

IntrCooll®

Cool large buildings at 80% lower running costs



OXYCOM
natural air conditioning

IntrCooll®



- **INDIRECT/DIRECT ADIABATIC COOLING**
- **COOLING CAPACITY UP TO 134 kW (38 TR)**
- **UP TO 116% WET-BULB EFFICIENCY**
- **EER UP TO 44 (150 BTU/Wh)**

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Introduction

Oxycom's IntrCooll® turns large industrial and commercial buildings into energy-efficient, higher productive and healthy spaces.

Until now, there was no affordable way to comfortably cool and ventilate large spaces in industrial and commercial buildings. Warm and humid days would easily lead to general discomfort, low productivity and failure to comply with labor regulations.

The IntrCooll® delivers the indoor environment conditions that boost engagement and productivity. Cool and fresh air is vital to our well-being. Ensuring a steady air supply is an ethical and legal duty for building owners and operators.

The IntrCooll® ensures that in a highly affordable way. In fact, the IntrCooll® requires lower investment costs and it guarantees 80% lower operational costs compared to conventional AC solutions. Moreover, Oxycom's IntrCooll® is the first and only environmentally responsible way to create and maintain a healthy and comfortable climate inside large buildings.

In warm climates other technologies often struggle to deliver tangible cooling in an efficient manner.

Oxycom's IntrCooll® innovative units are able to provide cool air streams effortlessly with as little as 10% of the energy consumption of conventional AC solutions.

IntrCooll® compared to conventional air AC

- Energy savings up to 90%
- Lower investment costs
- Extremely low running costs
- 100% fresh air (no recirculation)
- Natural indoor humidity regulation
- No uncomfortable cold spots or drafts
- Suitable for spaces with open doors or windows

IntrCooll® compared to direct evaporative cooling

- Up to 7 °C (13 °F) lower supply temperatures
- Up to 50% less moisture increase of supply air
- Keeps indoor climate perfectly within ASHRAE standards
- Lower water consumption
- High energy savings
- Lower indoor humidity, therefore higher comfort
- Suitable for humid climate and tropical conditions
- Significantly reduced airflow which translates in smaller ducts

Key Features

- Supply of fresh and cool air
- Best-in-class performance
- Extremely energy efficient
- Low water consumption
- Lowest operating costs compared to conventional AHUs
- Superior quality and durability
- Low noise level
- Excellent hygiene control
- Peak power reduction

Key Components

- Super-efficient Oxyvap® evaporative media with anti-bacterial coating
- Heat exchanger fueled with cold water for extreme cooling
- Internal separate chamber to create a self-sustained cold water supply
- Ozone water sterilizer to eliminate all waterborne bacteria and viruses
- Water sensor for continuous monitoring of water quality
- Electronically commuted (EC) and 100% variable speed fans
- Immersed pump capable to withstand the harshest climate conditions
- Different filter media classes to comply with local regulations
- Marine-grade aluminum with special UV and weather-resistant coating

Operation Modes Oxycom's IntrCooll® can operate in 3 different modes:



Free cooling mode

Free cooling uses low external air temperatures to cool the building. Especially in autumn and spring, sun radiation can be significant while ambient temperatures are still low. Whereas recirculating air conditioners need mechanical systems to cool the building, IntrCooll introduces free, cool and fresh outdoor air.



Single-stage cooling mode

Single-stage cooling can be referred to as direct evaporative cooling. During the drier days with medium temperatures, this cooling mode can efficiently cool your building and introduce the right humidity for a comfortable indoor climate.

