

## **ENERGY ABSORPTION DEVICES:**

Energy-efficient cooling and heating



TURNKEY SYSTEMS

DESIGNS AND IMPLEMENTATIONS

TECHNICAL SUPPORT AND SERVICING



# Absorption chilled water unit EBARA with nominal cooling capacity of 5200 kW

Provided by ANDRA. The unit runs on the premises of the largest coking plant in Poland. It guarantees retention of the appropriate efficiency and reliability of the coke-oven gas cooling process, continuously, all year round, using the factory process steam network for supply.



# ABSORPTION DEVICES TURN WASTE HEAT INTO USEFUL HEAT OR COLD

**DO YOU HAVE ACCESS TO HOT WATER, STEAM, OR ANOTHER SOURCE OF CHEAP HEAT?**

**USE THEM TO PRODUCE HEAT AND SAVE MONEY!**

Absorption technologies use cheap heat carriers, such as hot water or steam, to produce cold. They make it possible to create a cooling effect with a minimum demand for electricity.

Absorption devices use the physical properties of a liquid working medium (lithium bromide-water solution). It is pumped through a suitably-shaped, closed system of heat exchangers connected to an external heating stream. The result of this process is cold in the form of chilled water.

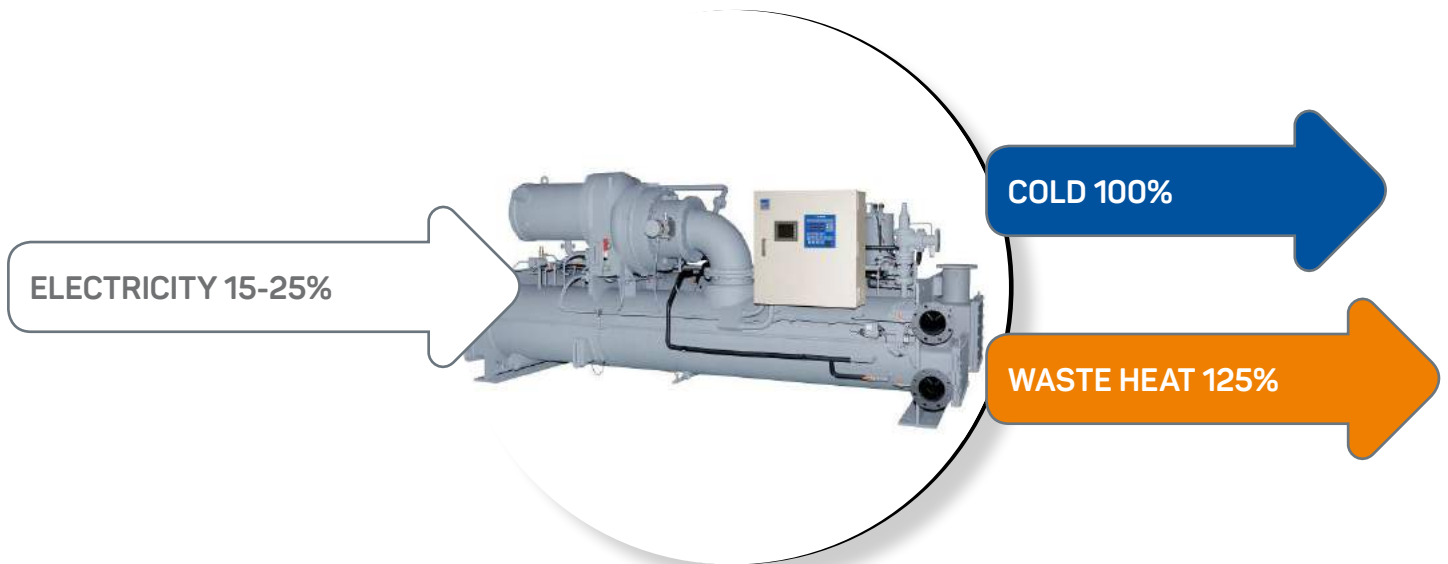
## For whom?

Systems based on absorption devices are the perfect solution for cooling process lines, as well as air conditioning halls and facilities, if you have a source of cheap heat at your disposal. One of these sources is waste heat from electricity generation or production processes – in the form of steam, hot water, oil or waste gas with at least **65°C**. **The resulting cold of +4 to +20 °C** can be used for air conditioning or process cooling.

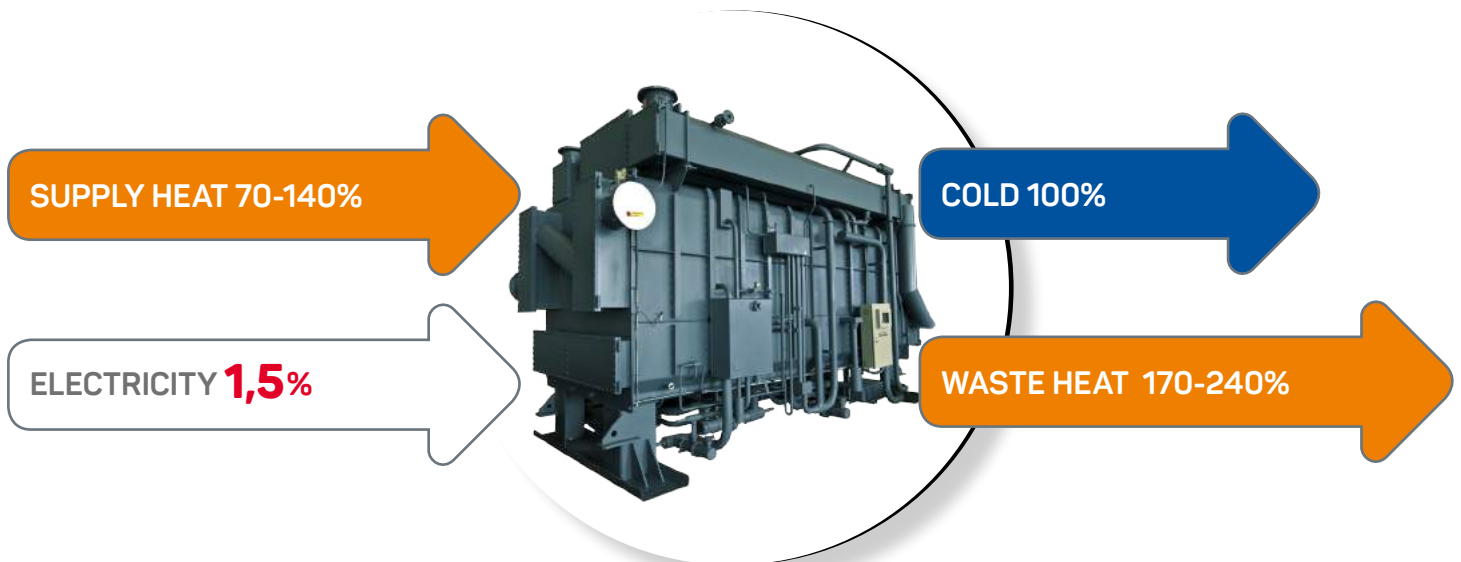
# USE OF ABSORPTION DEVICES SIGNIFICANTLY REDUCES THE CONSUMPTION OF ELECTRICITY TO GENERATE COLD

## ENERGY BALANCE COMPARISON FOR ELECTRIC AND ABSORPTION COOLING DEVICES:

### ELECTRIC COOLING DEVICES



### ABSORPTION COOLING DEVICE





# Absorption chilled water unit EBARA with nominal cooling capacity of 950 kW

Supplied by ANDRA. The unit works on the premises of a Polish plant food industry. It ensures that the performance of the air-conditioning installation of the industrial halls, while also using the waste heat waste heat from the production process.





