

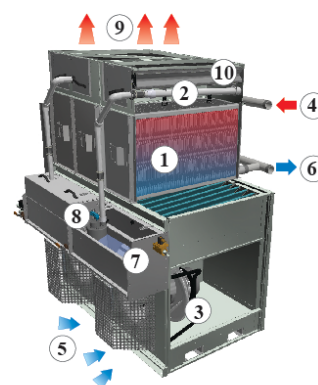
# Principle of operation

## Closed circuit cooling towers

### Principle of operation

A Nexus<sup>®</sup> modular hybrid cooler consists of one or more modules, each with their own individual **hCore<sup>®</sup> Heat Exchanger (1)**, **spray system (2)** and **EC Fan drive system (3)**.

When a module works evaporatively, the **warm process fluid (4)** circulates through the hCore<sup>®</sup> heat exchanger, which is wetted by the spray system. At the same time, the EC fan drive system(s) blows **ambient air (5)** upwards through the heat exchanger. A part of the spray water evaporates and cools the process fluid, which then **exits the unit (6)**. The remaining spray water flows back into the **sloping external sump (7)**, where it is collected. A **spray water pump (8)** recirculates the water up to the spray system. The **warm saturated air (9)** leaves the cooler through the **drift eliminators (10)**, which remove water droplets from the air.

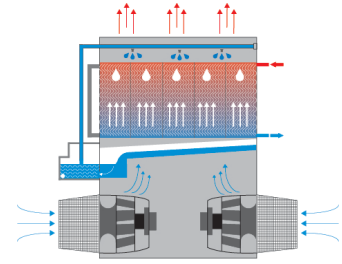


When a module works **dry**, the spray pump is turned off. Heat is now transferred from the process fluid to the ambient air using sensible heat transfer.

The **modular construction** and exclusive **iPilot<sup>®</sup> Control System** of the Nexus<sup>®</sup> enable **multiple modes of operation** to tailor water and energy performance to your needs. The embedded intelligence gives you the ability to **effectively balance water and energy savings** and achieve the lowest possible operating costs.

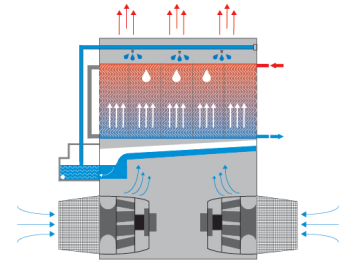
### Energy saver mode

Energy savings are maximized by leveraging the full power of evaporative cooling. During periods when ambient temperatures or loads from the building or process are relatively high, the Nexus<sup>®</sup> modular hybrid cooler operates with all spray systems active across all modules. During off-design conditions, the EC Fan System will automatically and intelligently reduce speed whenever possible. As the load is satisfied, the fans and spray pumps will cycle off.



### Nexus<sup>®</sup> mode

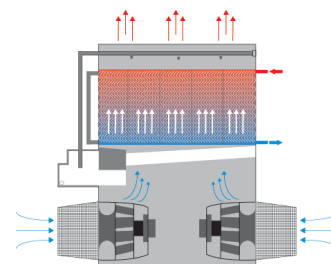
In the revolutionary Nexus<sup>®</sup> mode, you can prioritize water and energy savings to achieve the right balance of both. Your climate, cooling load profile and the rates you pay for water and energy will determine your specific settings, which can be easily adjusted as needed. You can specify the importance of water versus energy savings to automatically achieve the right balance for your specific situation.





## Water saver mode

In Water saver mode, water savings are maximized by applying spray water to the hCore® heat exchanger automatically, intelligently and only when absolutely necessary to meet cooling requirements. The iPilot® Control System applies water separately to each module, to minimize water usage and maximize savings.



**Want to use the Nexus® hybrid modular cooler to cool your process fluid?** Contact your local [BAC representative](#) for more information.