
Kelvion
Fluid Dynamics
Heat Exchange Solutions since 1981
Kelvion Data Center Solutions
ENGINEERED SOLUTIONS
FOR MISSION CRITICAL
APPLICATIONS

Kelvion

OUR STRATEGIC LEVERS

Empowering a sustainable future by optimizing energy efficiency and reducing environmental impact through innovative thermal solutions

Fluid Dynamics
Heat Exchange Solutions since 1981

HIGH TECH

SERVER HALL COOLING
HEAT REJECTION
INTEGRATION
LIQUID COOLING
SEMICONDUCTORS

GREEN TECH

CARBON CAPTURE
HYDROGEN
RENEWABLE ENERGIES | LNG
HVAC
HEAT PUMPS

CONVENTIONAL

REFRIGERATION
FOOD & BEVERAGE
TRANSPORTATION
CHEMICALS
HEAVY & LIGHT EQUIPMENT

SERVICE

FULL SERVICE
FOR ALL
APPLICATIONS

A TRULY GLOBAL FOOTPRINT

Interconnected Engineering, Manufacturing and Service as enablers for global customers

Fluid Dynamics
Heat Exchange Solutions since 1981

EMPLOYEES
6000
WORLDWIDE

MORE THAN
400
ENGINEERS

KEEPING
INNOVATION
AT THE FOREFRONT

OUR GLOBAL FOOTPRINT

- **18** MANUFACTURING SITES
- **34** SERVICE HUBS
- **18** R&D CENTRES
- **7** TEST LABORATORIES

MEETING
HIGHEST QUALITY
STANDARDS

ORDER INTAKE 2024
1.6
BN EUR

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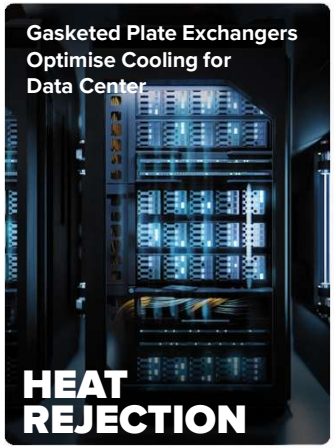
SUCCESS STORIES

Your Success is our Mission

Fluid Dynamics
Heat Exchange Solutions since 1981



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SUCCESS STORY

Kelvion secures $31.5M flagship order to deliver 250+ MW next-gen for major U.S. data centre expansion

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Heat Exchange Solutions since 1981

KELVION TO DELIVER ITS INNOVATIVE CASCADE COOLING SYSTEM

Kelvion's Cascade Cooling System brings together the best of dry and wet cooling in one intelligent platform:

- Dry mode for ultra-efficient performance in cooler months
- Wet mode for maximum capacity in peak summer conditions
- Mixed mode for seamless, adaptive year-round optimisation
- With its modular, multi-mode design, Cascade Cooling offers customers the flexibility to balance energy efficiency and water savings — without compromise.

Kelvion's Cascade Cooling System

Kelvion

Fluid Dynamics
Heat Exchange Solutions
since 1981

SUCCESS STORY

Kelvion Delivers $40M+ Scalable Cooling Solution for 200+ MW Phase of Major AI Data Centre in USA

KELVION TO DELIVER HIGH-CAPACITY HEAT REJECTION EQUIPMENT

- GigaBay configuration with large fans and high-pressure fogging systems
- Low-maintenance needs, optimised for uptime and long-term performance
- Water-saving operation compared to conventional wet cooling tower systems
- Significantly less space as conventional dry or hybrid cooling methods as well as less complexity in terms of piping and wiring
- Six CCDU skids – 5 x capacity of 9+ MW each & 1 with a capacity of 4+ MW
- Providing comprehensive technical guidance and tailoring the solution

Giga Bay & CCDU skids

SUCCESS STORY

Kelvion provided a tailored cooling concept for 850+ MW for a Major U.S. Data Centre Project

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Stackable Unit

KELVION PROVIDED EFFICIENET HEAT REJECTION SOLUTION

- The CFD analysis revealed the worst-case conditions for the middle units, highlighting the significant impact of recirculation
- The proposal involves lifting the 1st row dry air coolers 4 mtrs off the ground
- This elevation allows fresh air to flow underneath the first row of units, effectively delivering cooler air to the second row of coolers.
- >200 pcs customized dry coolers / stackable units
- Larger coils surface on same footprint compared to V-Shape

KELVION DATA CENTER SOLUTIONS OVERVIEW

Fluid Dynamics
Heat Exchange Solutions since 1981

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WHITE SPACING COOLING LIQUID BASED

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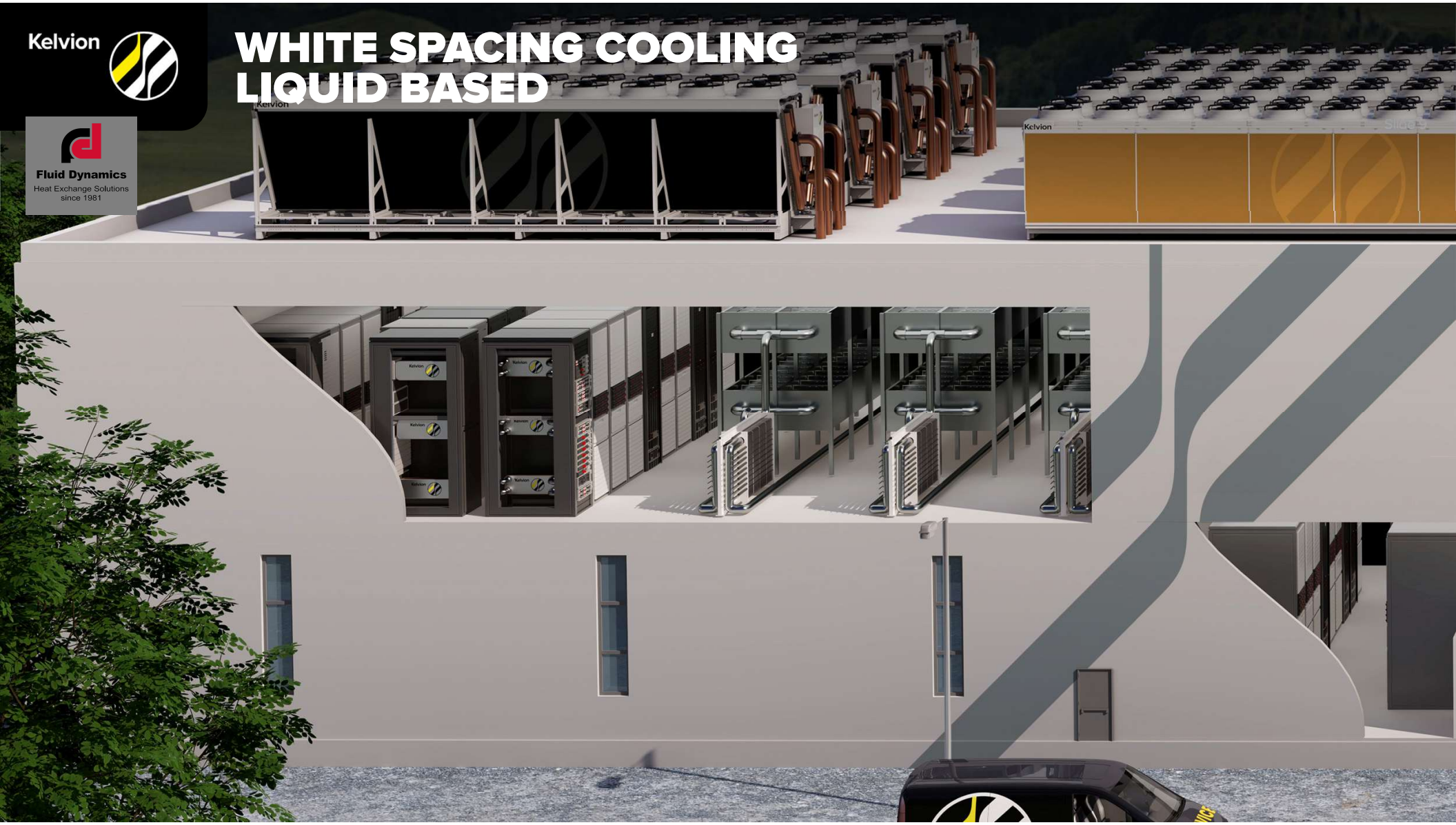
Heat Exchange Solutions
since 1981