## KNOWLEDGE, EXPERIENCE, RELIABILITY

We are a Polish company with engineering roots. For 30 years we have been helping our customers derive maximum benefits from the potential offered by new technologies. Our portfolio includes a broad spectrum of services and solutions in the field of technical infrastructure.

**We design and build heat recovery and cold generation systems based on energy efficient and environment-friendly absorption devices. We equip the systems with the necessary supply installations, low-current, hydraulic, cabling, as well as automation and control systems.**

### Distribution

We provide top-class absorption devices made by a Japanese company EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO.LTD.

As an official distributor of this unquestionably renowned company, we offer proven devices and support, both before and after sales.

### Projects

We make multi-branch design studies (HVAC, AKPIA). We develop construction, detailed and technical designs. We supplement the catalogue solutions with our own applications, integrated with the customers' production systems. We design custom solutions.

### Implementations, consulting, optimization

We reliably verify third-party technical designs to eliminate any inaccuracies or solutions which are ineffective or unprofitable. We conduct projects based on a proven set of good practices, which guarantee efficient implementation as well as minimize technical and organizational risks.

### Servicing and technical support

After functional acceptance of the installation, we monitor the operation of the system and, if necessary, make improvements. This way, we are always close to the customers' process, providing them with the necessary support. All the devices and components of the system are subject to care as part of the warranty service. We provide post-warranty technical support on the basis of servicing contracts, also as SLA 24/7.



## Distribution:

# EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO., LTD.

## QUALITY, MODERNITY, RELIABILITY



**EBARA**

荏原冷熱システムは、たくさんの「心地よい」を提供します。

**Since 2016, we have been cooperating with a renowned manufacturer of absorption devices – EBARA REFRIGERATION EQUIPMENT & SYSTEMS company, part of a Japanese EBARA Corporation.**

EBARA, the world's largest manufacturer of flow devices, has been providing absorption devices since 1960, making this company one of the most experienced manufacturers of these solutions. In its field of operations, it is an indisputable technological leader and role model for other manufacturers, also in terms of product liability. So far, EBARA has delivered more than 20,000 absorption devices to more than 60 countries.

In 2018, EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO. LTD. opened a branch in Warsaw. That way, as an official distributor, we have access to fast and professional support of the manufacturer at every stage of purchase, installation and operation of the devices.

### **Available device configurations:**

#### **absorption chilled water unit, supplied with hot water**

Intended for customers with access to hot water from electricity generation processes, industrial processes, geothermal sources or municipal heating networks.

#### **absorption chilled water unit, supplied with steam**

Intended for customers who have process steam installations, steam turbine sets, or waste-heat boilers being sources of saturated steam.

## WE WILL PROFESSIONALLY TAKE CARE OF ANY ABSORPTION DEVICE

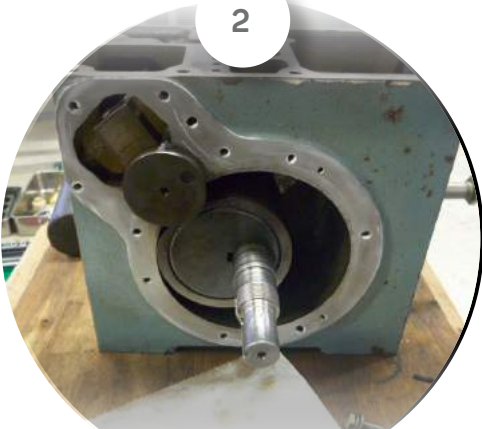
Among numerous providers of absorption devices on the Polish market, we stand out thanks to our unique servicing experience. Our engineers have gained comprehensive experience during many years of work with devices from various manufacturers and with different degrees of efficiency. We know how an efficient and reliable absorption device should be built and how it should work, and we can use this knowledge in practice.

1



ONLINE DEVICE MONITORING

2



VACUUM PUMP MAINTENANCE  
AND REPAIRS

3



LITHIUM BROMIDE PUMP  
MAINTENANCE AND REPAIRS

4



SPARE PART SUPPLY  
AND REPLACEMENT

ANDRA TECHNICAL SERVICE



Absorption devices are commonly seen as simple to keep up and maintain. But, as any cooling device, they require proper care and servicing. Professional, systematic care keeps the entire system at the highest level of efficiency and prevents the costs of potential repairs.

We provide the full extent of servicing to operators of absorption devices of any brand.



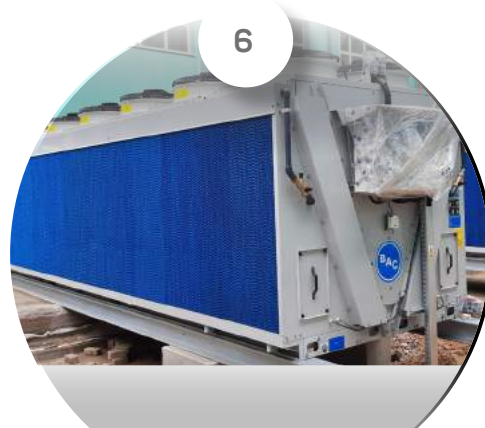
**LITHIUM BROMIDE SOLUTION  
CONDITIONING**



**LITHIUM BROMIDE SOLUTION  
CHEMICAL COMPOSITION ANALYSES**



**ENCLOSURE LEAK TESTS  
AND REPAIRS**

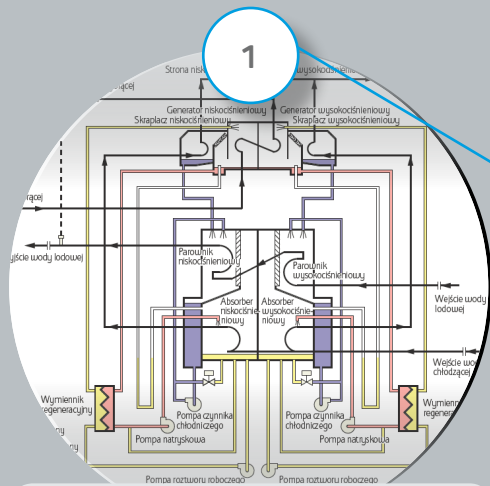


**WATER EXCHANGERS  
CLEANING**

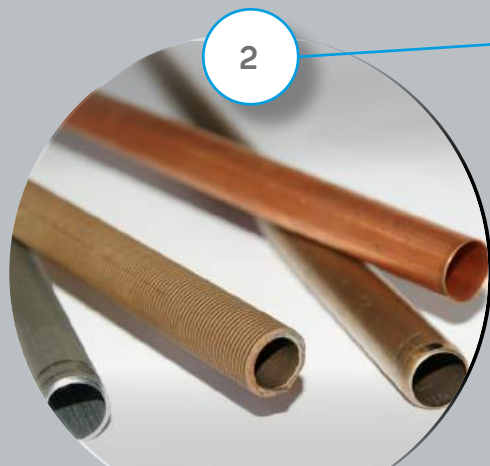
# ABSORPTION CHILLED WATER UNIT

SUPPLY:

