



GEYSIR II



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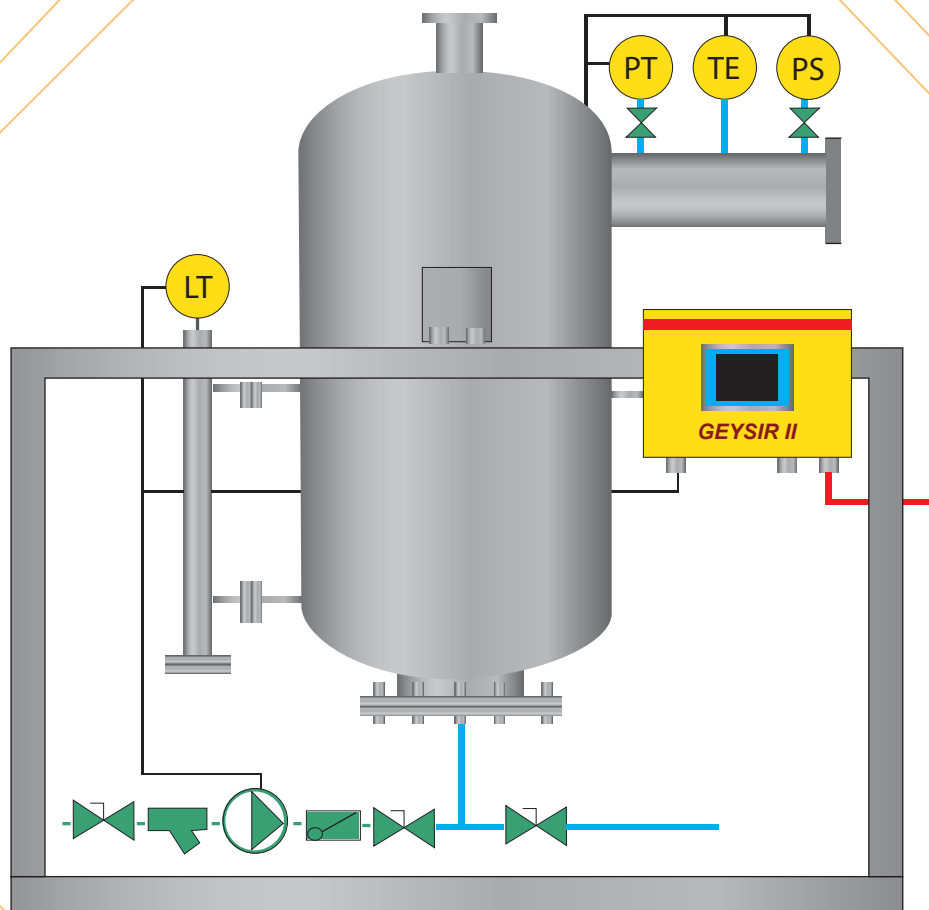
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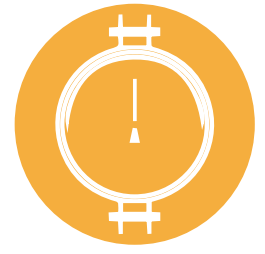
STEAM SATURATOR

100% saturated steam is the best that can be fed to production equipment. Heat exchangers, pasteurizers, textile dryers, paper dryers, chemical reactors, evaporators, etc. can then work at their maximum efficiency.

Although steam produced primarily in boilers may be saturated, the long transport in pipes causes it to cool down and convert into wet steam. Pressure reducing valves cause superheat. Production equipment loses capacity; products may lose quality.

The Geysir II saturator converts wet or superheated steam in 100% saturated steam.



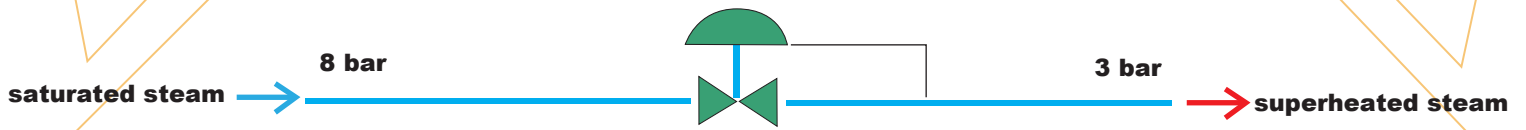


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Pressure Reducing Valves

Pressure reducing valves lower steam pressure, but not its temperature. Exiting steam has almost the same temperature as the incoming steam. Exiting steam is thus superheated.