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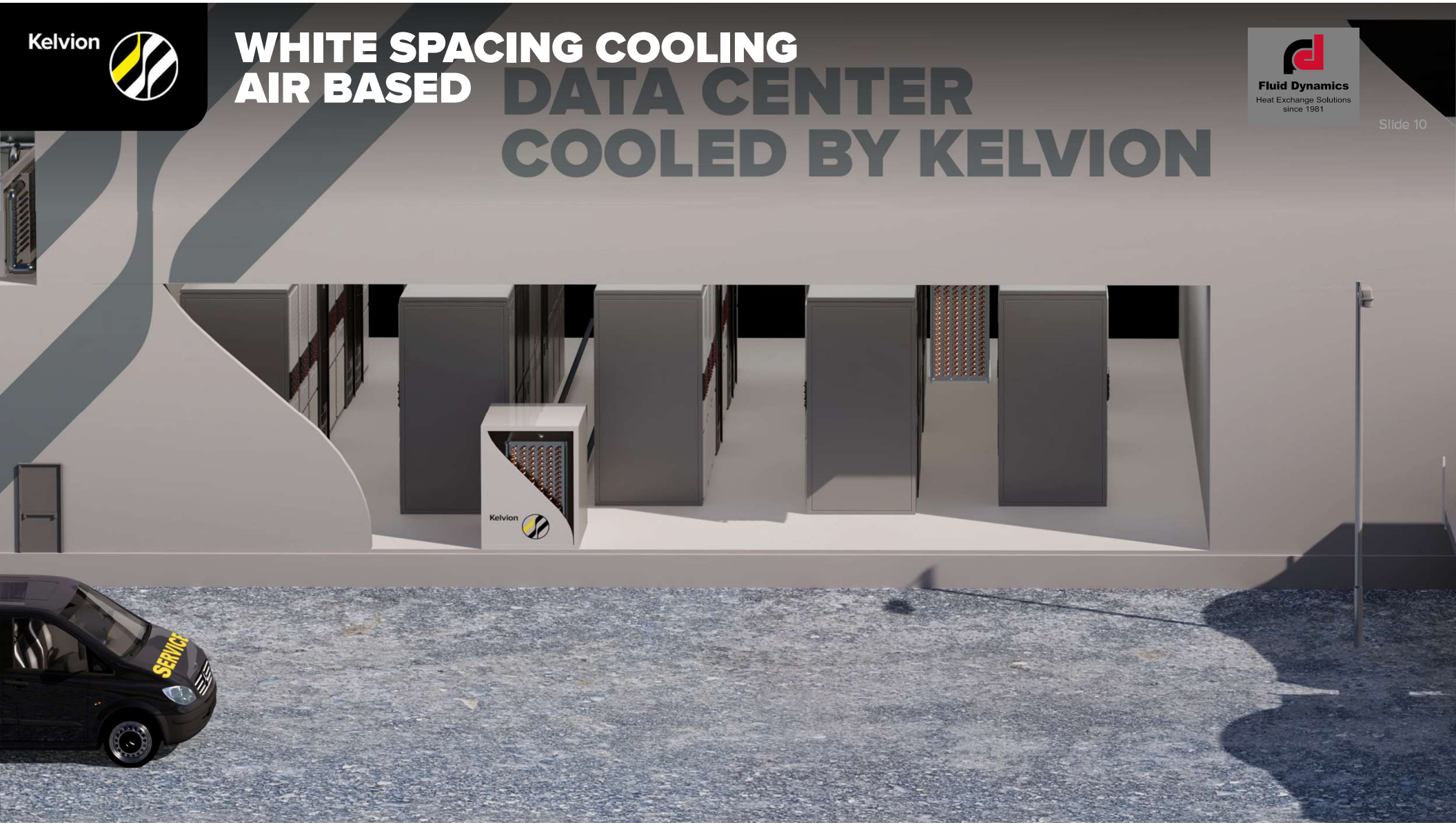
WHITE SPACING COOLING AIR BASED DATA CENTER COOLED BY KELVION

Fluid Dynamics
Heat Exchange Solutions since 1981



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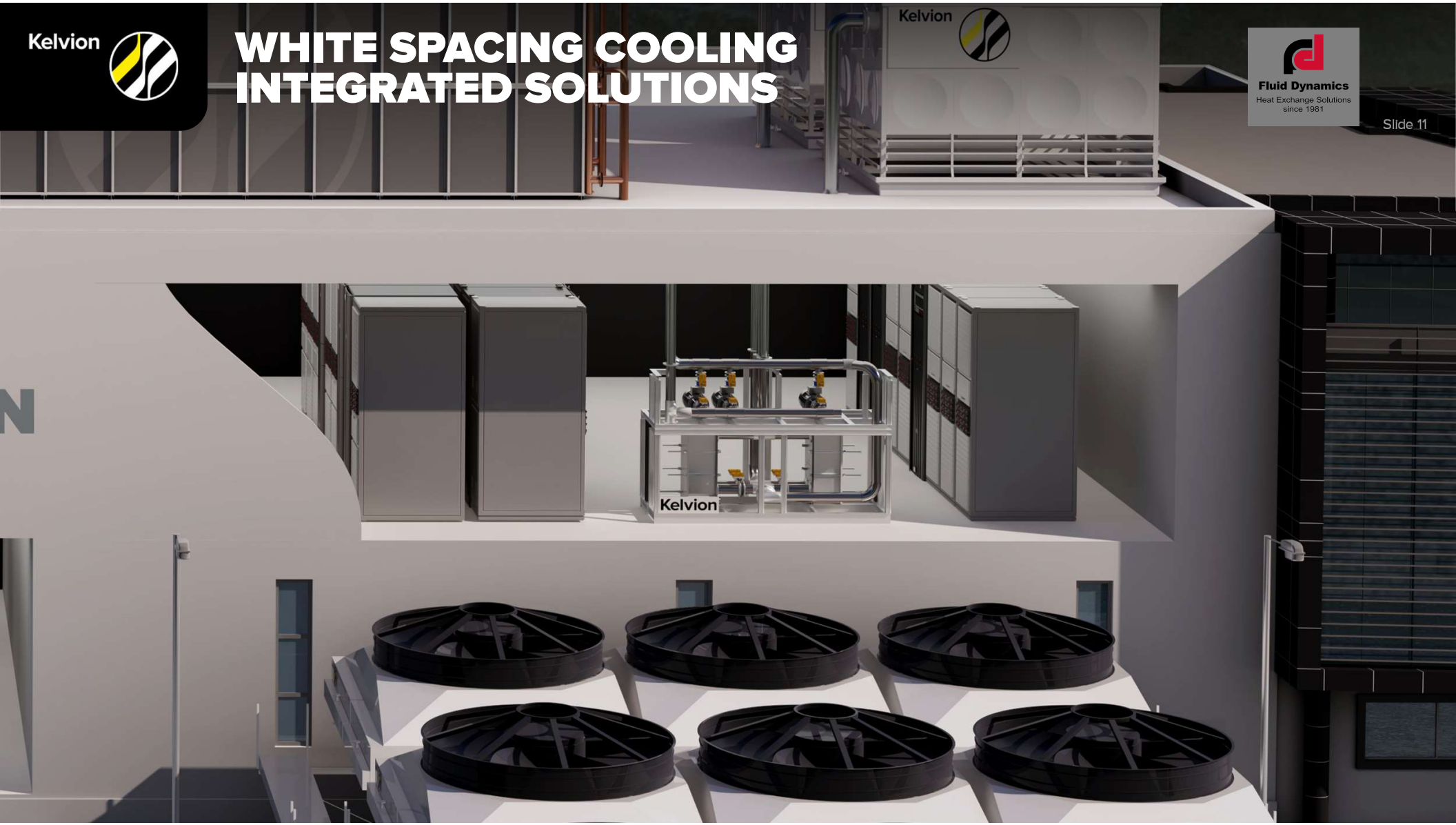
WHITE SPACING COOLING INTEGRATED SOLUTIONS

Fluid Dynamics
Heat Exchange Solutions
since 1981



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KELVION DATA CENTER SOLUTIONS OVERVIEW