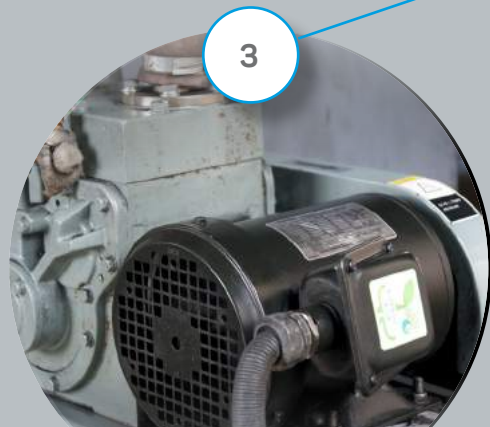
HOT WATER, SATURATED STEAM, GAS BURNER, EXHAUST GASES



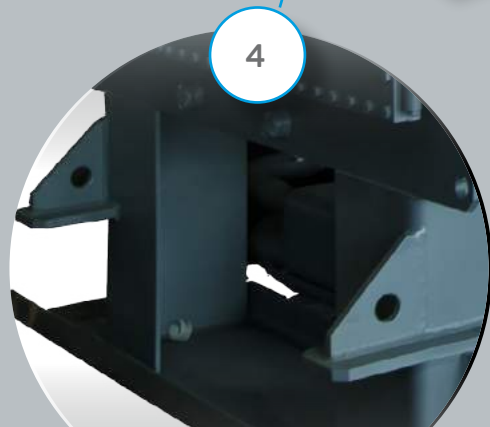
TWO-STAGE STRUCTURE



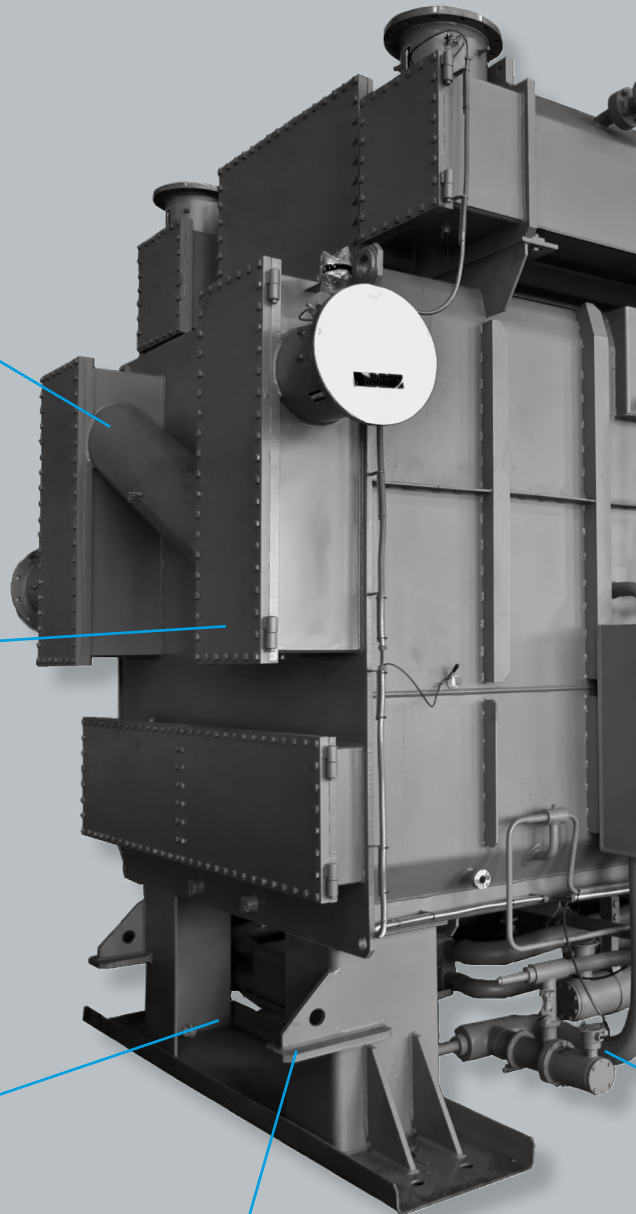
BROAD SELECTION OF EXCHANGER PIPE MATERIALS