90% WB
EFFECTIVENESS

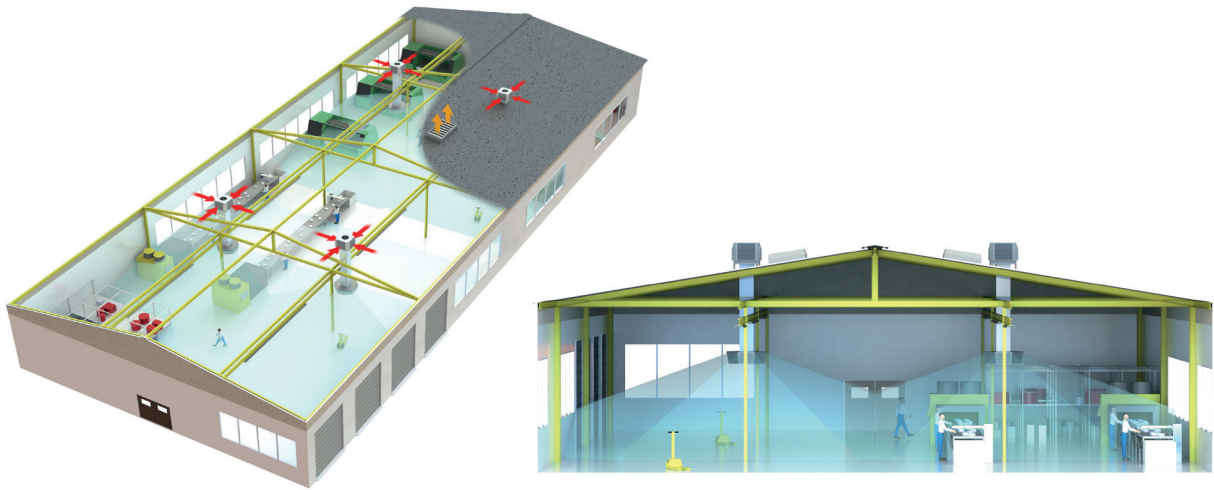


Dual-stage cooling mode

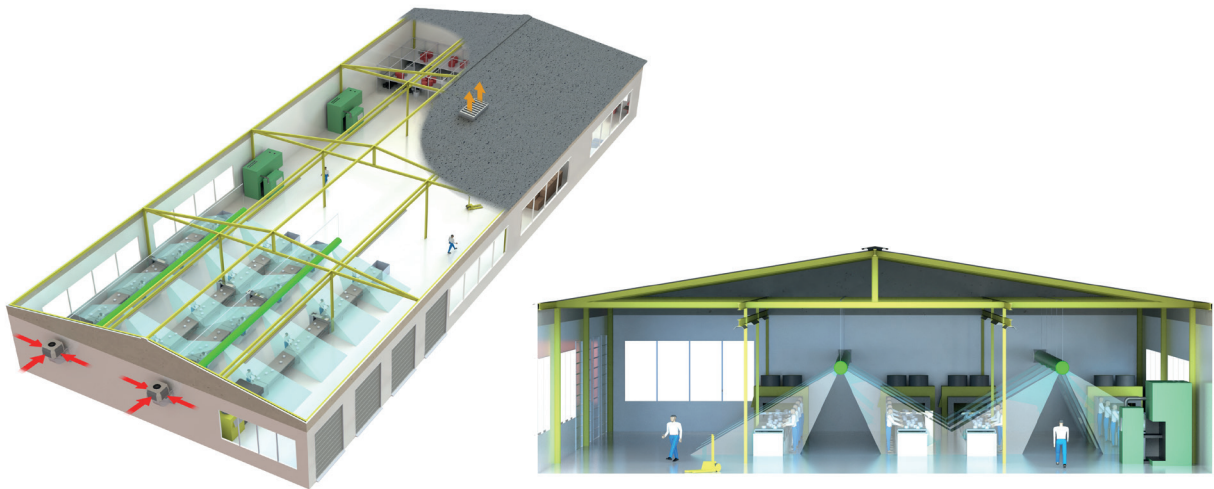
The first and indirect stage uses cold recirculation water to pre-cool the ambient air. As no humidity is added, the air leaving the heat exchanger has a lower dry bulb and wet bulb temperature than the outside air. In the second and direct cooling stage, the air can be further cooled down by the evaporative cooling media.