Fluid Dynamics
Heat Exchange Solutions since 1981

WHITESPACE COOLING LIQUID BASED

- Immersion Cooling
- Direct to Chip
- Edge Cooling

WHITESPACE COOLING AIR BASED

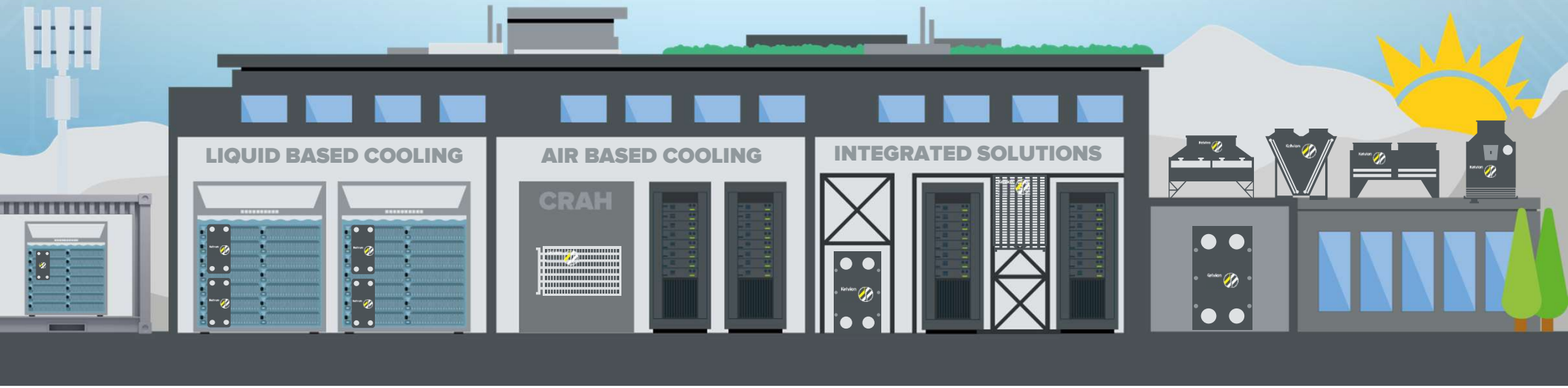
- CRAC/CRAH
- Hot Aisle & Cold Aisle

INTEGRATED SOLUTIONS

- CCDU
- Integrated HX Solutions

HEAT REJECTION & HEAT RECOVERY

- Condenser & Dry Cooler
- Adiabatic Spray/Pad
- Hybrid Cooler
- Cascade Cooling
- Cooling Tower



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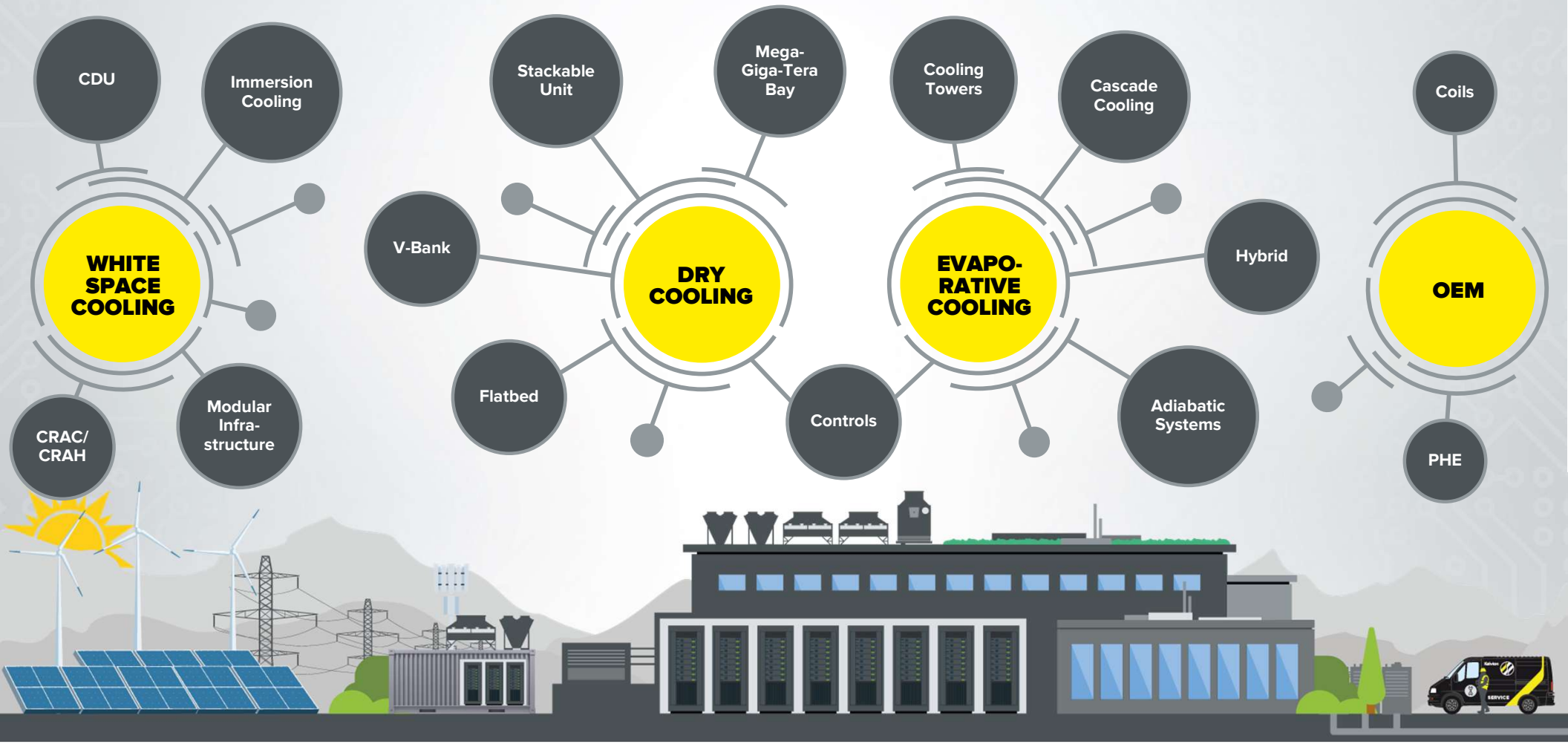
HIGH TECH COOLING SOLUTIONS

Delivering Incomparable Engineered Solutions for Data Center Applications

Fluid Dynamics
Heat Exchange Solutions since 1981



WHITE SPACE COOLING

Overview

Fluid Dynamics
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CENTRALIZED CDU CCDU

KEY BENEFITS AT A GLANCE

- Large thermal inertia
- Simplicity of installation & control
- Greater system resiliency
- Reduction of duplication of redundancies
- Reduced maintenance

LOCALIZED VS CENTRALIZED CDU

Liquid Cooling

ADVANTAGES CENTRALIZED CDU

- Large thermal inertia
- Simplicity of installation & control
- Greater system resiliency
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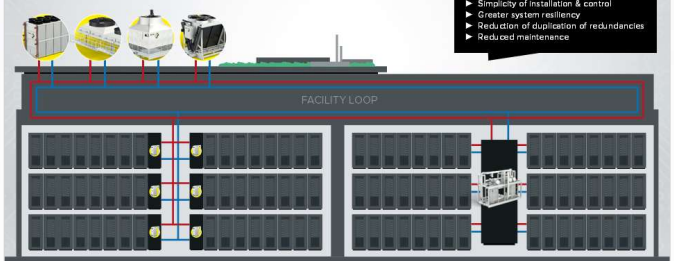


IMMERSION COOLING

BRAZED PLATE HEAT EXCHANGERS

- Small sizes ideally suited for card level placement
- Handling of volume flow make them also a suitable choice for a placement at rack or tank level
- Various corrugation available to match fluid properties

GASKETED PLATE HEAT EXCHANGERS

- For higher heat loads and placement on aisle or hall level
- Capable of dealing with fluid viscosity
- Various gap sizes
- Wide range of materials for plates and gaskets

MODULAR INFRASTRUCTURE

MODULAR INTEGRATION

- **Pre-manufactured & assembled modules**
  - Consistent & Controlled Quality
  - Reduction of On-Site Labor Hours
- **Integrated Services**
  - Hot Aisle Containment
  - Power & Network Modules
  - Cooling Infrastructure
  - Fire Suppression & Signage
  - Audio & Lighting
  - Access Doors & Hatches
- **Robotically Welded Steel Frame**

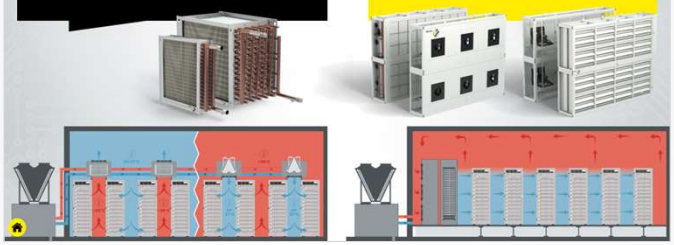
CUSTOMISED CRAH

CUSTOMIZED CRAH UNITS

- Applying a range of coil technology to direct cooling server racks
- Efficient direct aisle cooling