Pressure Reducing Valve



temperature
172° C

170° C

pressure
8 bar

3 bar



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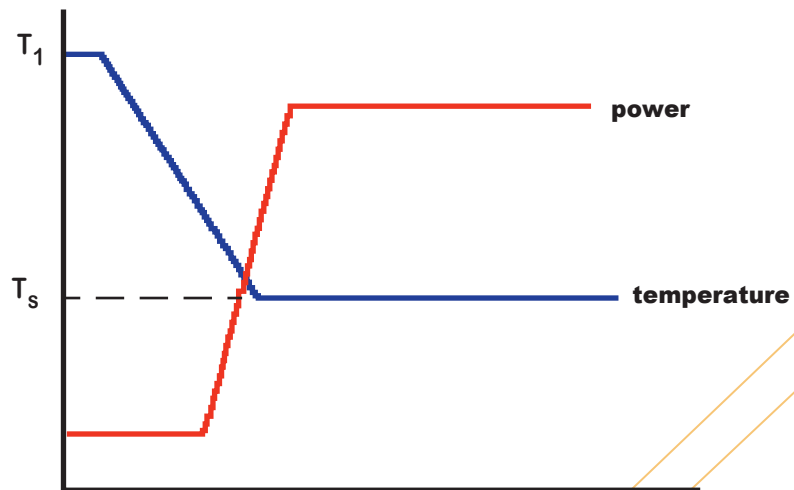
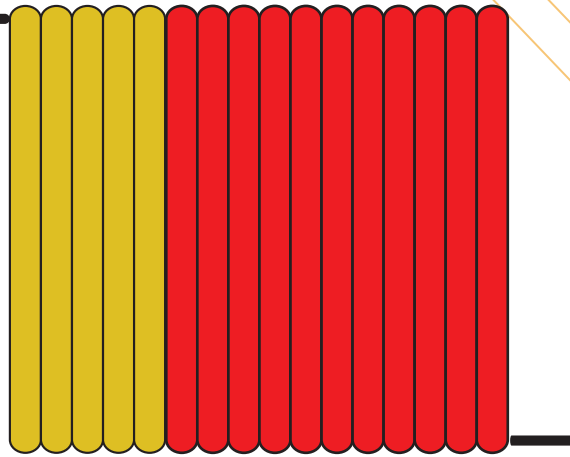
Superheated Steam

Superheated steam does not condense immediately when entering a heat exchanger. It first cools down, until the saturation temperature is reached. Then it condenses, delivering its latent heat. Consequently, the heat exchanger does not heat at full power.