116% WB
EFFECTIVENESS

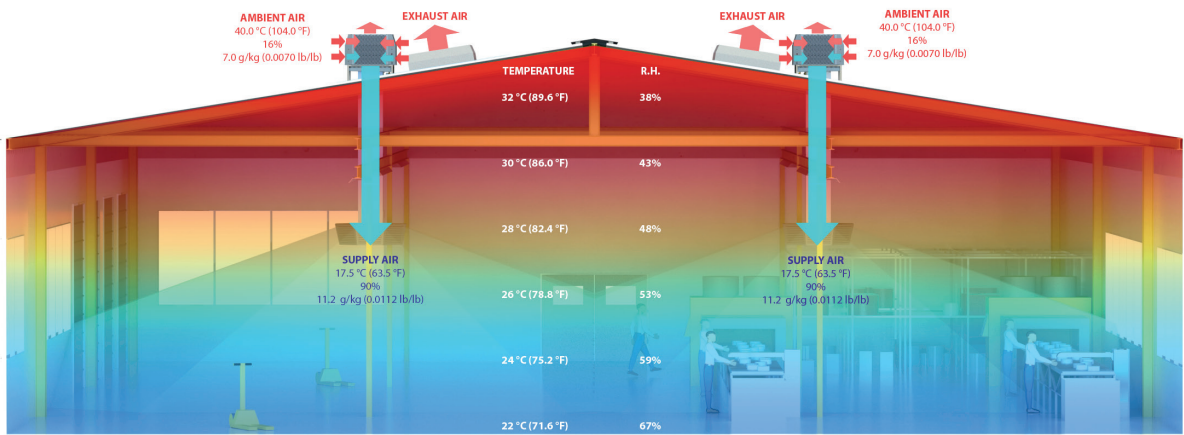
Large Space Cooling



Workspot Cooling

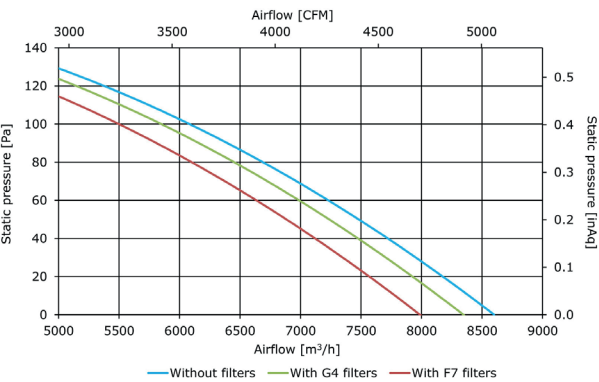


Displacement Cooling



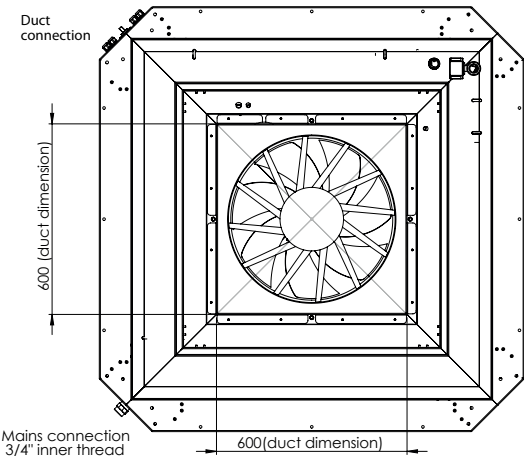
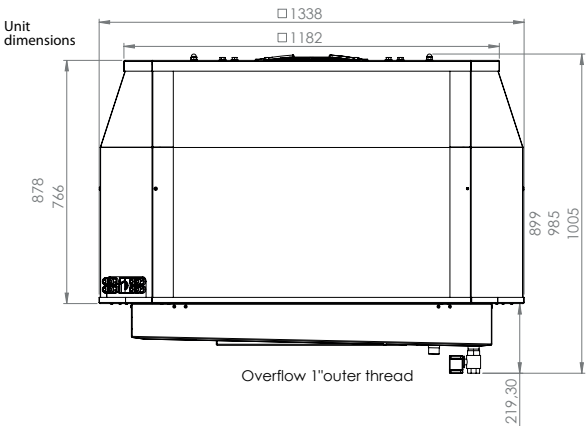
IntrCooll® Standard