FAN WALL

- Innovative and scalable server room integration
- Return Air Cooling



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CENTRALIZED CDU
CCDU

Fluid Dynamics
Heat Exchange Solutions
since 1981

KEY BENEFITS AT A GLANCE

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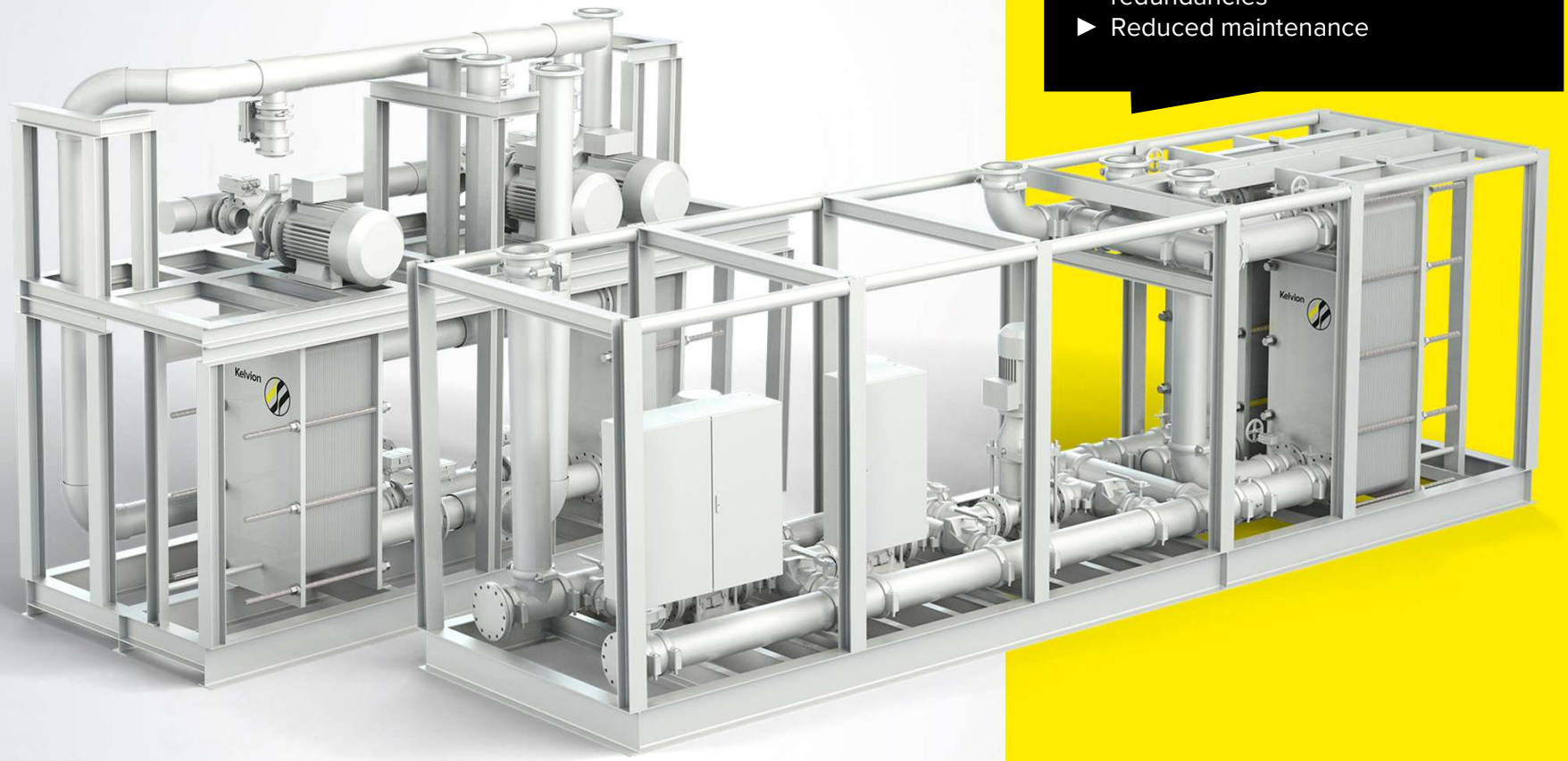

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LOCALIZED VS CENTRALIZED CDU

Liquid Cooling

Fluid Dynamics
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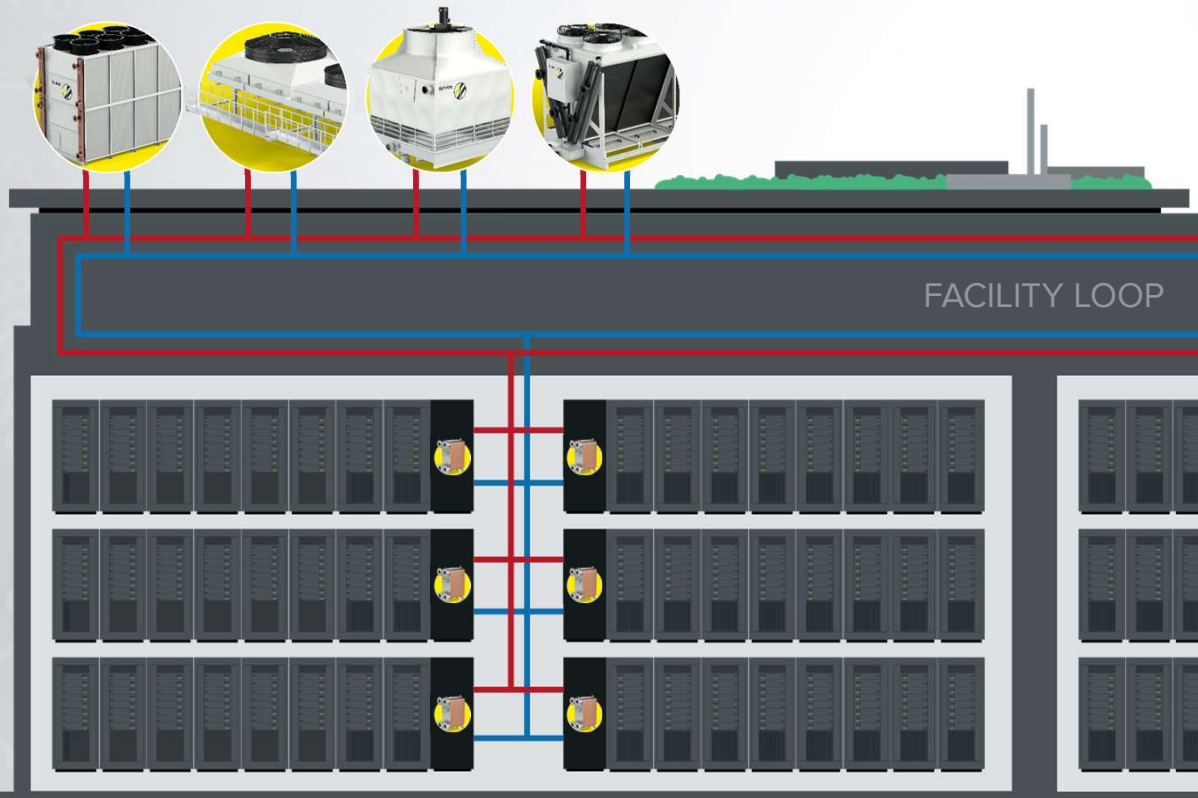

LOCALIZED LIQUID COOLING (< 3 MW)

CENTRALIZED LIQUID COOLING (> 3 MW)

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IMMERSION COOLING

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Heat Exchange Solutions since 1981

BRAZED PLATE HEAT EXCHANGERS

- Small sizes ideally suited for card level placement
- Handling of volume flow make them also a suitable choice for a placement at rack or tank level
- Various corrugation available to match properties of dielectric fluids

GASKETED PLATE HEAT EXCHANGERS

- For higher heat loads and placement on aisle or hall level
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- Various gap sizes
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MODULAR INFRASTRUCTURE

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Heat Exchange Solutions since 1981

