

IMMERSION COOLING FOR ANY WORKLOAD ANYWHERE

PNC TECHNICAL DATASHEET

www.asperitas.com



IMMERSION COOLING SOLUTION

Immersed Computing®: sustainable, high density data centres and edge nodes anywhere

Asperitas is a leading European cleantech provider of sustainable thermal management solutions, with a clear vision to maximise the effective use of energy for compute. Our mission is to help customers grow their digital infrastructure responsibly through high quality solutions like Immersed Computing®, our unique liquid cooling concept that enables record breaking densities, warm water cooling, and high-performance operations with minimal overhead energy.



Fully integrated and plug and play, our immersion cooling solutions enable highly efficient and flexible deployment of high-density CPU and GPU workloads, in both large scale core data centres and decentralised edge nodes. Our ambition is to build the intelligent thermal layer for the next generation compute stack, enabling sustainable growth wherever it's needed.

INDUSTRY AWARDS



TECHNICAL SPECS | PNC

CAPACITY

ASHRAE W3 solution footprint	18 kW/m ² , 32°C
Power capacity	44 kW at 2N
Cooling capacity	Typical 30 kW at 32°C, 1.2 kW/U (up to 1.8 kW/U)
IT capacity (immersed)	24U x 19" (optional 21") + 2U x 19" switches
IT capacity (air-cooled switches)	Up to 4U x 19" (optional)
Non-IT Power	110W
Maximum heat dissipation	350W/CPU, 400W/GPU

DIMENSIONS & WEIGHT

Dimensions (L x D x H)	1500 x 714 x 1591 mm
Product footprint	1.1 m ²
Solution footprint	2.9 m ² optimal with service aisles
Height clearance requirement	2460 mm
Service space	1200mm (space for service trolley and passage)
Product weight	600 kg
Operational weight (without IT)	1080 kg
Operational weight (with IT)	1680 kg (based on 25 kg/U)

TECHNOLOGY

Cooling technology	Natural convection, passive (no pumps)
CDU (Coolant Distribution Unit)	N/A
Main components	2 heat exchangers, PLC controller, rPDUs and power panel
Dielectric liquid type	Single-phase hydrocarbon (meeting OCP base fluid requirements)
Dielectric liquid volume	550-650 litres (IT-dependent)

WATER

Water input	Typical 32°C (above dew point, up to 45°C) (IT-dependent)
Water output	Typical 42°C (ΔT = 10°C)
Water flow	Nominal 0.5 l/s (25 kPa PDC), maximum 1.6 l/s overall
Maximum operating pressure	1000 kPa (10 bar-g)
Water connection	4 x 1" BSPP inner thread, stainless steel 316
Water quality	Liquid Cooling Guidelines for Datacom Equipment Centers, ASHRAE (2014) Second Edition

ELECTRICAL

Power feed	3-phase 400V/63A (optional 32A)
Electrical connection	2 x Mennekes 5-pin CEE 63A male center pin
Switch gear, electrical selectivity	Integrated

QUALITY & SAFETY

Liquid containment	Dual hull with insulation, level monitoring feature
Heat rejection effectiveness	> 98%
Autonomous safety system	Tank autonomous action (high-high) to shut-off power and cooling supply in emergency
Redundancy	Fully 2N power, ride-through time on cooling
Sensors	Level, water leak, dielectric fluid temperatures, water (in/out temperatures, flow & pressure)
Control modes	On water side by 3 set points: flowrate, return temperature, temperature change
Serviceability	All parts are live serviceable
Environment conditions	-20°C to 55°C non-condensing

Supports compliance with the EU Energy Efficiency Directive, EU Taxonomy for Sustainable Activities, EU Code of Conduct for Data Centre Efficiency, EU Ecodesign for Servers & Storage and the EU Corporate Sustainability Reporting Directive, by creating positive impact on KPI's like PUE, WUE, ERF, Total Energy Use (kWh), Waste Heat Reuse Potential (kWh, °C) among others.

KEY BENEFITS



Reduced **floorspace**



Reduced **CAPEX and OPEX**



Reduced **energy usage**



Reduced **carbon emissions**



Enabled **energy recovery**



Reduced **facility maintenance**



Increased **compute density**



Increased **IT components lifecycle**



Increased **reliability** lower heat & oxidation strain



Increased **resilience** under high heat & load

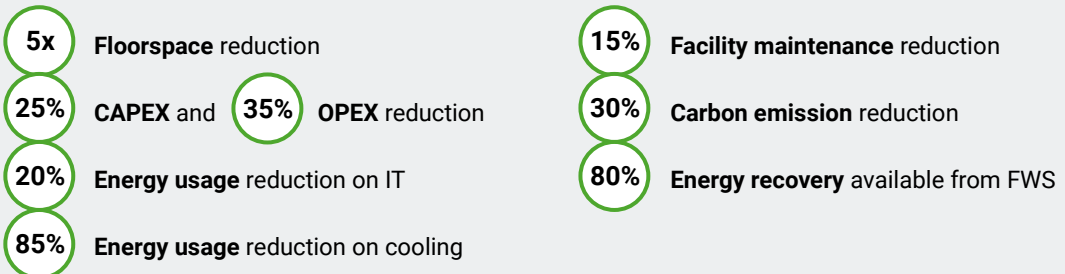


Redundancy with continuous cooling

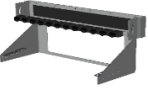
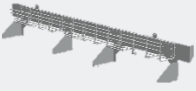


CASE STUDY GREENFIELD DEPLOYMENT GERMANY

Case Study based on outcomes from OCP TCO Model using Schneider Electric Reference Design RD65 for 1MW DC, Climate Zone 5A ASHRAE 169 (DE), resulting in **below achievements** with PUE L3 = 1.13 and ERF = 97% (encompassing the entire datacentre envelope)



OPTIONS & ACCESSORIES

CATEGORY	DESCRIPTION	PNC
PDU	Inlet meter	Options
	Phases meters	
	Outlets meters	
	Outlets switches	
Server mount	EIA 19"	Standard
	OCP 21"	Optional
Network switch mount	Internal immersed in tank up to 2U 19"	Standard
	 External side brackets up to 2U x 19" each side	Optional
	 External backside brackets up to 4U x 19"	Optional
	2U air-cooled in cabinet 600mm long	N/A
Industrial protocol	Modbus TCP	Standard
	Modbus RTU	N/A
	OPC UA	Standard
	Restful API	N/A
HMI	Atvise	Standard
	Phoenix	N/A

Dive into next-generation immersion cooling with Asperitas and get ready for the demands of the future.

Contact sales@asperitas.com