Airflow



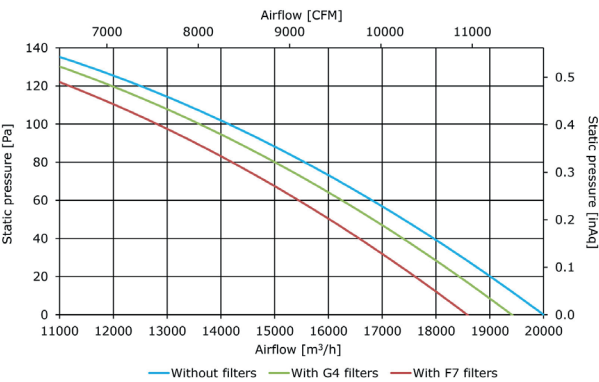
IntrCooll® Standard

Unit Dimensions



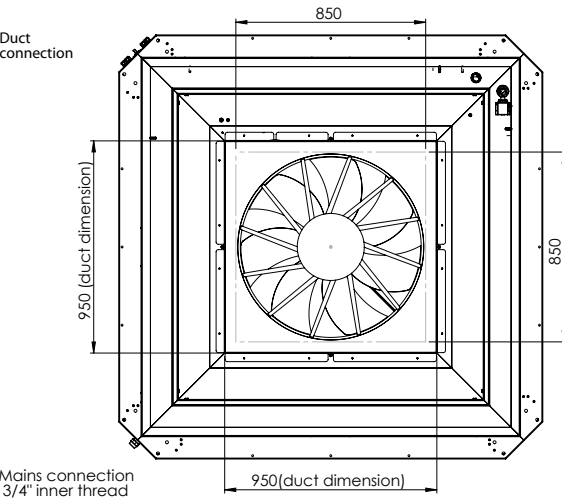
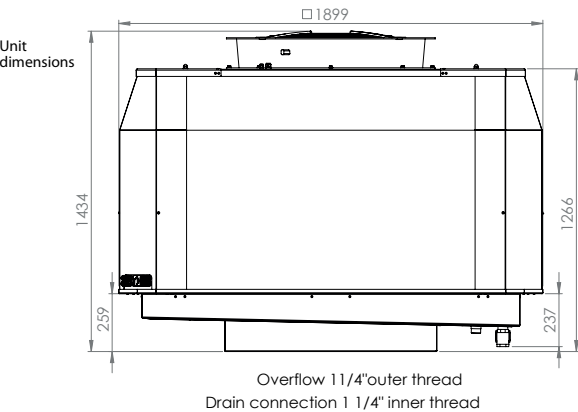
IntrCooll® Plus