Superheated steam



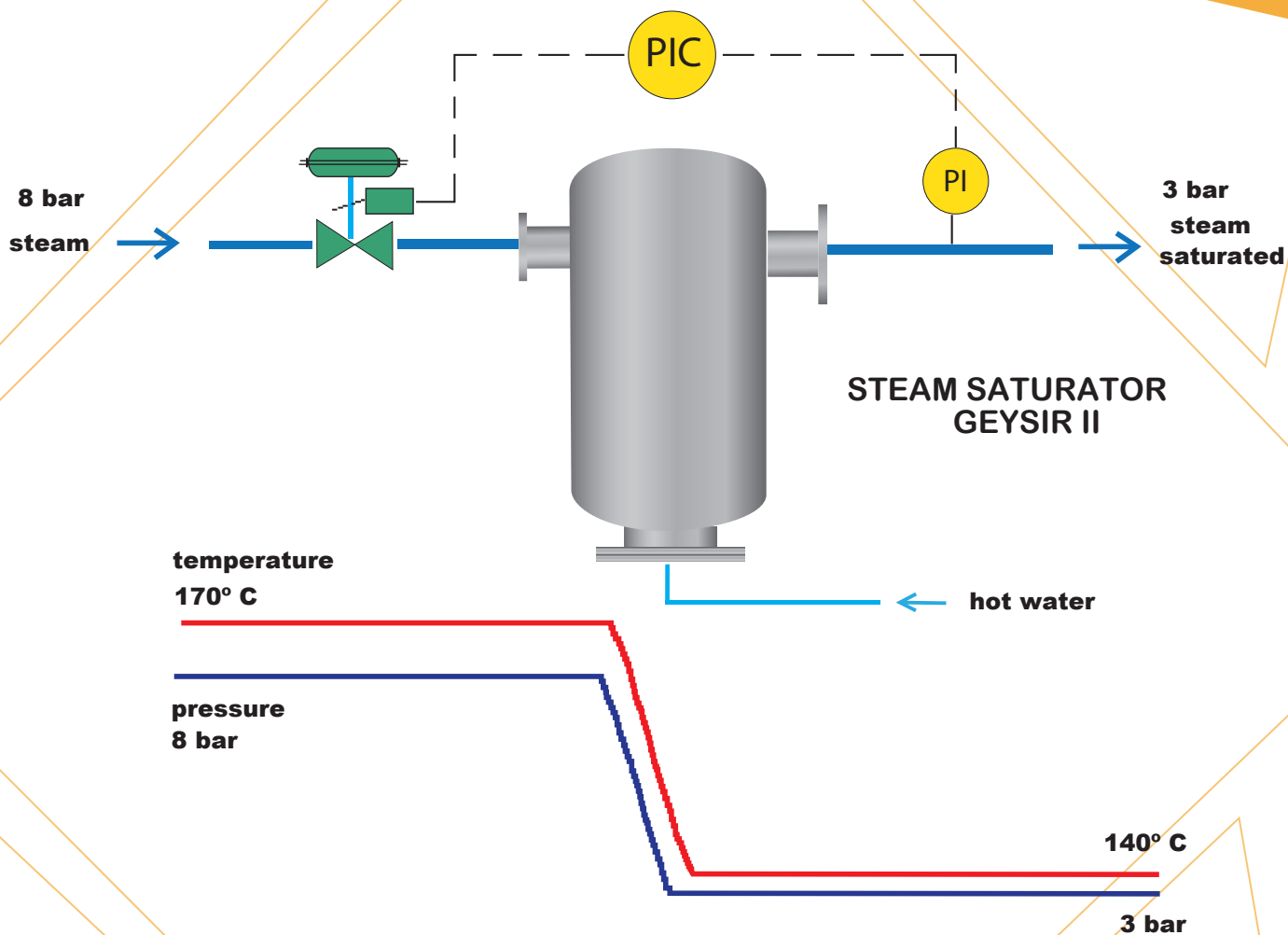
T_1



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GEYSIR II converts wet or superheated steam into saturated steam. The incoming steam is dispersed into thousands of fine veins and led through a hot water bath, from which it emerges 100% saturated. Water carried in the steam pipes is also converted back into steam.



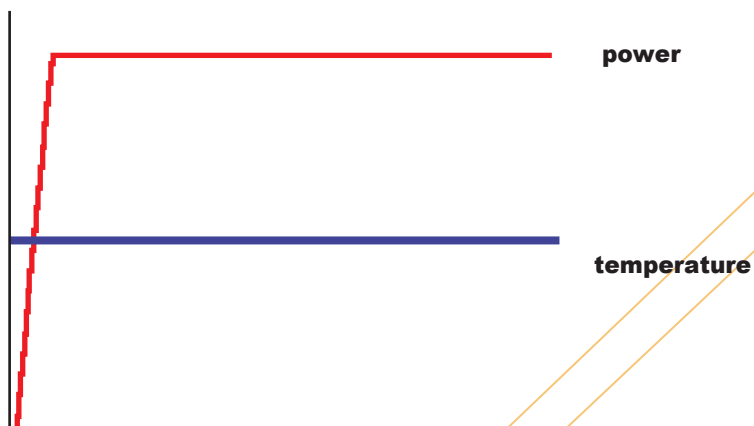
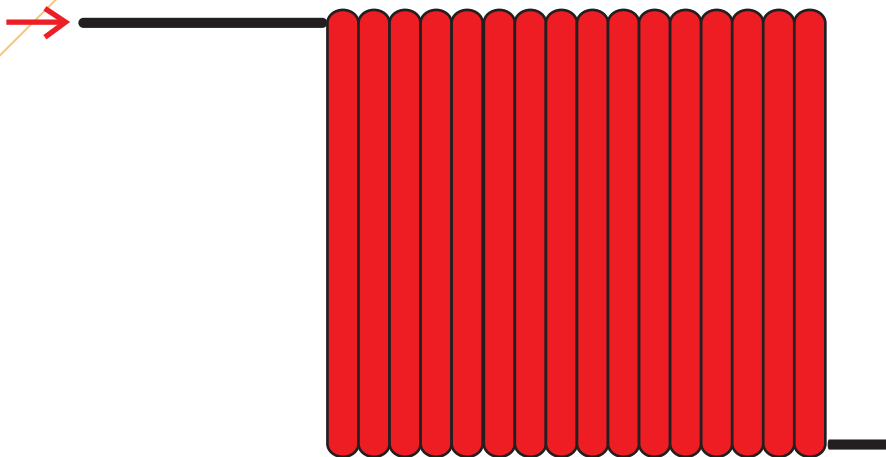


