Future ready modular data centre solutions

DigiPlex's modular data centre solution has been developed in-house to a deliver a high performing, energy efficient, adaptable data centre solution. The system is based on three matched modules - IT, power and cooling - which can be tailored to provide a robust, flexible, cost effective solution for both new-build facilities or to extend an existing data centre.

Integrated modular solution

DigiPlex is the leading data centre provider in the Nordics. We understand how important it is to have a reliable. secure facility in which to house the IT equipment essential to running a business. We also know that there is no one-size-fits-all data centre, which is why DigiPlex has developed a modular data centre solution. The three modules will enable a data centre to be deployed in a configuration to perfectly match a customer's requirements while delivering the highest standards of energy efficiency and operational reliability.

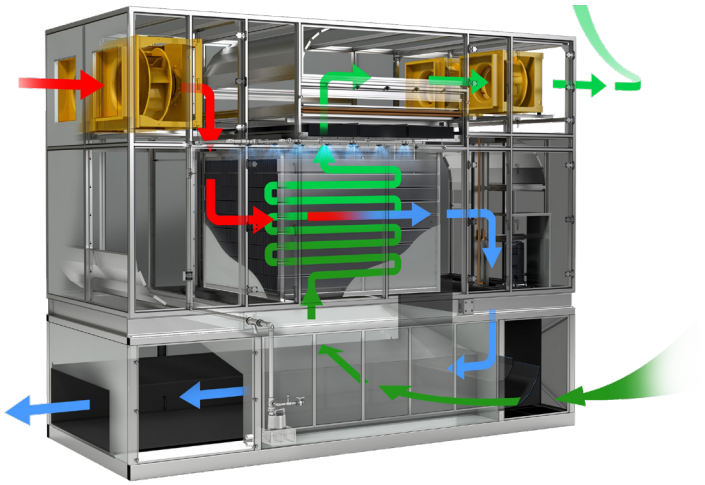
DigiPlex's modular data centre solution has been developed in-house to a deliver a high performing, energy efficient, adaptable data centre for a wide variety of applications and global locations.

The modular data centre is assembled from three matched, freestanding module-types: cooling, white space and power.

- The cooling module, also known as the Air Treatment Pod or ATP, houses DigiPlex's innovative, award winning Air-to-Air indirect evaporative cooling system that will provide a high cooling output with minimal energy consumption.
- The white space module is designed to house all of the IT equipment necessary to keep a business running. It includes space for server racks, cabling, cooling and power distribution. A major advantage of coupling the white space module to the cooling module, with its Air-to-Air indirect evaporative cooling technology, is that it enables the white space module to be sealed and positively pressurised to keep it free from external contaminants.
- The power module has been designed to accommodate switchgear, switchboards and an uninterruptible and power supply system to ensure the data centre can continue to operate even if there is a mains power failure.

DigiPlex's modular solution is easily scalable. Once the basic infrastructure is in place, modules can be procured and installed as the IT load increases.

To ensure the modules are of consistent high quality and to help speed construction on site, the data centre modules are built off-site. With the exception of a client's IT equipment, all plant and controls are installed in the factory. This ensures DigiPlex's modular data centre solution can provide a tailor-made, scalable, sustainable and economic data centre to match a customer's demands for an above ground data centre anywhere in the world.



Internal arrangement of ATP as deployed

How does DigiPlex's Air-to-Air cooling system work?

The provision of cooling is fundamental to a data centre's operation. Conventional cooling systems use refrigeration systems and CRAC units, which can consume large amounts of electrical power. By contrast, DigiPlex's cooling module incorporates DigiPlex's award-winning Air-to-Air indirect evaporative coolers, which use the evaporation of water as the principle source of cooling energy to minimise power consumption.

At the heart of Air-to-Air unit is a heat exchanger where cooler outside air is used to remove heat from the air extracted from the hot aisles of the white space module without the air streams mixing.

The system is designed to operate in three modes to ensure heat is removed in the most energy efficient manner:

- In the simplest mode, the unit is run as a dry cooler whenever the dry bulb temperature of outside air is cool enough to enable heat to be removed using outside air alone.
- If the outdoor dry bulb temperature is too high, the unit will operate as an indirect evaporative cooler. The heat exchanger elements are sprayed with a film of water to introduce adiabatic and evaporative cooling. The volume of outside air is also varied to match the heat load.
- The unit's unit as a third mode of operation incorporates direct expansion (DX) cooling, which provides additional cooling when the outside air temperature and humidity are high. In cool Northern European climates the DX unit's run-time will be minimal. Even in hot, humid environments with the DX unit running continuously the Air-to-Air data centre will deliver cost savings over one cooled using refrigeration.

DigiPlex can manipulate the point at which evaporative cooling is activated to vary the amount of water and electricity consumed. In locations where water is plentiful and cheap and energy is expensive the unit will maximise evaporative cooling. By contrast, in the Middle East where water is relatively expensive and energy plentiful, the unit will maximise the use of the DX unit to minimise water use.

A dedicated control algorithm has been developed to optimise the unit's operation.

An energy efficient modular data centre solution

Power usage effectiveness (PUE) is a measure of how effectively a data centre uses power. The PUE ratio can be as high as 2 on a conventional data centre whereas DigiPlex's energy efficient Air-to-Air cooling system deliver a PUE ratio of less than 1.17.

An additional benefit of the using the Air-to-Air system is that the data centre's power supply can be smaller than if a refrigeration-based system had been used. This enables transformer and generator ratings to be reduced, switchgear and cable sizes to be smaller delivering cost and construction benefits. Alternatively, more IT space can be allocated to a site for a given power supply.

The Air-to-Air has a low rate of water consumption. Water is recirculated in the evaporator; it is replenished only when dirty or when its calcium content is high. The unit can use harvested rainwater as its primary water supply with mains water as back-up.