Airflow

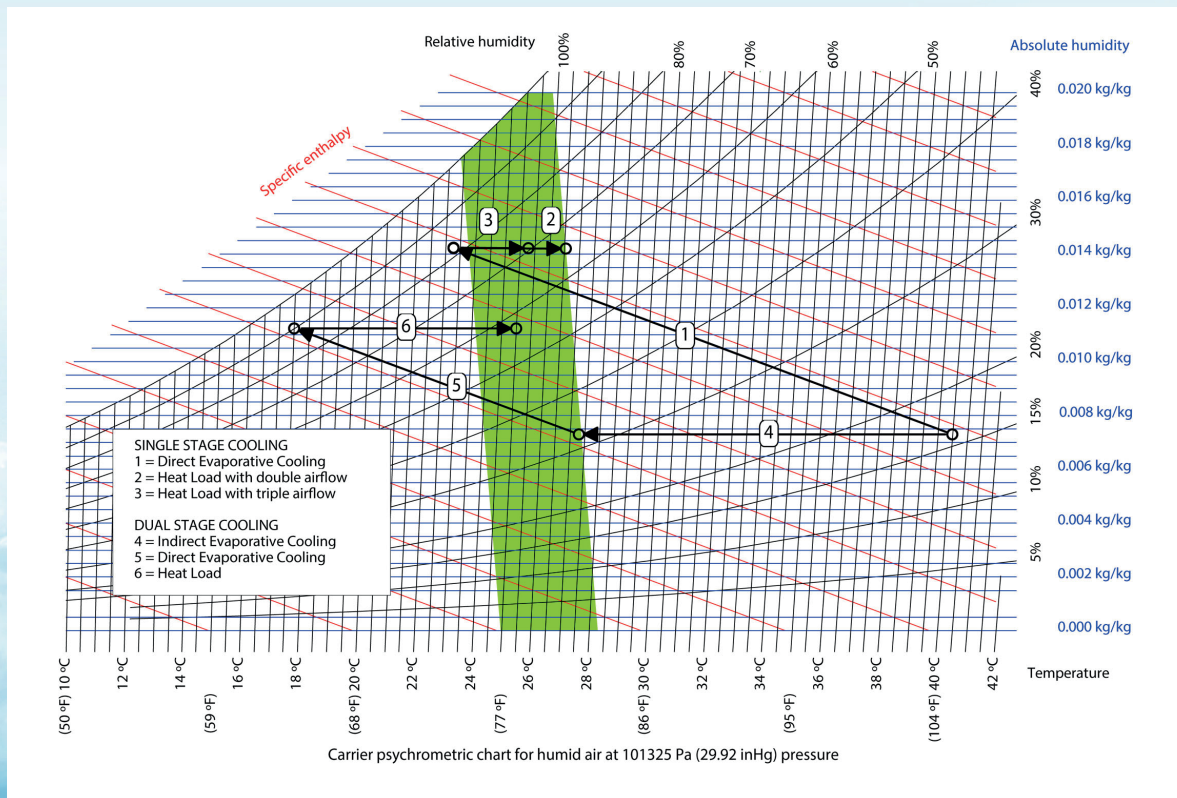


IntrCooll® Plus

Unit Dimensions



Performance compared to evaporative cooling



- 1 Direct Evaporative Cooling process
- 2 Temperature increase in building/occupied zone due to internal heat load, airflow: 13 000 CMH (7650 CFM)
- 3 Temperature increase in building/occupied zone due to internal heat load, airflow: 19 500 CMH (11 500 CFM)
- 4 Indirect/direct cooling process – first indirect stage
- 5 Indirect/direct cooling process – second direct stage
- 6 Temperature increase in building/occupied zone due to internal heat load, airflow: 6500 CMH (3800 CFM)

To reach the same temperature as Oxycom's IntrCooll®, a high efficiency direct evaporative cooler needs triple the amount of airflow. This results in significantly higher indoor humidities, electricity consumption and water consumption.

The absolute/relative humidity in the building is significantly lower when cooled with Oxycom's IntrCooll®.