MODULAR INTEGRATION

- **Pre-manufactured & assembled modules**
  - Consistent & Controlled Quality
  - Reduction of On-Site Labor Hours
- **Integrated Services**
  - Hot Aisle Containment
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  - Cooling Infrastructure
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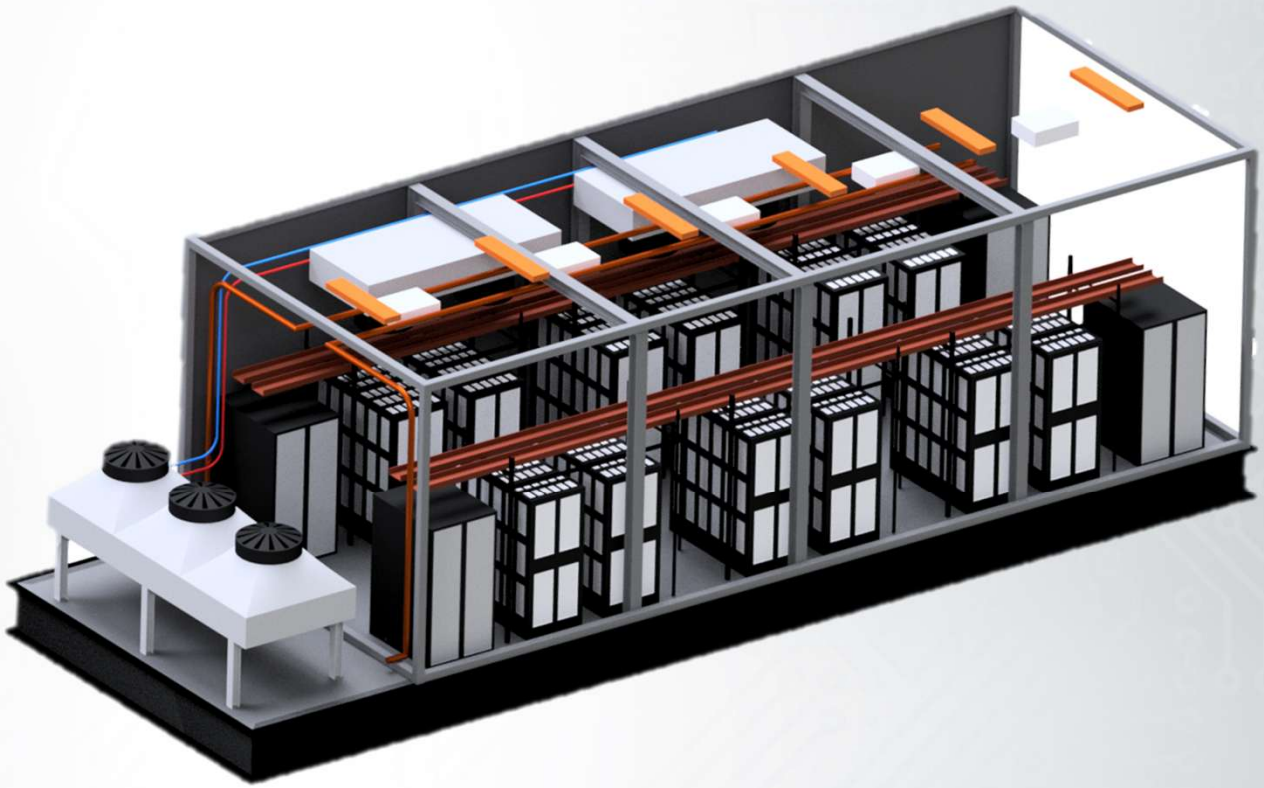
  - Access Doors & Hatches
- **Robotically Welded Steel Frame**



CUSTOMISED CRAH

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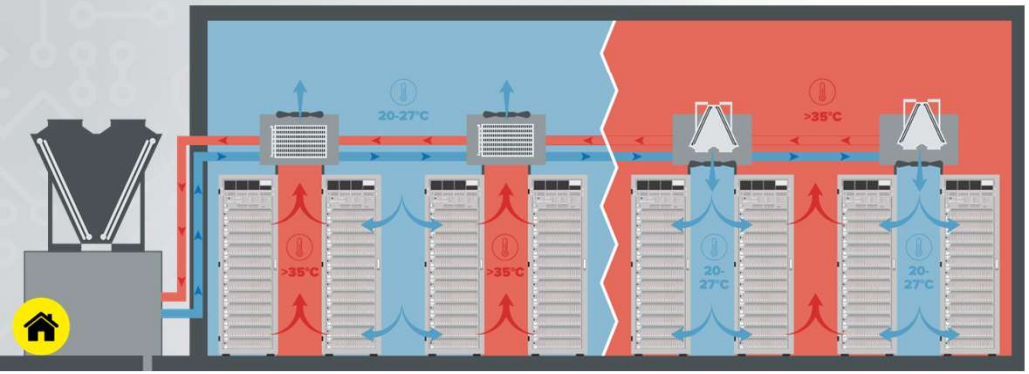
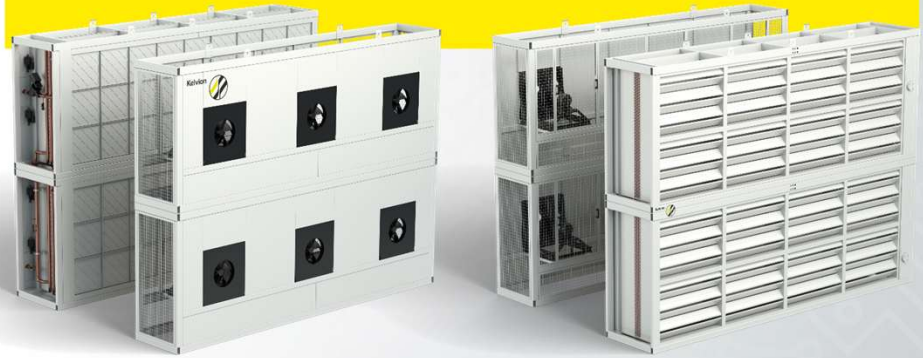
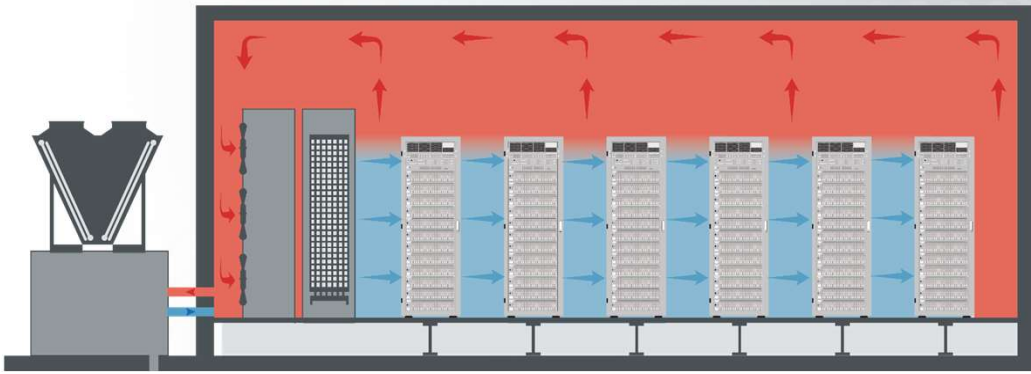


FAN WALL

- Innovative and scalable server room integration
- Return Air Cooling





DRY COOLING SOLUTIONS

Overview

Fluid Dynamics
Heat Exchange Solutions since 1981

DRY COOLING RANGE

COOLING CAPACITY PER MODULE

FLATBED
V-BANK
U-SHAPE
UTILITY FLATBED | MEGA BAY
UTILITY FLATBED | GIGA BAY

HVAC SCALE | UTILITY SCALE

HEAT REJECTION | DRY COOLING

Criteria Matrix

HVAC SCALE VS UTILITY SCALE

Fins Vs Tubes

COMPACT SYSTEM – HVAC

- Copper tube & alu fin
- Tube mechanically expanded into plate fin
  - All tubes brazed to header and return bends
- High thermal efficiency – decreases with increasing tube diameter
- Set configurations (fin types – geometry fixed)
- Limitations on manufacturable length (5..2m)
- Better for smaller scale applications (< 50MW)

SINGLE TUBE – UTILITY

- Steel tube with alu fin
- Individual tubes act as "independent" heat exchanger
  - Fin wrapped around tube or embedded into tube wall
- Headers made of box section instead of round tube
  - Tubes Welded or expanded into header
- High level of configuration
- Manufacturable length ~ 18m or greater
- Better for large scale applications (> 50MW)