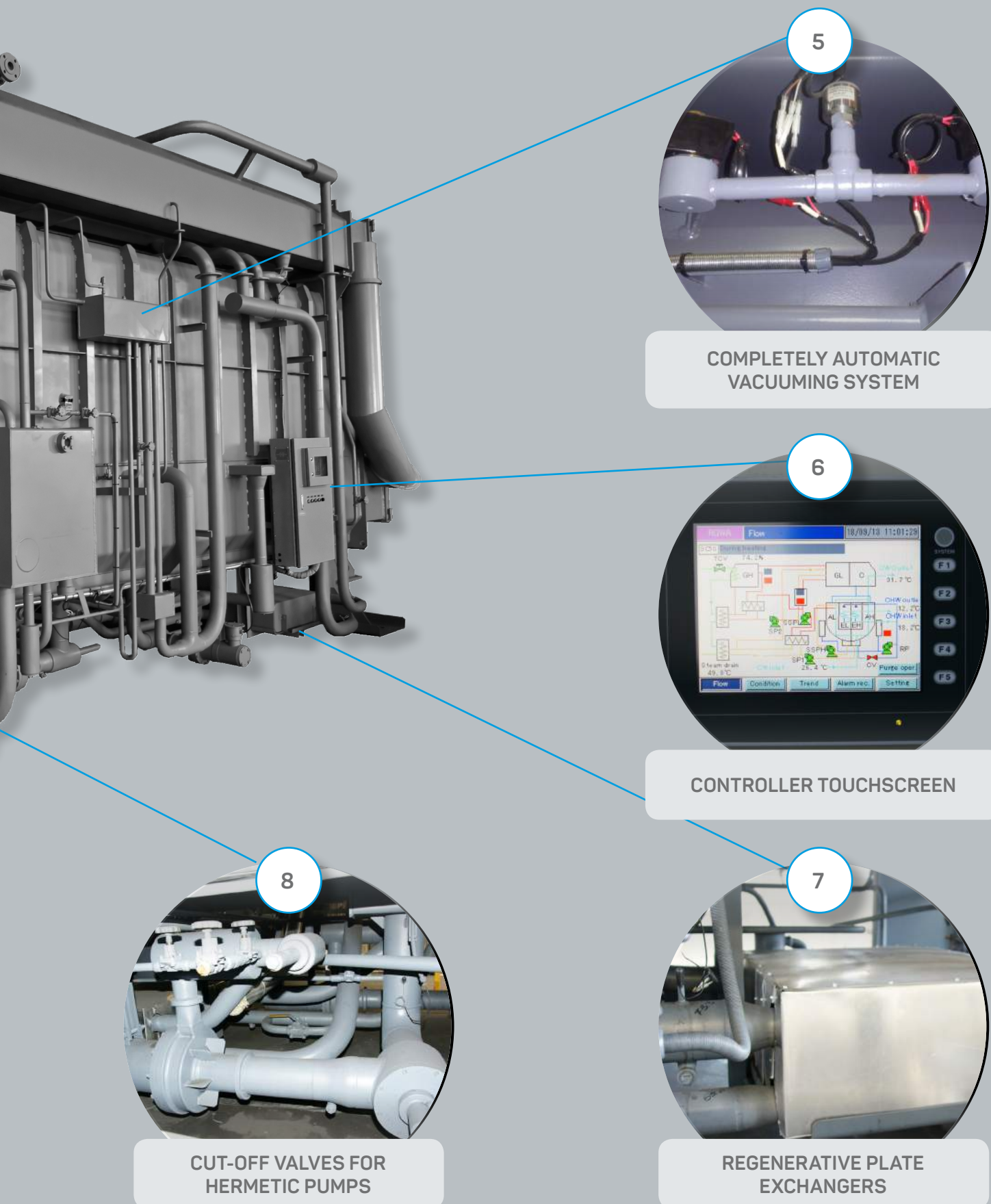


RELIABLE VACUUM PUMP



CONVENIENT MOUNTING CRADLES





5

COMPLETELY AUTOMATIC  
VACUUMING SYSTEM

6

CONTROLLER TOUCHSCREEN

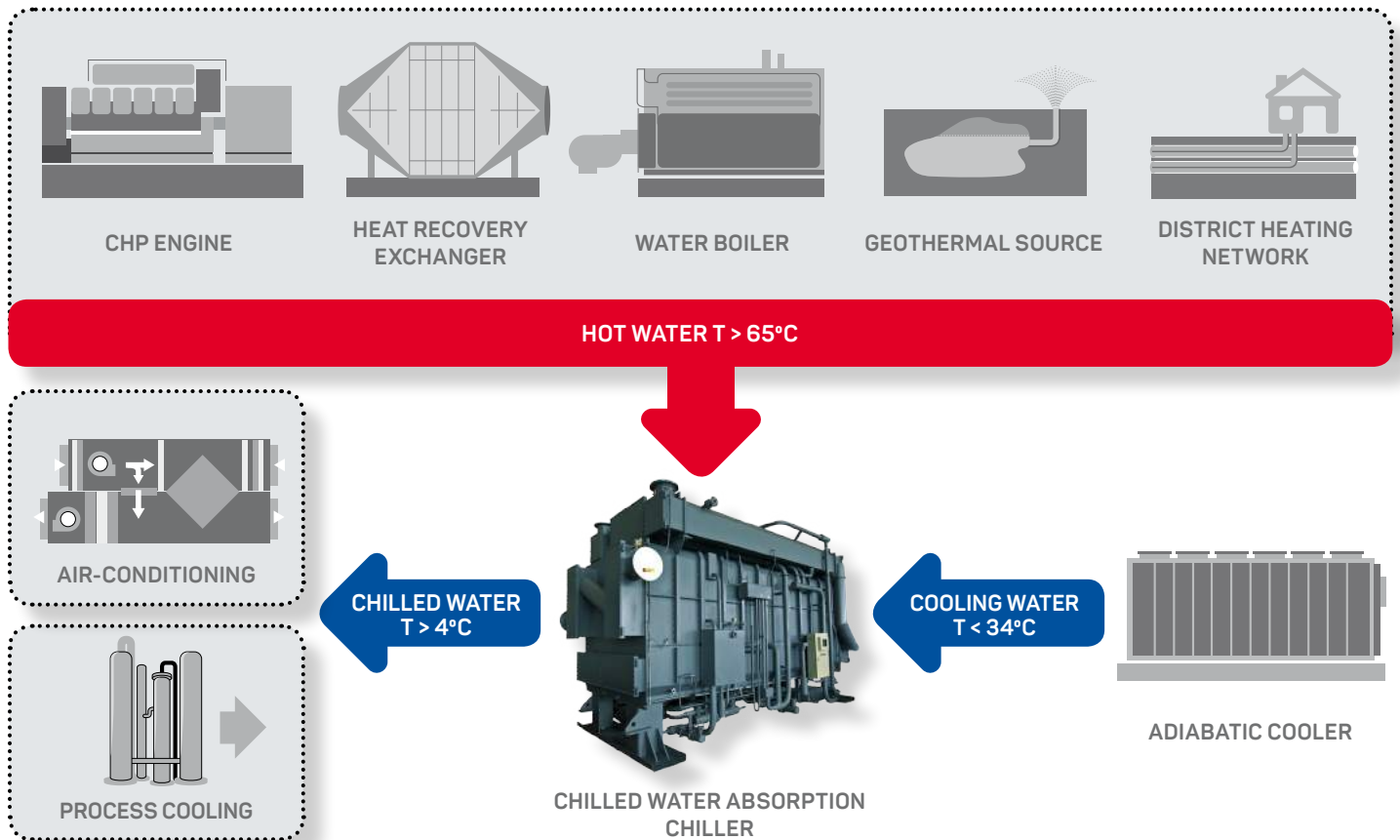
7

REGENERATIVE PLATE  
EXCHANGERS


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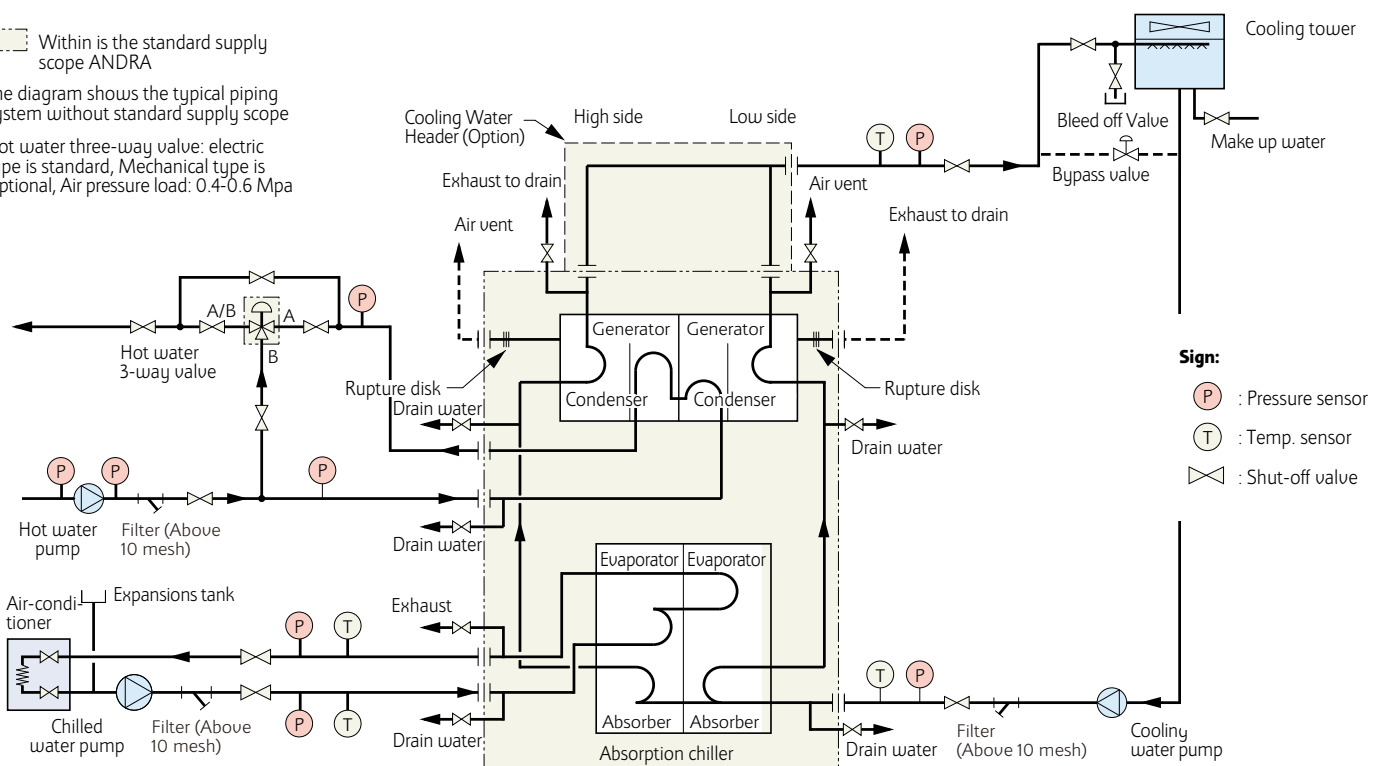
CUT-OFF VALVES FOR  
HERMETIC PUMPS

