single Effect Steam</b>  <b>Model:</b> YHAU-C  <b>Capacity:</b> 105 - 7,034 kW / 30 - 2,000 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling, industrial process cooling</p>	
<b>MEDIUM PRESSURE STEAM</b>	<p><b>Double Effect Steam</b>  <b>Model:</b> YHAU-CW  <b>Capacity:</b> 422 - 14,067 kW / 120 - 4,000 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling, industrial process cooling</p>	
<b>DIRECT FIRED</b>	<p><b>Small Double Effect Natural Gas or Light Oil*</b>  <b>Model:</b> YHAU-CG/CA-CXR  <b>Capacity:</b> 105 - 352 kW / 30 - 100 TR  <b>Application:</b> Commercial cooling</p>	
<b>DIRECT FIRED</b>	<p><b>Large Double Effect Natural Gas or Light Oil</b>  <b>Model:</b> YHAU-CG/CA  <b>Capacity:</b> 422 - 5,626 kW / 120 - 1,600 TR  <b>Application:</b> Commercial cooling, industrial process cooling</p>	

\*Utilizes standard cycle

DRIVING HEAT SOURCE	MODEL AND DESCRIPTION	
EXHAUST GAS	<p><b>Double Effect Exhaust Gas</b>  <b>Model:</b> YHAU-CE  <b>Capacity:</b> 527 - 5,064 kW / 150 - 1,440 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling</p>	
EXHAUST GAS AND LOW TEMPERATURE HOT WATER	<p><b>Multi Energy Exhaust and Jacket Hot Water</b>  <b>Model:</b> YHAU-CE -J  <b>Capacity:</b> 527 - 5,064 kW / 150 - 1,440 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling</p>	
EXHAUST GAS AND LOW TEMPERATURE HOT WATER AND DIRECT FIRED	<p><b>Multi Energy Exhaust, Jacket Hot Water, Direct Fired</b>  <b>Model:</b> YHAU-CGE-J  <b>Capacity:</b> Custom  <b>Application:</b> Combined heat and power (CHP), commercial cooling</p>	
NATURAL GAS AND LOW TEMPERATURE HOT WATER	<p><b>Gas Gene-Link</b>  <b>Model:</b> YHAU-CG-J  <b>Capacity:</b> 422 - 5,626 kW / 120 - 1,600 TR  <b>Application:</b> Combined heat and power (CHP), commercial cooling</p>	
MEDIUM PRESSURE STEAM AND LOW TEMPERATURE HOT WATER	<p><b>Steam Gene-Link</b>  <b>Model:</b> YHAU-CW-J  <b>Capacity:</b> 422 - 14,067 kW / 120 - 4,000 TR  <b>Application:</b> Combined heat and power (CHP), industrial process cooling</p>	
HOT WATER, STEAM, DIRECT FIRED	<p><b>Low Leaving Chilled Water Temperature (Down to -5°C)</b>  <b>Model:</b> YHAU-C/CL/CH/CW/CG-LL  <b>Capacity:</b> 567- 7,034 kW / 180 - 2,000 TR  <b>Application:</b> Industrial process cooling / refrigeration</p>	
HOT WATER, STEAM, DIRECT FIRED	<p><b>Absorption Heat Pump (Up to 90°C)</b>  <b>Model:</b> YHAP-C/CL/CH/CG  <b>Capacity:</b> Custom  <b>Application:</b> District heating, industrial process heating</p>	



## 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 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.

For additional information, please visit <https://be-ebusiness.eu.johnsoncontrols.com>

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### EU CMPO

Coordinate Market Price  
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### Spare Parts

Spare part list for 2 and 5  
years with pricing  
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