HVAC SCALE VS UTILITY SCALE

Fans

FAN OVERVIEW

- Bearing Lifecycle > 60,000 up to 100,000 Hours (EC Fans typically 30,000-35,000 hours)
- Easy access to motor for crane-free maintenance
- Low Noise Fan Options
- AC Fans with VFD speed control
- Options for factory fitted plug and play set-up

DESIGN, SELECTION AND LAYOUTS

SELECTION CONSIDERATIONS

- Approach temperature – 4K to 9K from DB
- Surface area vs tube side pressure drop – 1.5Bar max (typ 0.4 - 0.9 Bar)
- Rows & header passes
- Face velocity – max 4.2 m/s
- Air side pressure drop vs motor power

CHILLER ALIGNMENT

- Free cooling vs mixed vs mech mode
- Compressor duty
- High ambients and condensing temperatures
- Reducing condensing temperatures to improve chiller COP

SITE CONSIDERATIONS

- Hot air recirculation - ambient offsets (Recd / DC cyd, frame heights & spacing
- Additional heat sources & prevailing winds
- Weight & footprint
- Noise
- Power

FLATBED CONDENSERS & DRYCOOLERS

KEY BENEFITS AT A GLANCE

- Optimum cooling performance for a wide range of applications
- Robustness, high flexibility and individual adaptation options
- Easy installation, maintenance and cleaning
- Always ensuring the best possible product quality

V-SHAPE CONDENSERS & DRYCOOLERS

KEY BENEFITS AT A GLANCE

- High-capacity density when space is restricted
- Meets a growing market need for a lower carbon footprint & quieter operation
- Ideally suited for adiabatic spray or pad options

COMPARISON

Flatbed vs. V-Shape

	FLATBED	V-SHAPE
AVAILABLE AS	Condenser Geocooler Drycooler	Condenser Geocooler Drycooler
FAN TECHNOLOGY	AC Fan Technology EC Fan Technology	AC Fan Technology EC Fan Technology
MAX NO° OF FANS	20	22
ADIABATIC OPTION	●○○	●●●

CAPACITY IN RELATION TO FOOTPRINT
(EXAMPLE)

CAPACITY 200 kW
Footprint Flatbed 7.0 m²
Footprint V-Shape 4.7 m²

U-SHAPE STACKABLE UNIT

UP TO 20.000 m² HEAT EXCHANGER SURFACE

EXEMPLARY CALCULATION 2.5 MW

- Design Condition
  - Air On: 40.8
  - Fluid In: 54.4 | Fluid Out: 46.1
  - Fluid: Propylene Glycol 30%

UP TO 40MW PER UNIT AT ΔT=10K

KEY BENEFITS AT A GLANCE

- High-capacity density
- Design with high surface area
- Lower energy consumption
- Rapid deployment without any major site works
- Balanced airflow over the top and bottom coil sets

TWO SIZES AVAILABLE

Transport as one unit

Transport in several parts with final assembly on site

MEGA-BAY & GIGA-BAY

KEY BENEFITS AT A GLANCE

- Offers high level of free cooling
- Efficiency in combination with Liquid Cooled Chillers
- Factory fitted solution (Mega-Bay)
- High-capacity density
- Reduced overall footprint

MEGA-BAY & GIGA-BAY

- Integrated mounting frames for no hot air re-circulation
- FEA and structural calculation applied to ensure wide ranging standards can be met on request
- Delivered seperately, but designed modularly for rapid assembly

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DRY COOLING RANGE

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COOLING CAPACITY PER MODULE

200kW | 1MW | 2MW | 3MW | 5MW | 10MW | 50MW+


FLATBED


V-BANK


U-SHAPE


UTILITY FLATBED | MEGA BAY


UTILITY FLATBED | GIGA BAY

HVAC SCALE

UTILITY SCALE

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HEAT REJECTION | DRY COOLING

Criteria Matrix

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FOOTPRINT PER MW	High	Low
WATER CONSUMPTION	High	Low
WATER QUALITY NEEDED	High	Low
POWER CONSUMPTION	High	Low
ON SITE ERRECTION WORK	High	Low
MAINTENANCE	High	Low
EXPECTED LIFETIME	High	Low
HEIGHT ABOVE GROUND	High	Low

Site erected

Site erected

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HVAC SCALE VS UTILITY SCALE

Fins Vs Tubes

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Heat Exchange Solutions since 1981

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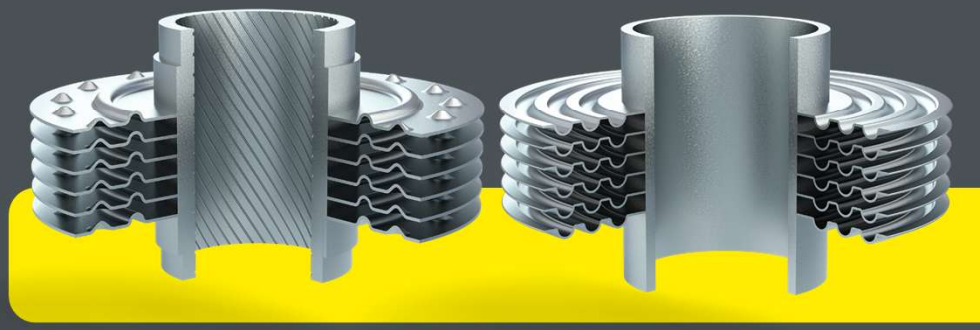

HVAC SCALE VS UTILITY SCALE

Fans

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FAN OVERVIEW

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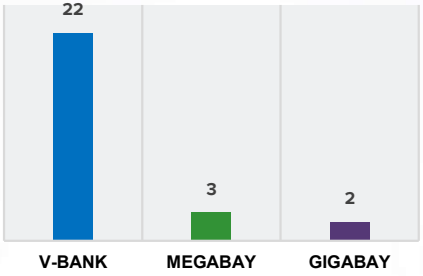
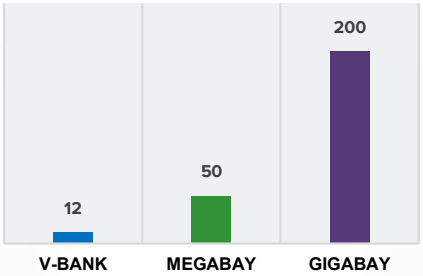
- Easy access to motor for crane-free maintenance
- Low Noise Fan Options
- AC Fans with VFD speed control
- Options for factory fitted plug and play set-up

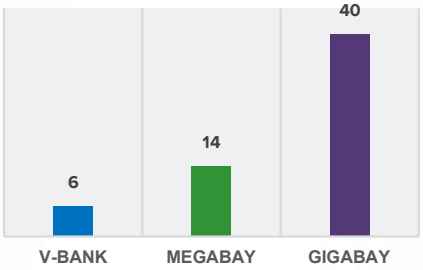
FANS / UNIT



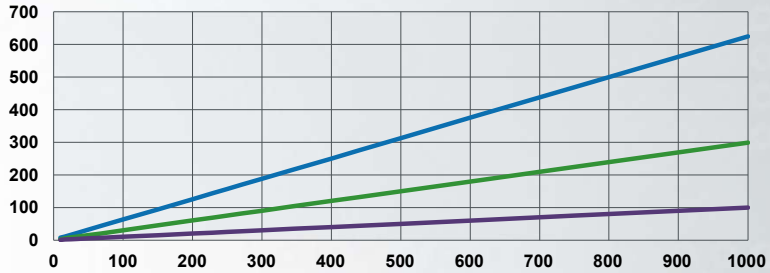
MAX MOTOR POWER (KW)



MAX FAN DIAMETER (FT)



NO. UNITS VS DC SIZE (MW)



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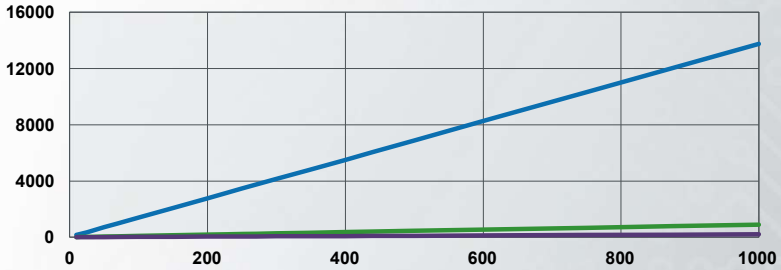
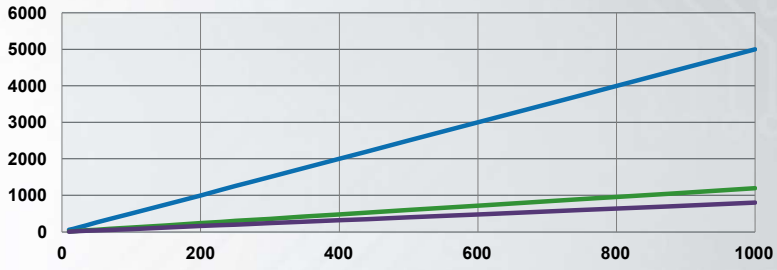