# ABSORPTION UNITS SUPPLIED WITH HOT WATER

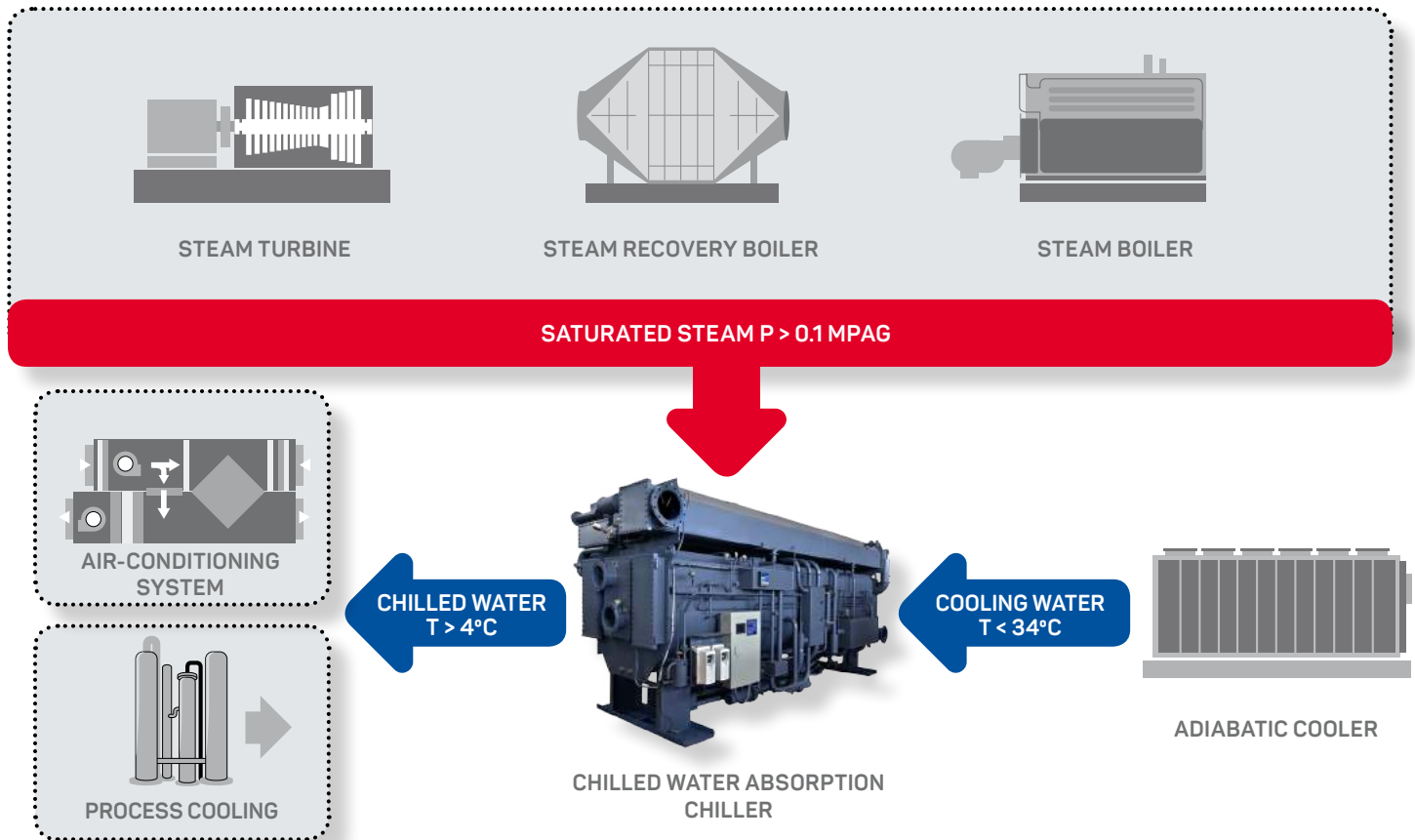


## PIPING FLOW DIAGRAM OF HOT WATER FIRED ABSORPTION CHILLER SYSTEM

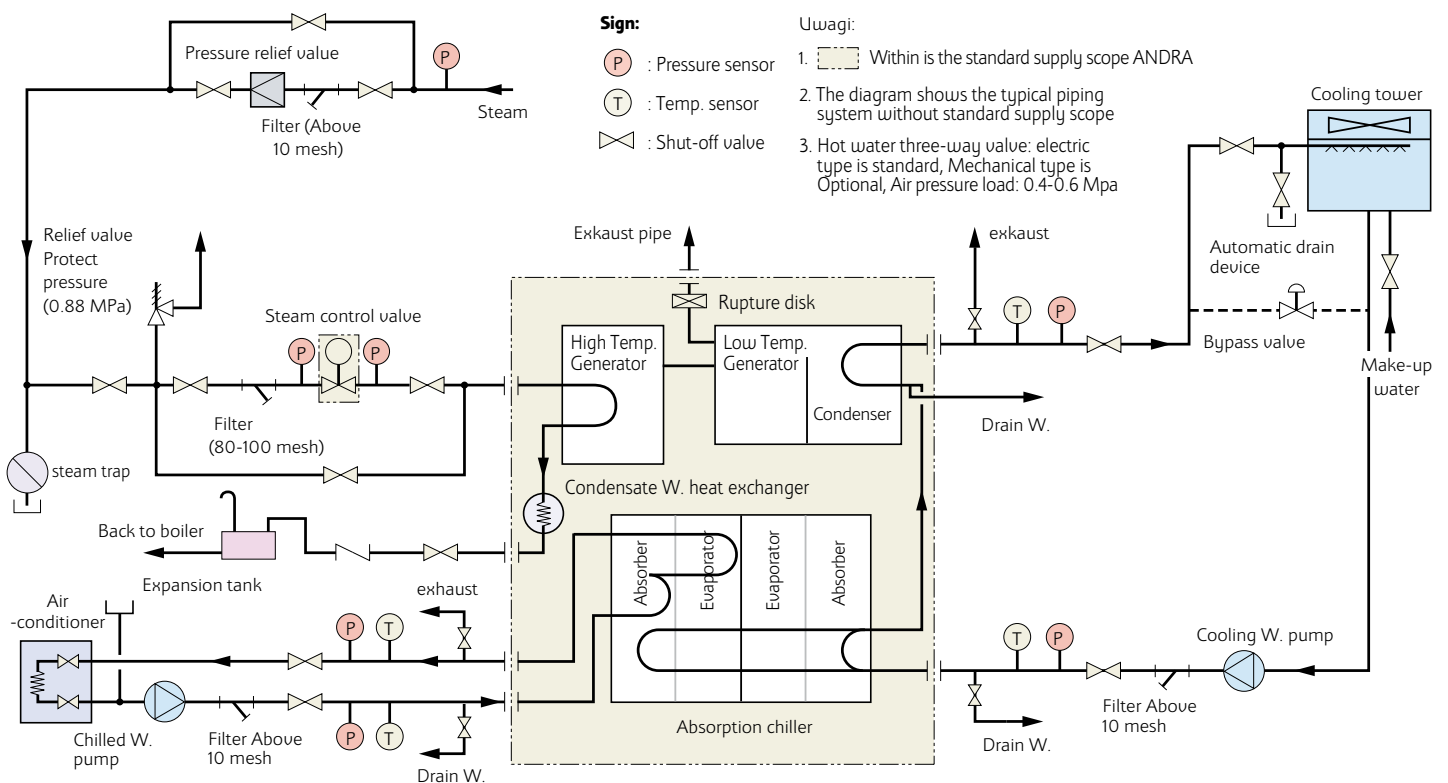
1.  Within is the standard supply scope ANDRA
2. The diagram shows the typical piping system without standard supply scope
