HYPERCOOL AND HYPERSEP
FREQUENTLY ASKED QUESTIONS

HYPERCOOL Shell and Tube Exchangers

What is a shell and tube heat exchanger?

A shell and tube heat exchanger is a type of heat exchanger that is widely used in various industries for transferring heat between two fluids.

The heat exchanger consists of a series of tubes, enclosed within a larger cylindrical shell. One fluid flows through the tubes, while the other fluid flows around the tubes inside the shell, allowing heat to transfer between the two fluids without mixing them.

What is the main purpose of Hypercool?

To eliminate most of the water present within compressed air and gas systems, thus protecting the entire air system or production process.

What is the working principle of Hypercool?

Hot fluid enters the cooler's tubes, while the cold fluid enters the shell surrounding the tubes. As the two fluids flow in opposite directions (counterflow), heat is transferred from the hot fluid to the cold fluid through the walls of the tubes.

Hypercool

Which materials are used in Hypercool?

Each type of Hypercool (WRN/WFN/WRS/WRA) is manufactured from different materials, depending upon the user's requirements.

WRN/WFN	**Shell/flanges/tubes:** Carbon steel **Internal tubes:** Copper
WRS	**Shell/flanges:** Carbon steel **Internal tubes/tube plates:** Stainless steel AISI 304 (AISI 316/316L on request)
WRA	**Shell/flanges/tube plates/internal tubes:** Stainless steel AISI 304 (AISI 316/316L on request)

Can Hypercool be used with corrosive fluids?

Yes, by using corrosion-resistant materials (stainless steel).

What is the difference between Hypercool 'WF' and Hypercool 'WR' types?

WF refers to 'fixed', while WR references the 'removable' option.

The main difference being access, and maintenance, to the heat exchanger's tubes.

In the fixed version (WF), the tubes are permanently welded to the heads, so the tube bundle cannot be removed. Whilst in the removable version (WR), the tube bundle can be removed.

When is it preferable to use a WF fixed tube bundle Hypercool?

In cases of low pressure (up to 1 barg) or special gases such as hydrogen and oxygen.

Hypercool with Hypersep

Which type of water can be used in Hypercool?

These are the water characteristics required below, (indicated in the user manual) for standard WFN and WRN models.

Water Cleanliness	Clean (no sediments)
Chloride Content	<200 ppm
Residual Chlorine	<2 ppm
PH	6,5 / 8
Electrical Conductivity	100-500 µS/cm
Langelier Saturation Index (LSI)	0.1
H_2S (Hydrogen Sulfide)	none
NH_3 (Ammonia)	none
Max % Glycol	50%
Time exchanger left full or in standby	<7 gg

How often should the gas side of a Hypercool be cleaned?

Every 1000-8000 of working hours, and depending on the quality of compressed air.

How often should the water side of a Hypercool be cleaned?

After every 1000-1200 of working hours, and depending on the quality and on the hardness of water.

It is recommended to always clean in the direction opposite to the cooling water's flow.

What is required to proceed with Hypercool product selection?

The type of gas being treated, flow rate, gas inlet temperature, gas inlet pressure, requested outlet gas temperature, acceptable pressure drop and type of application.

What is the acceptable water pressure drop for Hypercool?

Water pressure drop must always be greater than 10-12 kPa, to allow for optimal heat exchange.

HYPERCOOL Shell and Tube Exchangers

What is the standard min/max design temperature for Hypercool?

- 10°C / 200°C gas side
- 10°C / 90°C water side

Higher or lower working temperatures can be evaluated.

What is the standard design pressure for Hypercool?

Flow Rate	Pressure bar(g)	
	Gas Side	Water Side
Up to 16m³/min	16	10
From 50 to 90m³/min	12	10
From 130 to 550m³/min	10	10

Higher or lower working pressures can be evaluated.

Can I use Hypercool under vacuum conditions?

Yes

Can I use Hypercool as a heater?

Yes

When Hypercool is used as heater, is a separator necessary?

No, in this case the separator is not necessary because there isn't condensation.

What are the possible applications for Hypercool?

- Blower cooling
- Technical gases cooling
- Plastic injection moulding
- Upstream a dryer
- Pneumatic conveying
- Heat recovery
- Hydrogen production
- Biomethane upgrading
- Biogas purification

HYPERSEP Centrifugal Separators

What is the main function of a centrifugal separator?

Separate water from compressed air and remove oil droplets.

What is the working principle of Hypersep centrifugal separator?

The centrifugal separators use centrifugal force to separate water from air or gas.

Humid air or gas carrying water droplets, enters the separator at a certain speed; because of centrifugal force, the water is separated from the air and discharged from the bottom.

STH-N

STH-A

SFH

Which materials are used in Hypersep

Each Hypersep range is manufactured from different materials, depending upon the user's requirements.

STH-N **Housing:** Aluminium
Impeller: Plastic (models from 0.9m³/min to 21m³/min)
Stainless steel
(models from 40m³/min to 46m³/min)

STH-A **Housing:** Stainless steel
Impeller: Stainless steel

SFH **Housing:** Carbon steel
Impeller: Aluminium (models from 29m³/min to 97m³/min)
Carbon steel
(models from 142m³/min to 550m³/min)

What is the difference between 'STH' and 'SFH' models?

STH are threaded models, while SFH are flanged models.

What information is needed to proceed with the selection of Hypersep?

Type of gas, gas inlet temperature, gas inlet pressure, flow rate, type of application.

What is the standard min/max design temperature for Hypersep?

STH 0°C / 65°C
STH-A -20°C / 65°C
SFH 0°C / 65°C

What is the standard design pressure for Hypersep?

STH 16 bar(g)

SFH 16 bar(g) from 29m³/min to 97m³min

10 bar(g) from 142m³/min to 550m³/min

Higher or lower working pressures can be evaluated

Can I use a Hypersep under vacuum conditions?

Yes

What is the efficiency of a Hypersep?

The efficiency, defined as the amount of liquid remaining in the compressed air flow compared to the separated liquid, is up to 98-99% (typically it ranges between 90-98%).

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Reference: FAQHFHS_00_EN