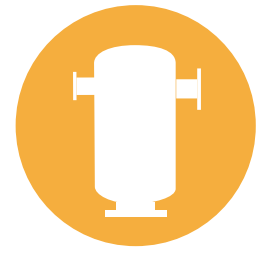
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Saturated Steam

With saturated steam, the heat exchanger heats at 100% of design power. Temperature distribution is even. Maximum surface temperature can not surpass the saturation temperature; this natural limit ensures that the product will not be damaged. Less steam is consumed.

saturated steam T_s



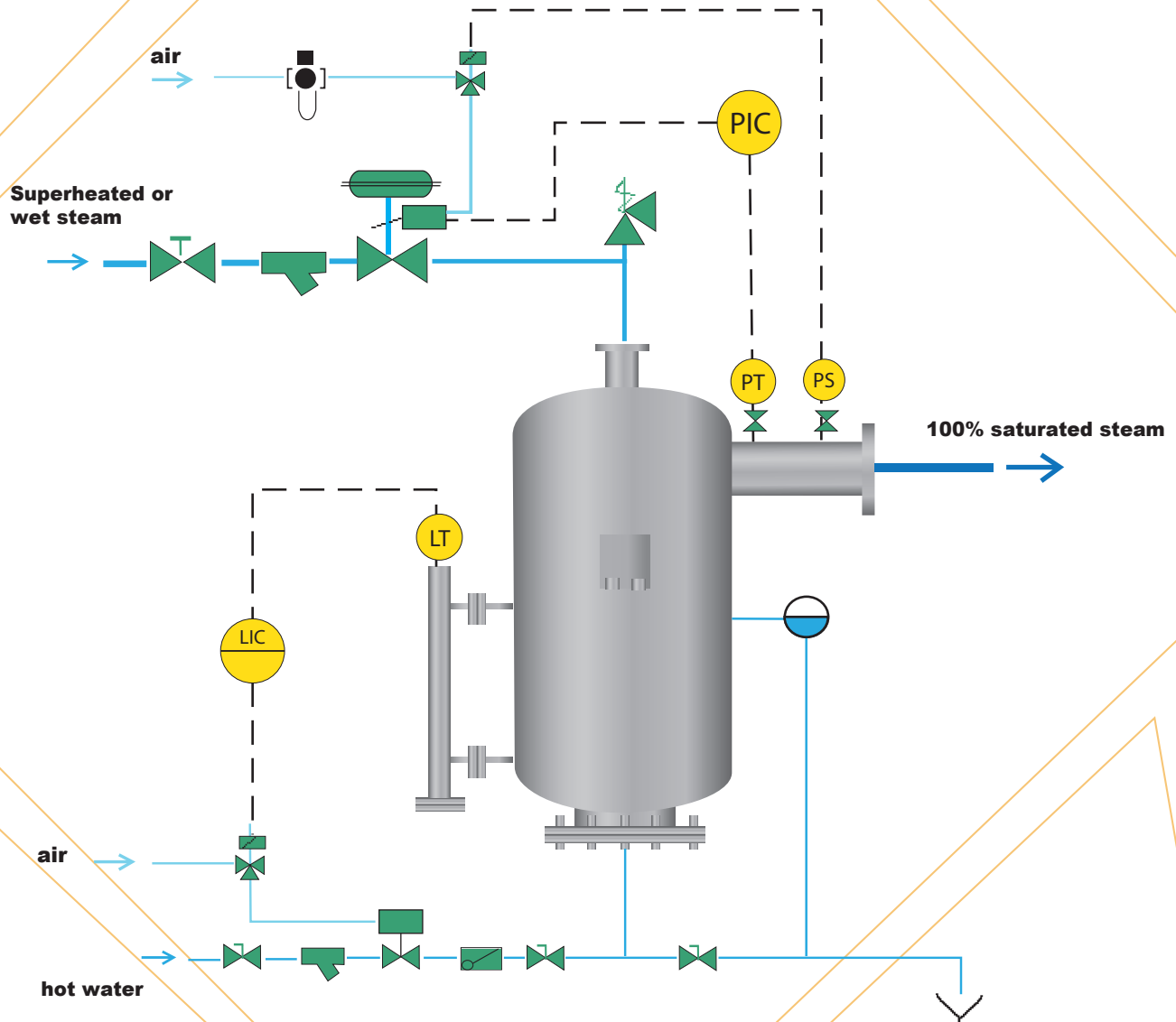


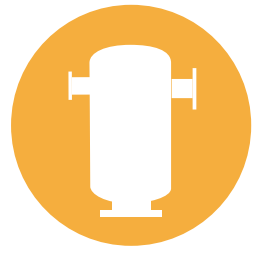
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Benefits:

- ▶ *Delivers immediately 100% saturated, dry steam, without oscillations.*
- ▶ *For a given production capacity, less steam is consumed.*
- ▶ *For the same steam consumption, production is increased.*
- ▶ *Water carried in the pipes is converted back into steam.*
- ▶ *Product can not be overheated above saturation temperature.*
- ▶ *Cleaning intervals may become longer*

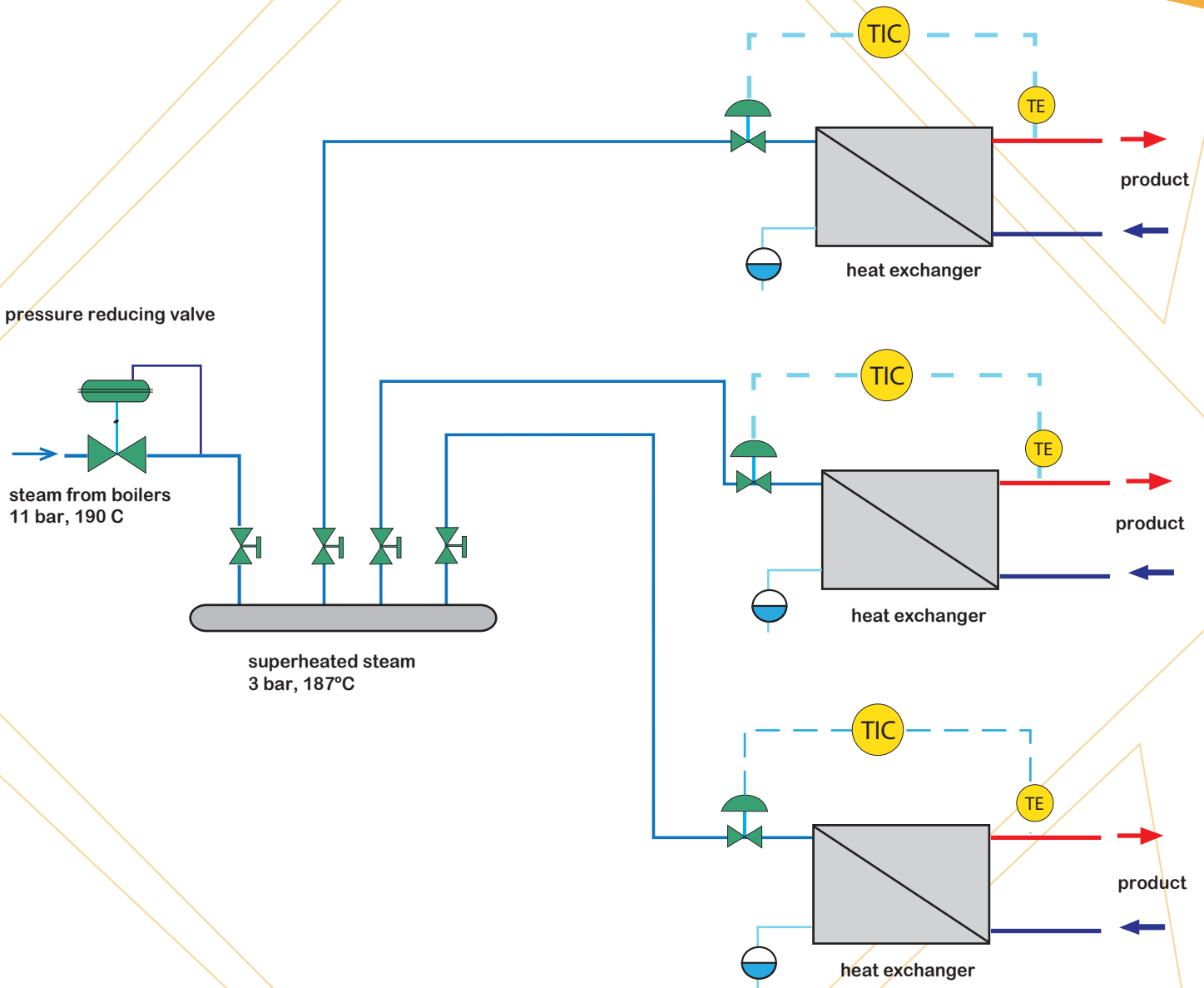
Control Diagram



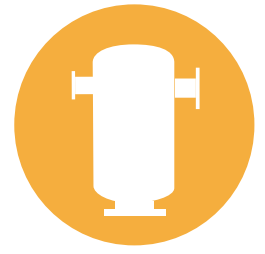


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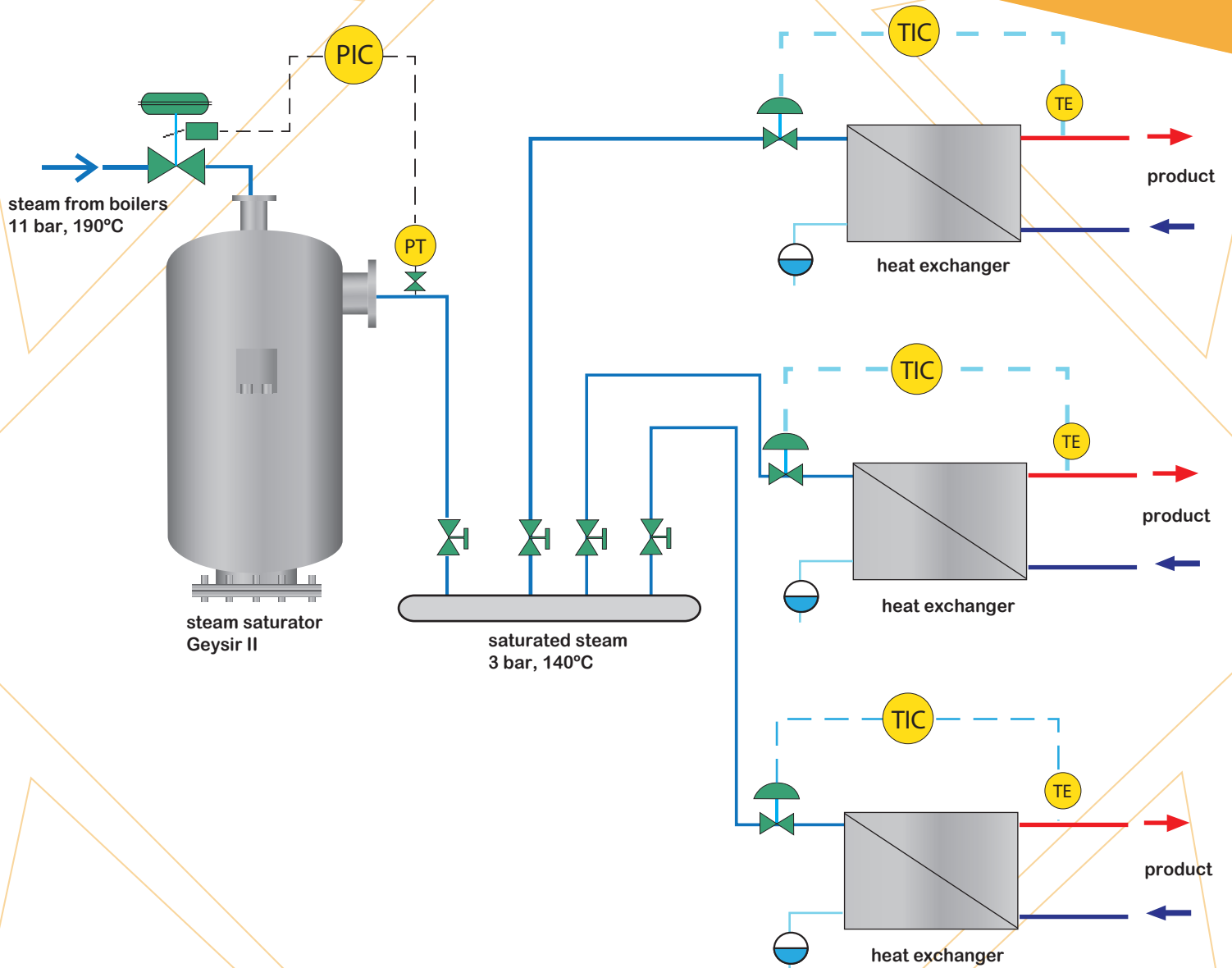
Old Installation with PRV