3. Hot water three-way valve: electric type is standard, Mechanical type is Optional, Air pressure load: 0.4-0.6 Mpa



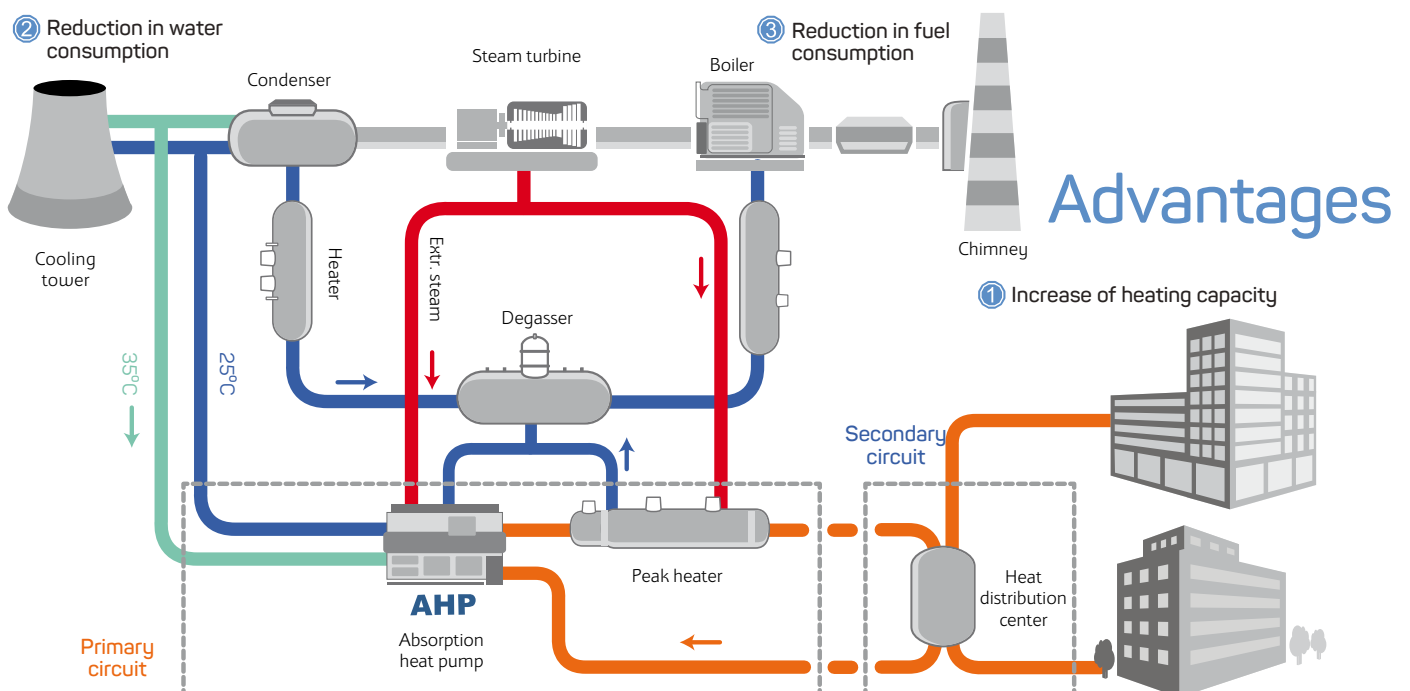
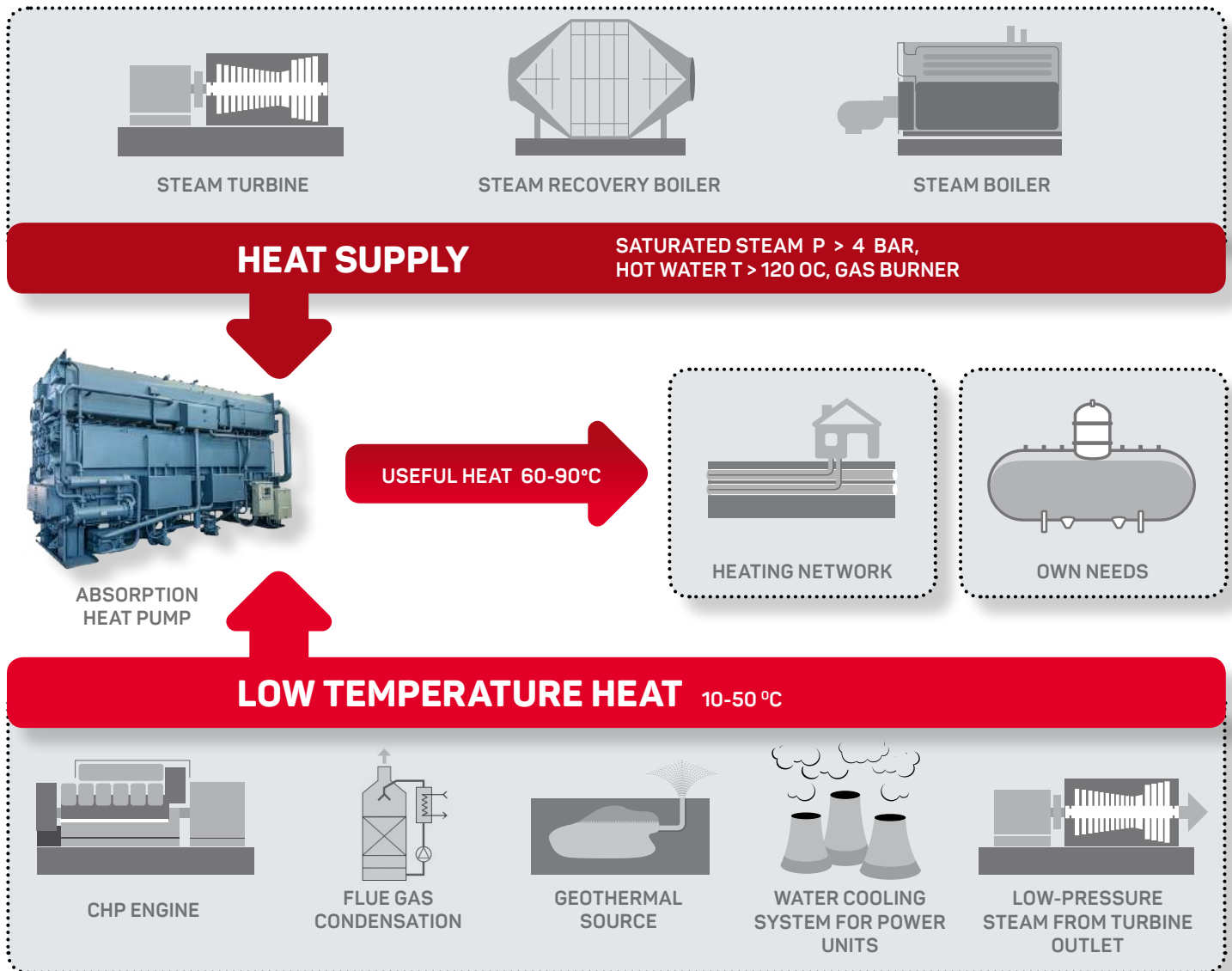
# ABSORPTION UNITS SUPPLIED WITH STEAM



