

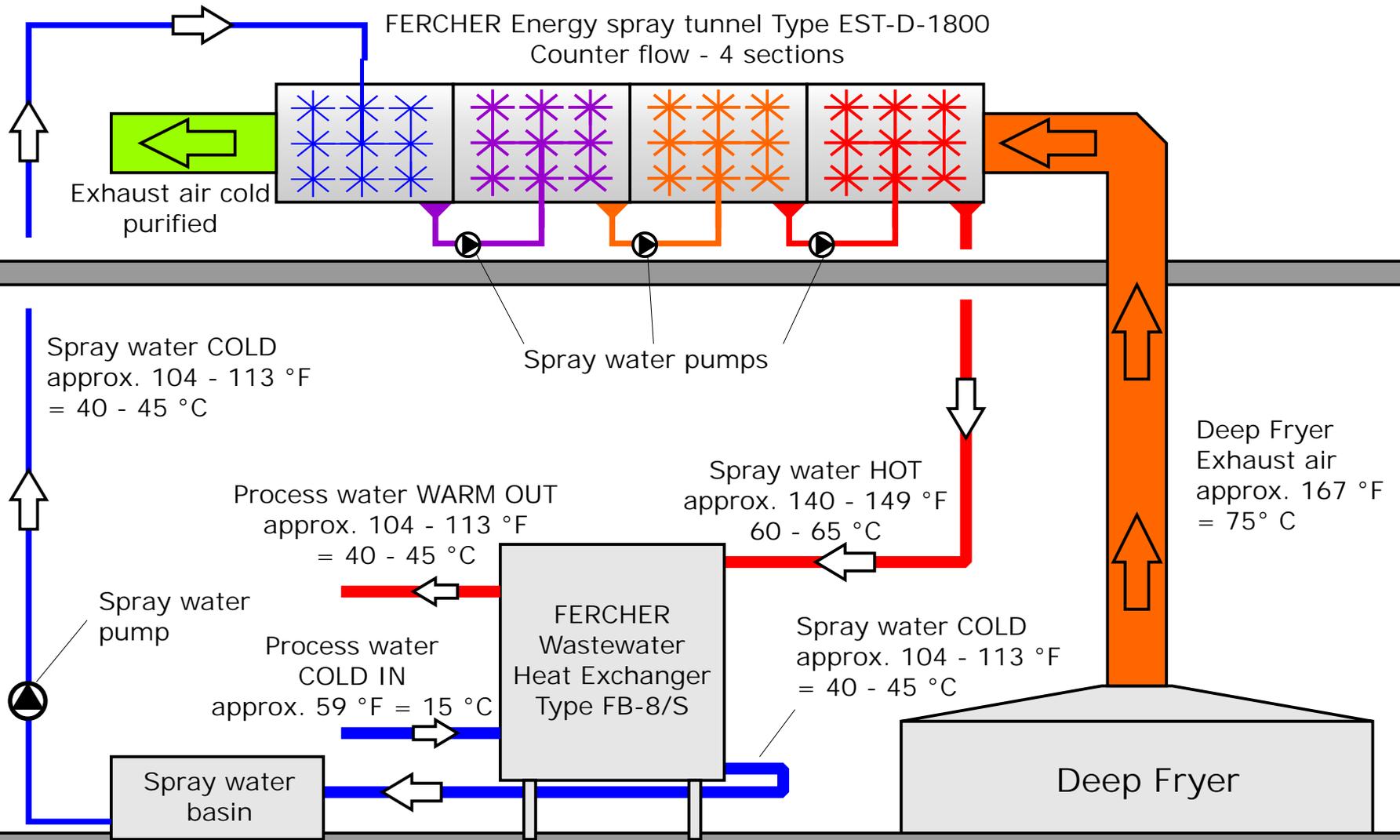


FRISCH & FROST  
NAHRUNGSMITTEL GES.M.B.H.  
HOLLABRUNN, AUSTRIA

EXHAUST AIR RECOVERY  
EXHAUST AIR PURIFICATION  
SYSTEM FERCHER\*



# Exhaust air recovery and exhaust air purification System FERCHER at F&F



# Exhaust air heat recovery and exhaust air purification system FERCHER

The heat recovery from the hot deep fryer exhaust air in the food processing factory takes place with a combination of equipment:

FERCHER Energy Spray Tunnel Type EST-D-1800  
FERCHER Wastewater Heat Exchanger Type FB-8/S

On the following pages we will give you a short description of the above mentioned equipment.

## FERCHER Energy Spray Tunnel Type EST-D-1800

The Fercher Energy Spray Tunnel is a spray tunnel (spray pipe) constructed from stainless steel. Special spray nozzles are located on the inside, which spray water with a fine atomized spray.