Specifications

General Model	IntrCooll® Standard	IntrCooll® Plus
Direct Evaporative Cooling – Wet-bulb efficiency	92%	92%
Indirect/Direct Evaporative Cooling – Wet-bulb efficiency	116%	116%
Supply @ 46 °C (115 °F) DB/24 °C (75 °F) WB	20.5 °C (68.9 °F)	20.5 °C (68.9 °F)
Supply @ 38 °C (100 °F) DB/21 °C (70 °F) WB	18.3 °C (64.9 °F)	18.3 °C (64.9 °F)
Supply @ 28 °C (82 °F) DB/19 °C (66 °F) WB	17.6 °C (63.7 °F)	17.6 °C (63.7 °F)
Nominal capacity @ 46 °C (115 °F) DB/24 °C (75 °F) WB	57 kW (16.2 TR)	134 kW (38.1 TR)
Nominal capacity @ 38 °C (100 °F) DB/21 °C (70 °F) WB	44 kW (12.5 TR)	103 kW (29.3 TR)
Nominal capacity @ 28 °C (82 °F) DB/19 °C (66 °F) WB	23 kW (6.5 TR)	55 kW (15.6 TR)
Nominal EER @ 46 °C (115 °F) DB/24 °C (75 °F) WB	42.2	43.5
Nominal EER @ 38 °C (100 °F) DB/21 °C (70 °F) WB	32.6	33.6
Nominal EER @ 28 °C (82 °F) DB/19 °C (66 °F) WB	17.2	17.8
AIRFLOW		
Nominal airflow at 80 Pa (0.32 inAq) ESP – G3 Filters	6700 CMH (3943 CFM)	15 600 CMH (9182 CFM)
Nominal airflow at 80 Pa (0.32 inAq) ESP – G4 Filters*	6450 CMH (3796 CFM)	15 000 CMH (8829 CFM)
Nominal airflow at 80 Pa (0.32 inAq) ESP – F7 Filters*	6100 CMH (3590 CFM)	14 200 CMH (8358 CFM)
ELECTRICAL		
Electrical supply	1-Phase, 220 V – 230 V AC 50/60 Hz	3-Phase, 380 V – 400V AC 50/60 Hz
Rated power	1.36 kW	3.07 kW
Water supply connection	3/4" BSP male	3/4" BSP male
Water supply conductivity	20 µS/cm – 600 µS/cm	20 µS/cm – 600 µS/cm
Water supply type Tap drinking water or Reverse Osmosis (do not use softened water). Always ask for advice based on local available water qualities.		
Overflow connection	1" BSP male	1 1/4" BSP male
UNIT DIMENSIONS		
Lenght	1338 mm (52.68 inch)	1899 mm (74.76 inch)
Width	1338 mm (52.68 inch)	1899 mm (74.76 inch)
Heigth	1005 mm (39.66 inch)	1434 mm (56.46 inch)
WEIGHT		
Dry	185 kg (408 lb)	385 kg (849 lb)
Operation	250 kg (584 lb)	475 kg (1047 lb)

* Optional

Components

HOUSING

The entire Oxycom IntrCooll® housing is made out of marine-grade and corrosion-resistant aluminum. The exterior and all parts in contact with water are powder coated. The side screens and covers can easily be removed and allow for quick inspection and service of the unit.

FANS

The Oxycom IntrCooll® uses state-of-the-art EC axial fans with built-in efficiency guarantee.

- Optimized full nozzle with guide vane.
- Motor suspension.
- Short diffuser aerofoil section.
- Sickie-shaped blades made of composite material.
- Electronically commutated (EC) external rotor. motor integrated controller.
- 100% speed controlled for optimum performance at part load conditions.
- High durability.
- Extremely low noise emissions.

DIRECT EVAPORATIVE COOLING MEDIA

The Oxycom IntrCooll® uses Oxyvap® direct evaporative cooling media. The Oxyvap® is made of water-retaining aluminum fins with corrosion-resistant coating to ensure longevity of the media.

- Optimized fin design for maximum evaporation and minimum pressure drop.
- Self-cleaning - dust and pollen are captured by the water-retaining fins and are then rinsed down into the sump.
- Anti-microbial and anti-bacterial finish incorporated into water-retaining fins. This ensures effective protection during the entire life-time of the media and keeps the media clean and hygienic.

FINNED BLOCK HEAT EXCHANGER

The high efficiency finned heat exchanger design used in the Oxycom IntrCooll® is the result of extensive testing in our laboratory. It ensures maximum performance, minimum pressure drop and it is made out of high quality materials.

WATER RECIRCULATION PUMP

The immersed water recirculation pump with radial blades is selected to withstand continuous duty, high temperatures and fine dust. All of this to ensure trouble-free operation with minimum maintenance.

- Over-voltage protection.
- Over-current protection.