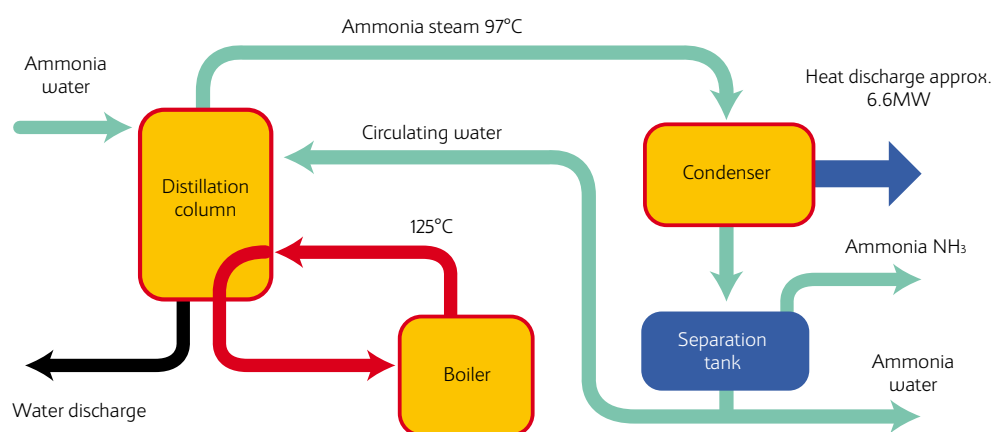
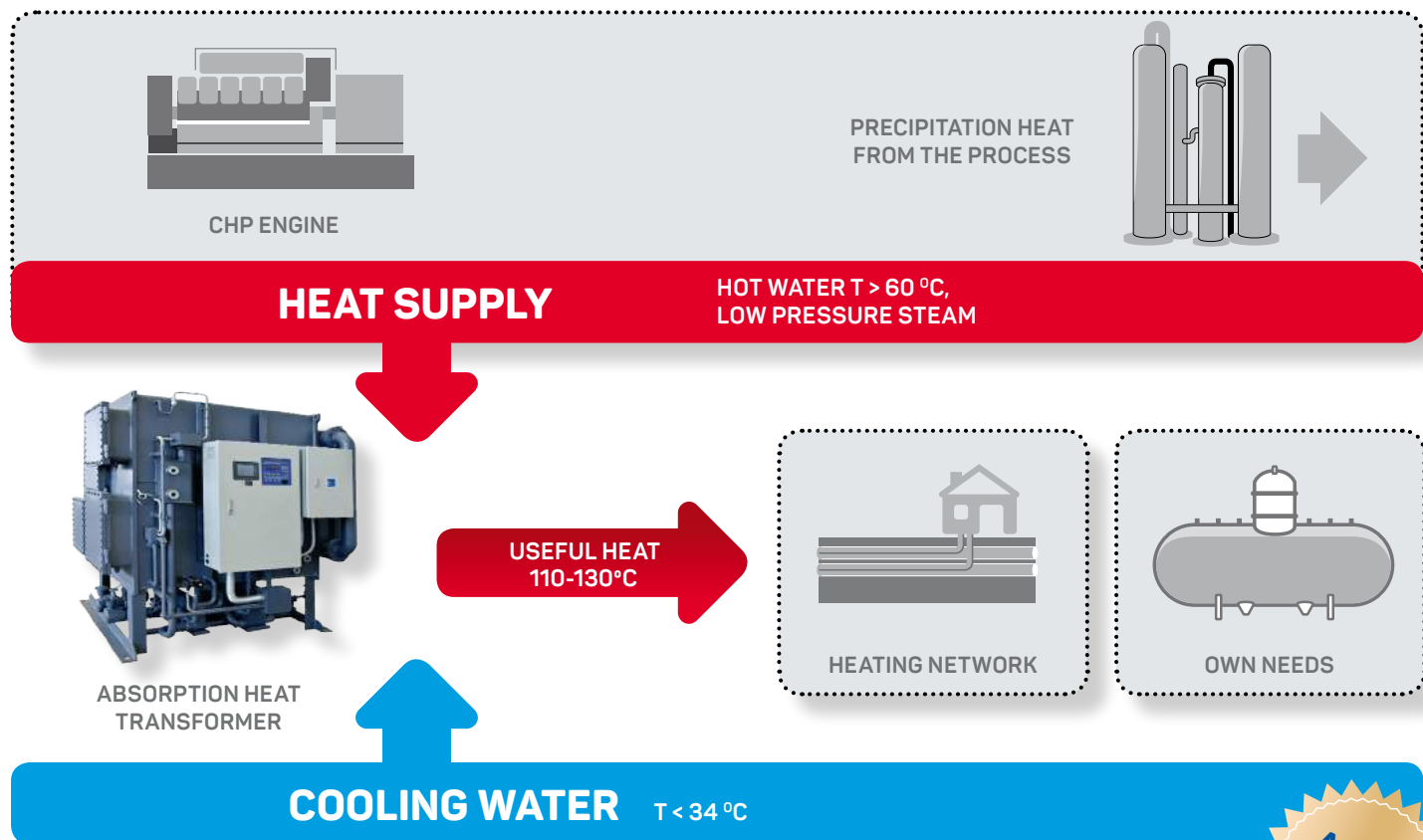
## PIPING FLOW DIAGRAM OF STEAM FIRED ABSORPTION CHILLER SYSTEM