The fine water drops receive the heat from the exhaust air, which are led through the spray tunnel and purify the exhaust air from dirt particles. Oil and fat from the exhaust air are bound to the water.

A droplet separator at the end of the spray tunnel ensures that no water is lost. The separated water drains together with the spray water in the spray tunnel.

Because the spray water is unclean, it cannot be used directly in the process, yet. To this end, the hot spray water afterwards runs through a dirt tolerant waste water heat exchanger to transfer the heat from the spray water to the process water.



Photo: Fercher Energy Spray Tunnel Type EST-D-1800



Photo: Inside of the Fercher Spray Tunnel, spray nozzles

## FERCHER Wastewater Heat Exchanger Type FB-8/S

The Fercher Wastewater Heat Exchanger Type FB-8/S is a medium size wastewater heat exchanger, which, due to the way it is constructed (on the wastewater end), can even deal with extremely contaminated wastewater and works almost maintenance free.

Hot spray water runs down from the spray tunnel on the roof of the factory across the plates of the heat exchanger (pressure-less) and transfers the heat energy to the clean process water that runs inside the Fercher flat pipe absorber.

How is the FERCHER Heat Exchanger different from other products?

No interruptions of the operation

Should it still become necessary to clean the heat exchanger due to extreme contaminations in the wastewater, then this can be done during operation of the heat exchanger. The operation does not have to be interrupted.

High efficiency

FERCHER Heat Exchanger guarantee an extraordinary degree of efficiency for the heat transfer due to their large heat exchanger surface (flat pipe absorber) and their self-cleaning effect due to the turbulent film flow on the surface of the absorber, even in case of highly contaminated wastewater.



Photo: FERCHER Wastewater Heat Exchanger Type FB-8/S, before start-up.  
Side and upper covers removed



Photo: FERCHER Wastewater Heat Exchanger Type FB-8/S during operation

## Technical data / Operating data

### Process water (hot water for boiler)

Flow through amount:	5 m <sup>3</sup> /h
Temp. process water COLD:	59 °F/ 15 °C
Temp. process water WARM after WT:	40-45 °C

### Spray water loop

Temp. spray water HOT before HE:	140 - 149 °F / 60-65 °C
Temp. spray water COLD after HE:	104 - 113 °F / 40-45 °C

Transferred heat output:	approx. 160 kW
Saved kWh per month: ( 30 days per month ) :	approx. 115.200 kWh/month
Saved gas amount per month ( 1 m <sup>3</sup> gas = 10 kWh ) :	approx. 11.520 m <sup>3</sup> gas

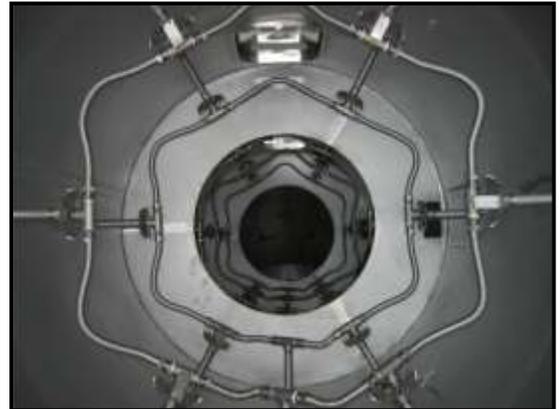
Price per m <sup>3</sup> gas:	Savings per month
30 Cent	3,456.00 EUR
40 Cent	4,608.00 EUR
50 Cent	5,760.00 EUR

Functional principle:  
FERCHER Energy Spray Tunnel

The FERCHER Energy Spray Tunnel is a welded and screwed stainless steel construction, material no. 1.4301, alternatively also other materials.

Exhaust air led through the spray tunnel is sprayed out with water via the spray nozzles. Heat and dirt particles are thus transferred to the water.

We recommend a droplet separator at the end of the spray tunnel to avoid loss of water and it does not become necessary to feed more water into the spray system.



Functional principle:  
FERCHER Wastewater Heat Exchanger

All FERCHER Wastewater Heat Exchanger work with the same principle. An absorber made from flat pressed pipes is completely welded together with a structured sheet. In this example case 8 FERCHER Absorbers are used on the process water end, connected in series, 2 parallel each. The complete FERCHER Heat Exchanger and the absorber are constructed from stainless steel.

The wastewater drains pressure-less on the surface of the structured sheet as a film flow. The structure of the sheet causes a turbulence of the film flow and therefore an optimized mixing and optimal heat transfer into the cold process water flowing in the flat pipes.

Because FERCHER Heat Exchanger can operate pressure-less on the wastewater end, these heat exchanger cannot clog or "overgrow" as opposed to a closed heat exchanger.