WATER RECIRCULATION FILTER

The stainless-steel strainer on the suction side of the pump is self-cleaning. When the pumps are turned off, water flows through the filter in reversed direction by gravity, effectively removing all particles captured by the strainer.

CONDUCTIVE LEVEL SENSOR

The conductive level sensor contains no moving parts and precisely monitors water levels within the sump.

WATER QUALITY MONITORING

The control unit monitors and manages the conductivity and quality of the recirculating water. It minimizes the buildup of solids and impurities on the evaporative media and ensures no water is drained unnecessarily.

OZONE WATER STERILIZER

The Oxycom IntrCooll® uses an ozone generator to improve and maintain the recirculating water quality. Ozone is a safe, natural and broad-spectrum disinfectant.

ACTUATED DRAIN VALVE

The actuated drain ball valve is placed at the lowest point of the water tank and ensures fast and efficient draining of water and particles.

ACTUATED WATER MAKE-UP VALVE

The actuated make-up ball valve ensures quick fill times and makes it possible to run the unit at sites with low water pressures.

INTELLIGENT AND INTUITIVE CONTROL SYSTEM

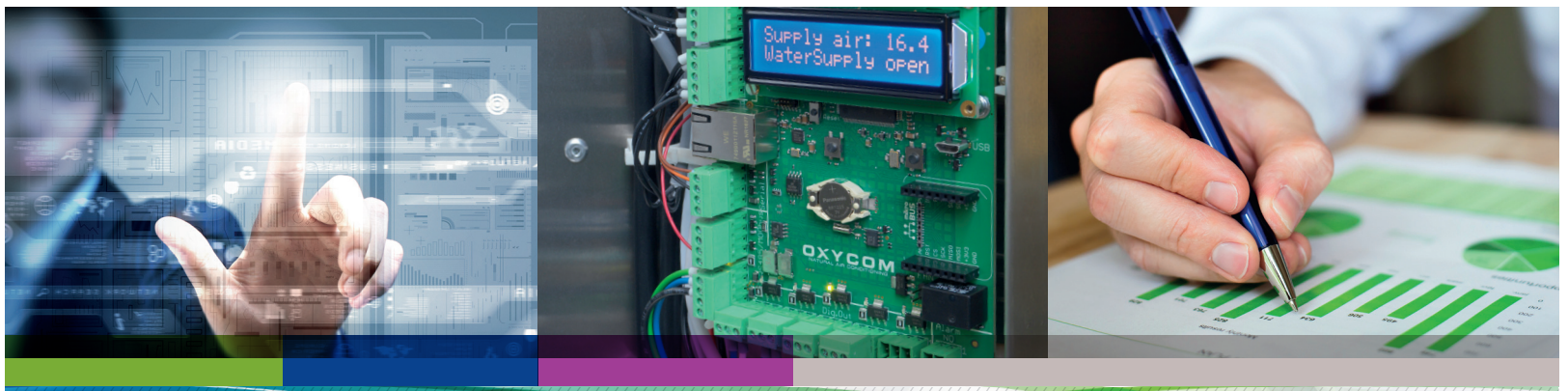
The Oxycom IntrCooll® control system guarantees maximum efficiency and minimum water use under all conditions. It precisely monitors ambient temperature, ambient humidity and indoor temperature. Based on this information the controller determines the most efficient operation mode and controls the fan speed.

When the unit is in cooling mode, the controller takes care of water management. It controls the water quality and makes sure the media is dried out and the water tank is drained at least once a day.

AIR FILTRATION

The Oxycom IntrCooll® has washable G3 filters and it could be optionally fitted with G4 or F7 composite corrosion free filter units, in accordance with EN 779:2012. Composite filters are known for their extremely low pressure drop and high dust-holding capacity.

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About Oxycom

Oxycom understands the need for fresh and cool air. In this age of growing environmental concern, our goal is to deliver a healthy indoor climate that makes people feel and perform better in every season. Inspired by nature, we develop and produce today's most practical and energy-efficient solutions that point to the future of climate control.

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