

ONYX

Adiabatic condenser



JACIR ONYX range combines latest technologies to achieve the expected and safe performance from an environmentally focused heat rejection system

- *Condensing at lower temperature than ambient air*
- *No water spray in the airflow*
- *Optimized water consumption – no water treatment required*
- *Easy maintenance: full internal access to all components*
- *Highly efficient EC technology motors*
- *ErP 202x compliant*

Commercial Documentation

Adiabatic condenser: ONYX

Operating principle

The **ONYX** system has been designed to guarantee to operate **the best global performance of a cold chain installation**, even under the most severe climatic conditions. The **ONYX Series** goes one step further greatly reducing fan input power for every tonne of heat discharged. Pressure loss optimisation and motor fan unit's regulation control enable both noise levels and power consumption reduction.

Low greenhouse effect fluid: although NH₃ must be handled with care, due to the high Global Warming Potential (GWP) of most refrigerant fluids, **JACIR's choice** naturally went towards ammonia (NH₃), considered to be less environmentally damaging: it does not deplete stratospheric ozone and has little impact on the greenhouse effect. In both ODP and GWP indexes, the environmental impact of NH₃ is zero (source: 4th IPCC report). NH₃ also has many other benefits: good heat transfer coefficient, easily leaks detection, low-flammability, and it is furthermore natural and biodegradable.

Cold chain securing: while significantly reducing the water and electricity consumption, eliminating chemical treatment and reducing the demanding maintenance usually required for evaporative systems, the ONYX condenser offers minimal operating costs, fully controlled health risk, and a major step towards an ever more environmentally friendly technology.



Tube Coil

As standard, the coils are made of stainless steel. Tubes are expanded through the fins to ensure both **mechanical physical strength and thermal conductivity**. The coils have been tested for thermal performance, sealing and pressure in compliance with PED. ONYX is also available in HYBRID version allowing on the same equipment to discharge calories from the cooling water circuit and from the chiller compressor.



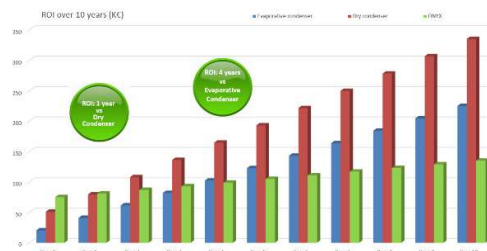
Intelligent and safe access

The « H » layout of the tube coils offers the ideal geometry allowing full access to the motors, fans and the inner internal surfaces of the finned tube coils, over both full height and width of the cooler. **This full open access is safer for maintenance:** a threshold-free opening flap equipped with safety sensor offers immediate and easy access to the motor/fan unit for maintenance. Indeed, motor fans unit enabling disassembling from within the inside of the cooler. This design avoids extra costs for lifting equipment, safety guards or exterior walkways



Motor fan units

The motor fan units draw air through the pads, then through the tube coils. Equipped with EC (Electronically Commutated) technology motors as standard, which are **specially designed** to reduce power consumption with very low noise level: efficiency is higher than IE5. EC motors are directly coupled to low-speed axial fan, this combination offers both **power efficiency and an optimised sound level**. The motor-fan coupling is direct, and requires **no maintenance**. Technology in compliance with Eco conception (UE) 327/2011 concerning Directive 2009/125/CE application (ErP) for minimum efficiency thresholds after 202x.



Pre-cooling by evaporation

The evaporation surface is used to pre-cool the incoming air before it circulates through the tube coils: the cooling / humidifying pads completely covers the whole air inlet surface, on both sides of the unit.

Designed for easy cleaning, the water distribution circuit and water recirculation systems are made of Z-STEEL stainless steel. The water distribution channels are located at the top of the unit, out of the air flow. The water recirculation pump is serviced externally by an access hatch provided for this purpose and thus remains accessible when the cooler is in operation. This complete system is factory pre-assembled.

The air precooling circuit is activated when the fluid outlet temperature is higher than the setpoint. This wet / dry switch point is around 23 °C under a continental climate, with an outlet fluid temperature of 27 °C. The recirculation water system from the pads avoids **bacteriological risk, and drastically reduces water consumption: by up to 70% in wet mode.**



PLC control panel

The ONYX adiabatic condenser is **totally «Plug and Play»**: the Schneider PLC is equipped with an HMI (Human Machine Interaction) as standard, which enables the EC motors and pre cooling function to be controlled in complete safety. Ethernet, Modbus, BACnet communication protocols, as well as web gateways or LonWorks are available as options.



ONYX SAFE® Jacir patent

Refrigerant containment and protection device
SafetyFrame: building containment sleeve for better condenser refrigerant management
SafetyPulse: refrigerant abatement system in case of leak detection
SafetyDrain: safe recovery and evacuation network.