NO. CONNECTIONS VS DC SIZE (MW)



DESIGN, SELECTION AND LAYOUTS

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Heat Exchange Solutions since 1981

SELECTION CONSIDERATIONS

- Approach temperature – 4K to 5K from DB
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- Rows & header passes
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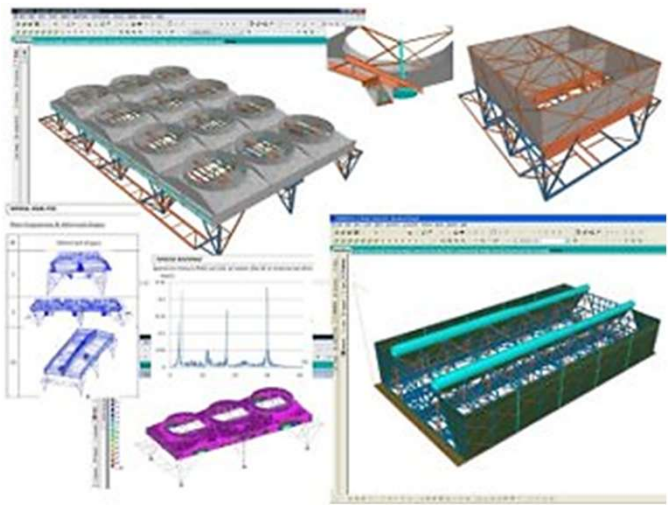
- Air side pressure drop vs motor power

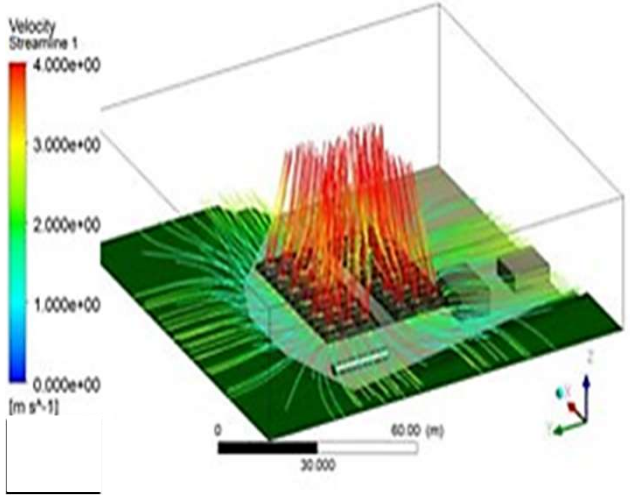
CHILLER ALIGNMENT

- Free cooling vs mixed vs mech mode
- Compressor duty
- High ambients and condensing temperatures
- Reducing condensing temperatures to improve chiller COP

SITE CONSIDERATIONS

- Hot air recirculation - ambient offsets (Saudi / DC typ), frame heights & spacing
- Additional heat sources & prevailing winds
- Weight & footprint
- Noise
- Power





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FLATBED CONDENSERS & DRYCOOLERS

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KEY BENEFITS AT A GLANCE

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COMPARISON

Flatbed vs. V-Shape

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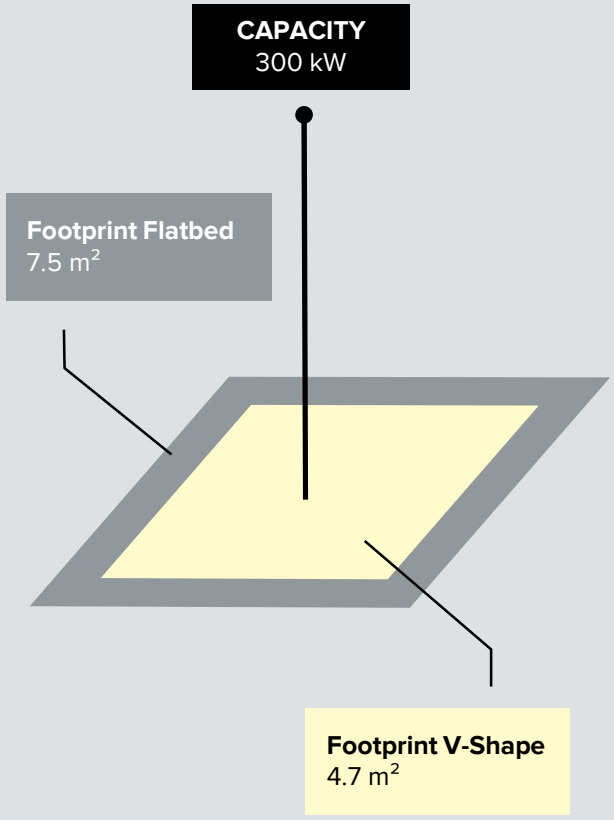
FAN TECHNOLOGY	AC Fan Technology EC Fan Technology	AC Fan Technology EC Fan Technology
MAX NO° OF FANS	20	22
ADIABATIC OPTION	●○○	●●●

CAPACITY IN RELATION TO FOOTRPINT
(EXAMPLE)



Conditions
55 db (A)
Δt 15K

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U-SHAPE STACKABLE UNIT

Fluid Dynamics
Heat Exchange Solutions since 1981

UP TO
20.000 m²
HEAT EXCHANGER SURFACE

EXAMPLARY CALCULATION 2.5 MW

- Design Condition
  - Air On: 40.6
  - Fluid In: 54.4 | Fluid Out: 46.1
  - Fluid: Propylene Glycol 30%

UP TO 4MW PER UNIT AT ΔT=10K

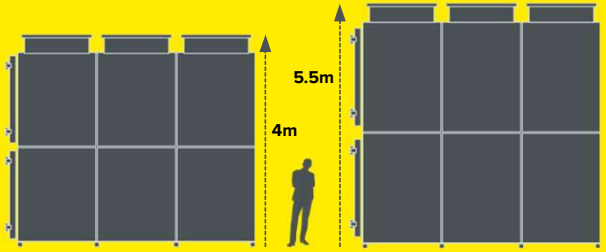
KEY BENEFITS AT A GLANCE

- High-capacity density
- Design with high surface area
- Lower energy consumption
- Rapid deployment without any major site works
- Balanced airflow over the top and bottom coil sets

TWO SIZES AVAILABLE

Transport as one unit

Transport in several parts with final assembly on site



Kelvion

MEGA-BAY & GIGA-BAY

Fluid Dynamics
Heat Exchange Solutions since 1981

KEY BENEFITS AT A GLANCE

- Offers high level of free cooling
- Efficiency in combination with Liquid Cooled Chillers
- Factory fitted solution (Mega-Bay)
- High-capacity density
- Reduced overall footprint

MEGA-BAY & GIGA-BAY

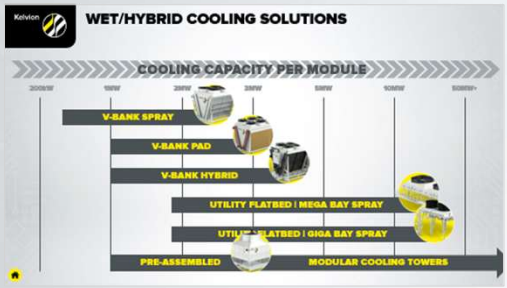
Fluid Dynamics
Heat Exchange Solutions since 1981

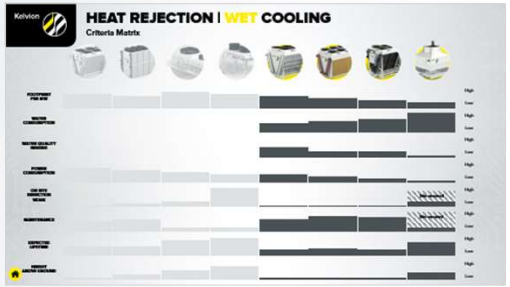
- Integrated mounting frames for no hot air re-circulation
- FEA and structural calculation applied to ensure wide ranging standards can be met on request
- Delivered separately, but designed modularly for rapid assembly