# ABSORPTION HEAT PUMPS



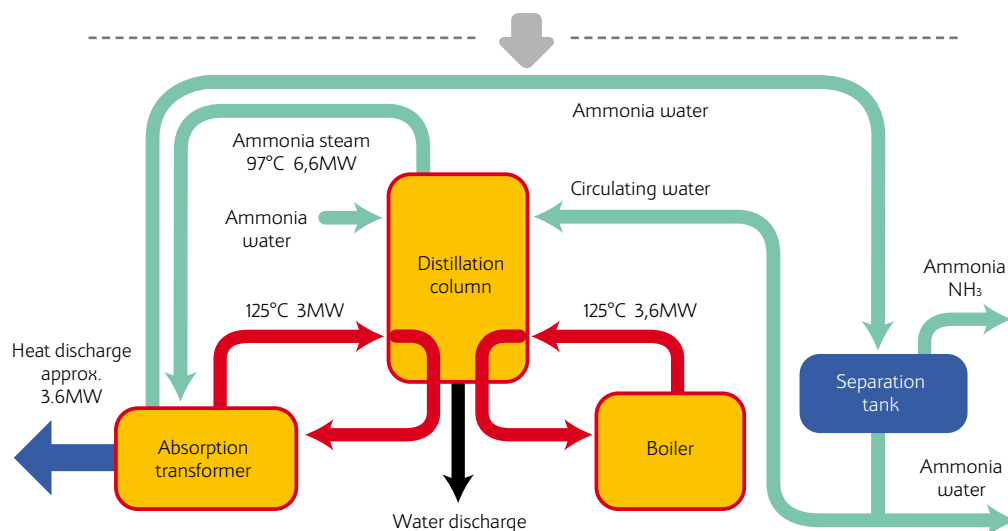
# ABSORPTION HEAT TRANSFORMERS



**Advantage!**

**REDUCTION IN BOILER AND COOLING SYSTEM POWER FROM 6.6 TO 3.6 MW**

**INDUSTRIAL DISTILLATION SYSTEM BEFORE USING ABSORPTION HEAT TRANSFORMER**



**INDUSTRIAL DISTILLATION SYSTEM BEFORE USING ABSORPTION HEAT TRANSFORMER**

# FREEDOM OF INSTALLATION PLACE AND METHOD

## INDOOR: NON-ENCLOSED VERSION



The device can be installed in an enclosed and air-conditioned engine room, where the temperature is maintained between +5 and +40°C. We provide the design and construction of all the necessary systems in the machine room.

## OUTDOOR: ENCLOSED INSTALLATION



To save space inside your plant or hall, the device can be installed outdoor, in an enclosure. Apart from making the enclosure, we provide comprehensive support in design preparation.

# AUTOMATION AND CONTROL SYSTEMS

## REMOTE MANAGEMENT AND MONITORING

## OPTIMIZED ELECTRICITY CONSUMPTION FAULTLESS, EFFICIENT

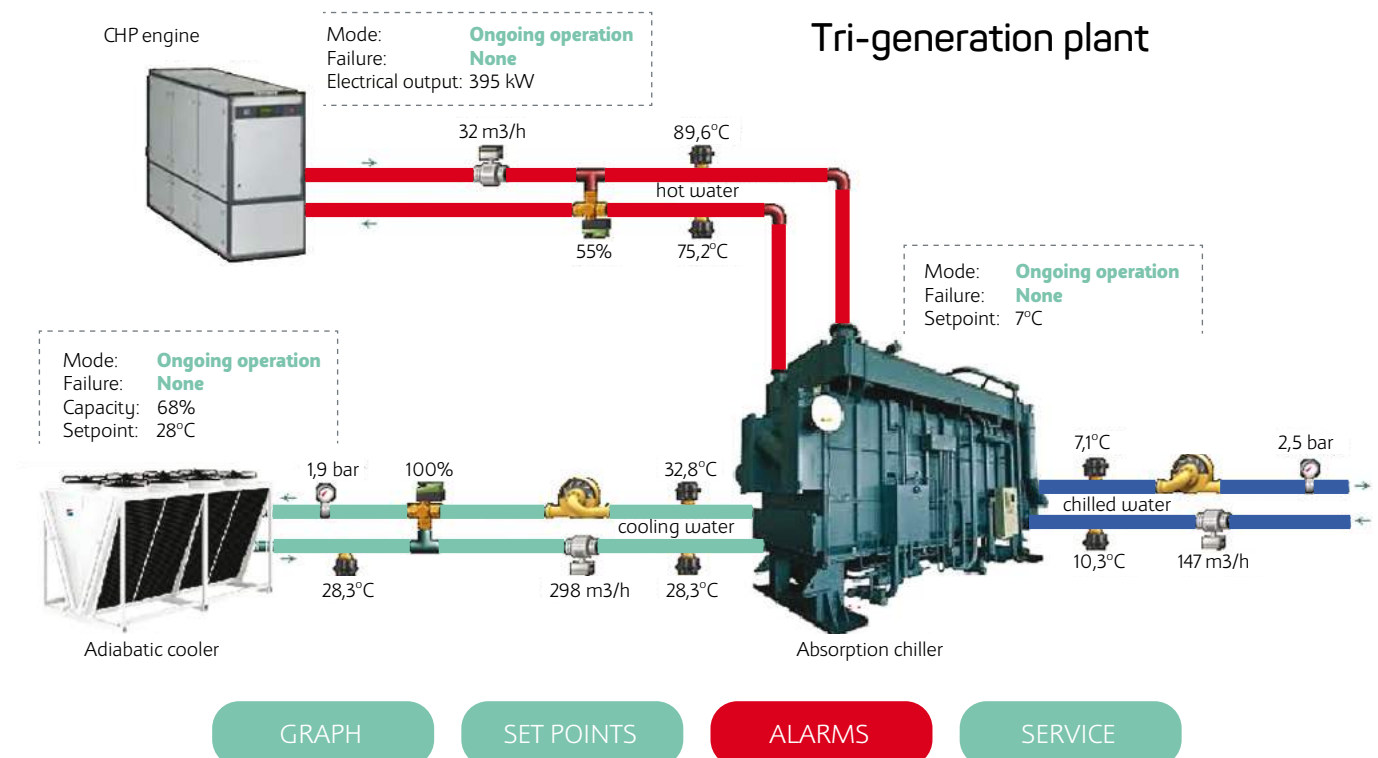
## OPERATION OF THE MACHINE ROOM

We design and build control systems which ensure the required parameters of the cooling process in diverse, variable conditions. They enable remote monitoring of these parameters (and system load rate) as well as management of the process itself.

## FRIENDLY VISUALIZATION

The visualization and supervision system lets you assess correct operation of the cold generation system at a glance. This enables a quick and effective response in the case of malfunction or overload.

Reports and collective diagrams are presented as a function of time. They are an excellent data source for planning modernization or optimization of the system, as well as for technical audits.



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