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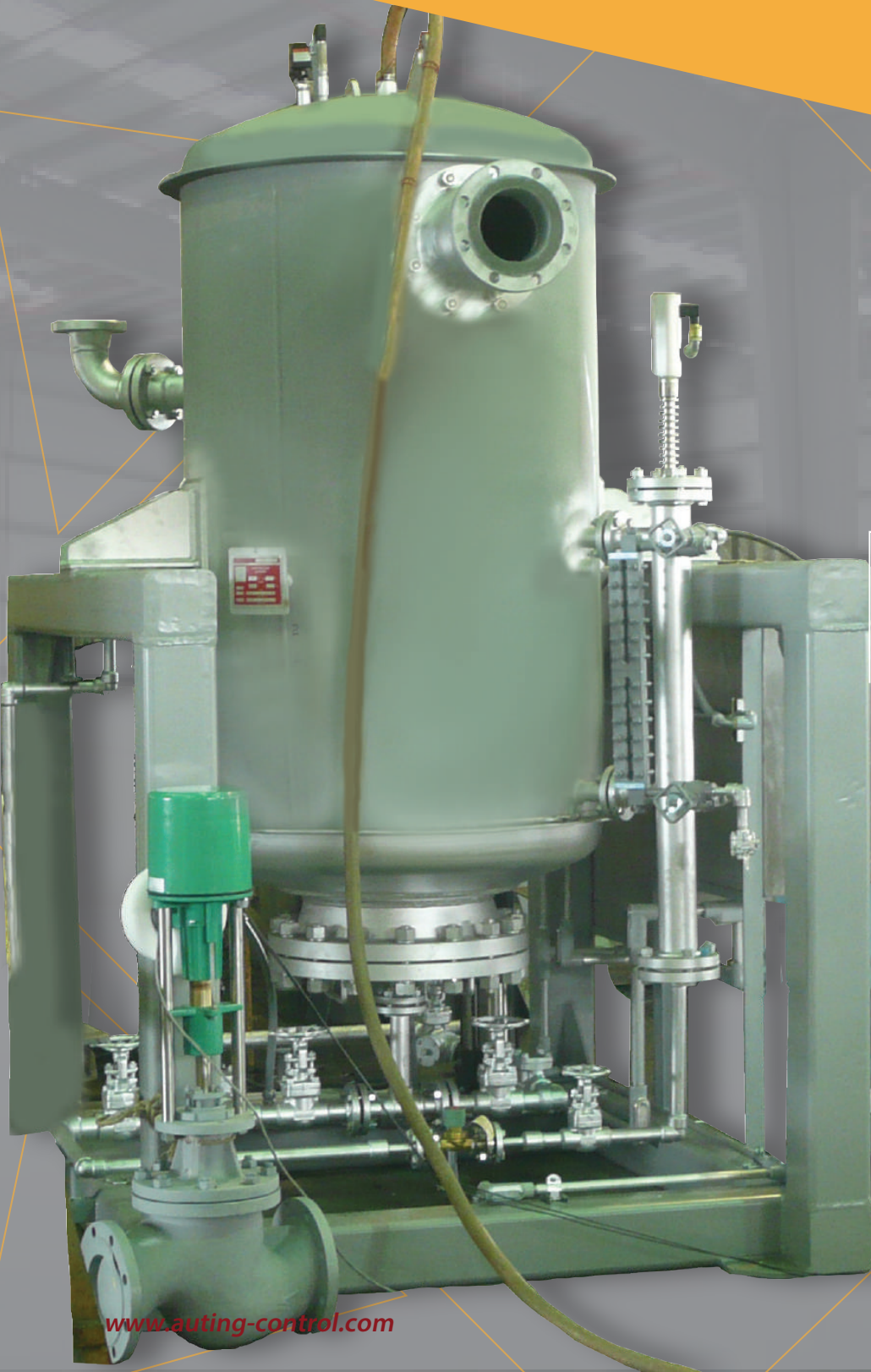


