



Adiabatic dry cooler JAEGGI ADC in trigeneration system

In the town of Zülpich, located in the German federal state of Northrhine-Westfalia, a company producing food additives relies on economic trigeneration. The waste heat of the cogeneration unit feeds an absorption liquid cooler that cools an office building. The dry cooling of this building, in turn, is performed by two ADC coolers from JAEGGI as they meet stringent hygiene requirements and this, as a rule, without water treatment.

There were strict demands with regard to the cooling of the absorption liquid cooler: As the return temperature in the generator of the absorber is 65 °C and as the difference between the outlet temperature of the generator and the outlet temperature of the cooling water has to be at least 35 K, the liquid cooler cools down at 28 °C due to the system. Another advantage: The JAEGGI ADC can be used as emergency cooler for the power-led CHP as required.

Adiabatic pre-cooling from 24.8 °C

With a cooler in pure dry operation, the operating points of the absorption liquid cooler could be reached only at return temperatures of about 82 °C at the generator. However, this temperature level cannot even be achieved by most of



Overview:

Line of business:	Air conditioning
Application:	Air conditioning
Country/city:	Germany/Zülpich
Fluid:	Water/glycol-mixture
Product:	ADC 2x2/NS9-D1F-1-6P

JAEGGI Hybridtechnologie AG
Hirschgässlein 11
CH-4051 Basel



The ambient air is pre-cooled at the inlet by wetted humidification pads.

the CHPs. Besides, many absorbers can no longer be operated at these temperatures.

However, the operating points can easily be obtained by the ADC coolers from JAEGGI (*Adiabatic Dry Cooler*): The JAEGGI ADC is designed as dry cooler providing the additional possibility to adiabatically pre-cool the air at rising external temperatures. The required wetting water does, as a rule, not require any water treatment.

Adiabatic pre-cooling is achieved from an ambient temperature of 24.8 °C via humidification pads being placed in the air stream, prior to the heat exchanger. In dry mode as well as in adiabatic mode, the JAEGGI ADC can reach very high cooling capacities at a small footprint and at low operating costs – particularly if, as it is the case here, exceptionally efficient EC fans equipped with the appropriate control (Güntner Motor Management EC) are in use.

Operating mode according to the German Engineer Association (VDI) guideline 2047-2

The stringent hygiene requirements in the foodstuffs industry are also met thanks to the unit-specific properties and a mode of operation in line with the VDI guideline 2047-2 respectively. If required, the humidification pads can be cleaned or replaced very easily. As the feed pipes for the wetting water are drainable and as there is no collection basin, there are no areas with standing water. This effectively prevents an uncontrolled proliferation of germs.

The way in which the JAEGGI ADC units are supplied with water ensures that these units operate plume-free throughout the year. This means there is virtually no danger of wetting the pads with water contaminated with legionella. The humidification pads are separated from the dry heat exchanger, which means there will not be any deposits or corrosion.

Main details:

Cooler type	ADC 2x2/NS9-D1F-1-6P
Quantity	1
Thermal output for design in total	130 kW

Product side:

Cooling medium	Wasser/Glykol 70/30 %
Medium temperatures (inlet/outlet) target	30/28 °C

Air side:

Operating status of cooler	Cooler wet operation	Cooler dry operation
Air status at input	32 °C/38 % rel. humidity	25 °C
corresponds to wet-bulb temperature (input)	21 °C	--

Total wetting water consumption:

Evaporation water quantity	0,9 m³/h in design state
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