New Installation with Saturator



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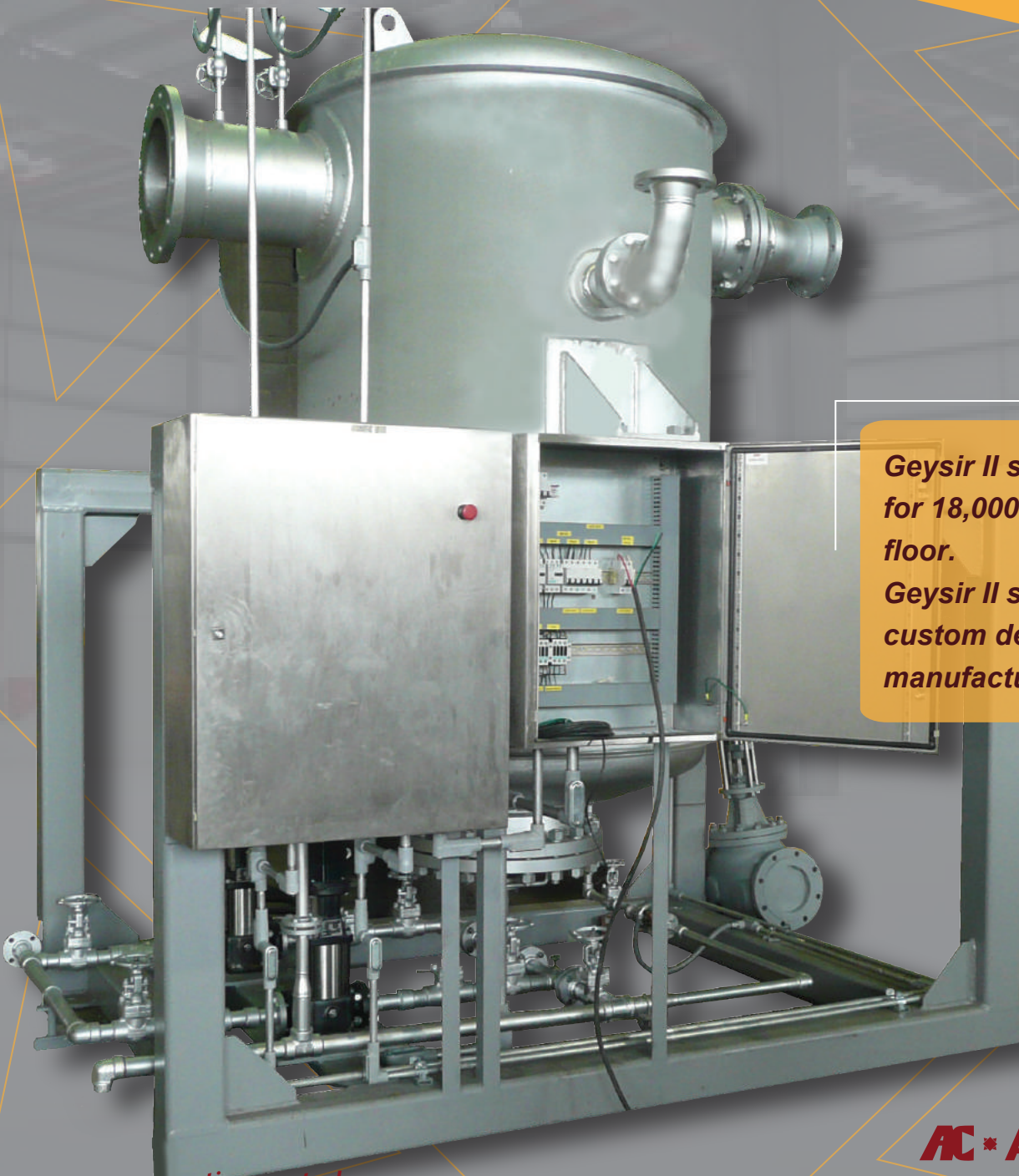
Model 10 ton/h



*Geysir II saturator
for 10,000 kg/h, being tested
in factory.*

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Model 18 ton/h



*Geysir II saturator
for 18,000 kg/h, on the factory
floor.*

*Geysir II saturators are
custom designed and
manufactured.*

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Electronic Control Cabinet



Control cabinet for pressure and level control, column purge, pump control.

Communication with a plant supervisory system or with a remote terminal is possible through Ethernet bus with a TCP protocol or through RS485 with Modbus RTU.

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Model 5 ton/h installed



*Geysir II saturator
for 5000 kg/h, installed and in
full operation.
Input pressure: 9.5 bar
Output pressure: 5.0 bar*

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Model 5 ton/h installed

Side view of the Geysir II with 6" discharge pipe



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Design Data



Before designing a GEYSIR II steam saturator, the following data is necessary:

- ▶ *Pressure and temperature of the incoming steam*
- ▶ *Output pressure*
- ▶ *Steam flow in kg/h (max/min)*
- ▶ *Atmospheric pressure (or altitude) at the installation site*
- ▶ *Feedwater (condensate) pressure and temperature*
- ▶ *Desired vessel material (steel, stainless steel)*
- ▶ *Operation area classification (safe, explosive)*
- ▶ *Corrossive ambient (yes/no)*
- ▶ *Available power supply: voltage, phases*



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