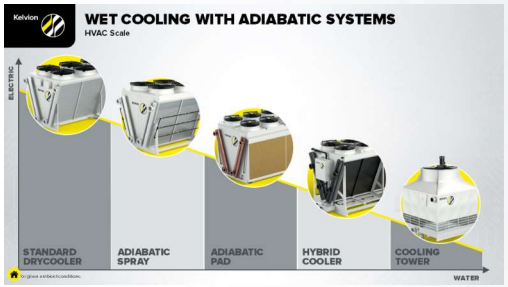
WET COOLING SOLUTIONS

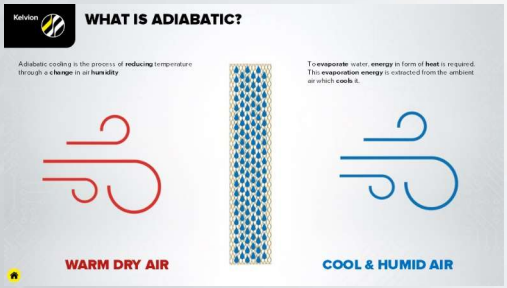
Overview

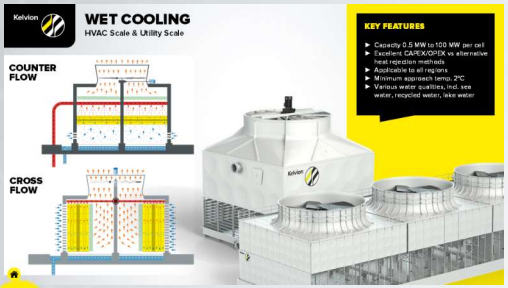
Fluid Dynamics
Heat Exchange Solutions since 1981

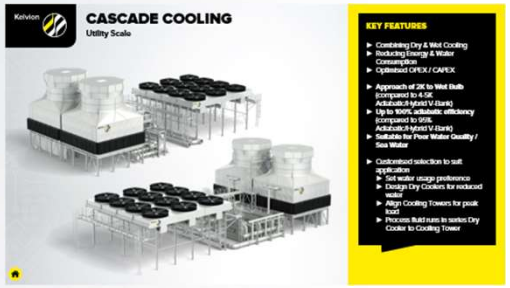


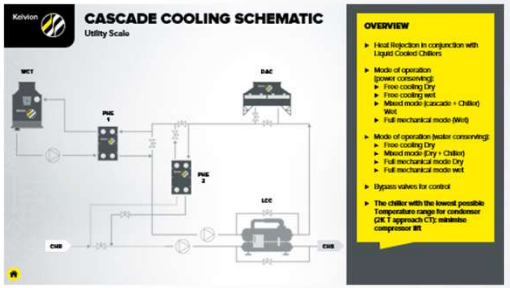


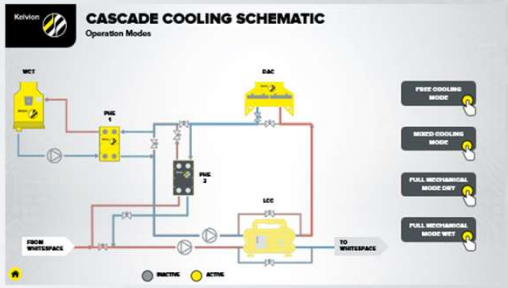












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WET/HYBRID COOLING SOLUTIONS

Fluid Dynamics
Heat Exchange Solutions since 1981

COOLING CAPACITY PER MODULE

200kW | 1MW | 2MW | 3MW | 5MW | 10MW | 50MW+

V-BANK SPRAY

V-BANK PAD

V-BANK HYBRID

UTILITY FLATBED | MEGA BAY SPRAY

UTILITY FLATBED | GIGA BAY SPRAY

PRE-ASSEMBLED

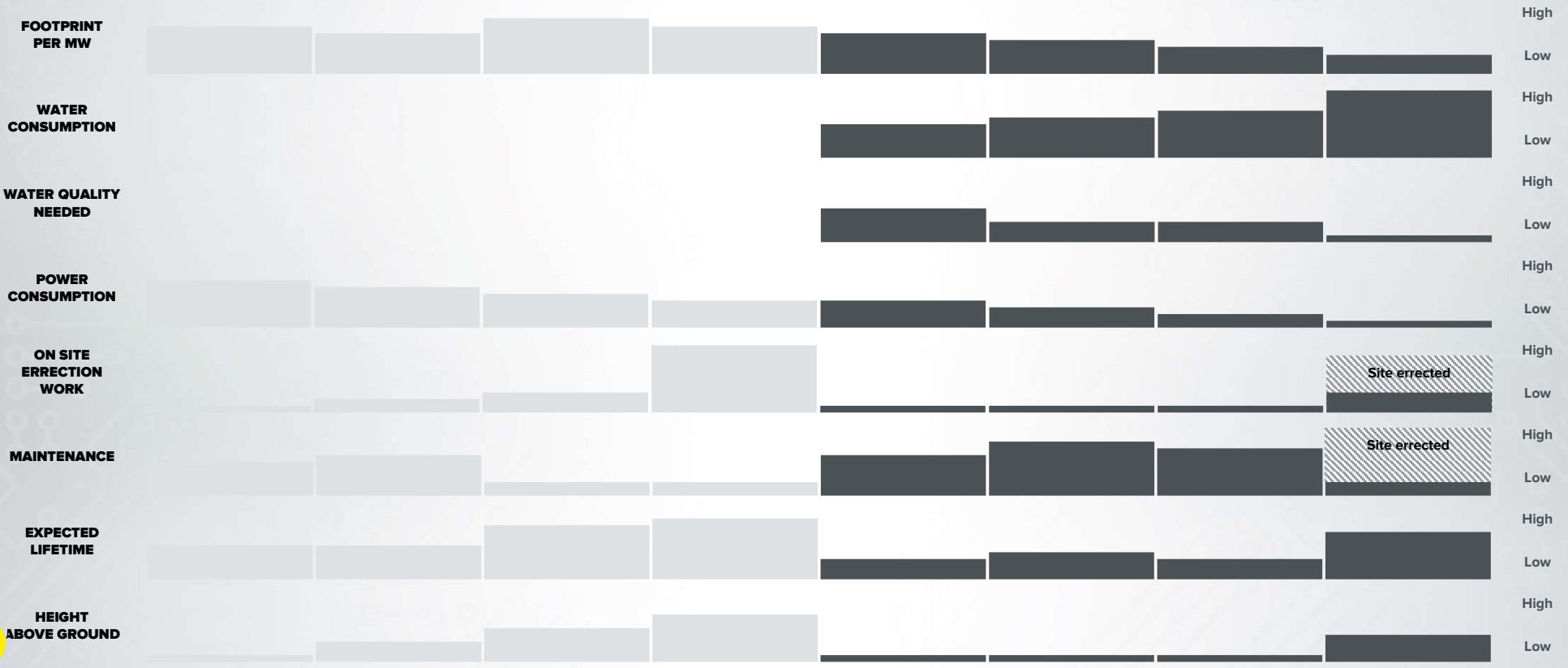
MODULAR COOLING TOWERS

Kelvion

HEAT REJECTION | WET COOLING

Criteria Matrix

Fluid Dynamics
Heat Exchange Solutions since 1981



WET COOLING WITH ADIABATIC SYSTEMS

HVAC Scale

Fluid Dynamics
Heat Exchange Solutions since 1981

ELECTRIC

STANDARD DRYCOOLER

ADIABATIC SPRAY

ADIABATIC PAD

HYBRID COOLER

COOLING TOWER

WATER

For given ambient conditions.

COOLING TECHNOLOGY COMPARISON

Fluid Dynamics
Heat Exchange Solutions since 1981





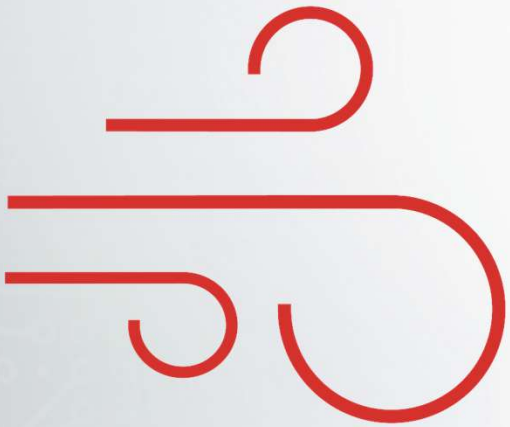

	DRY COOLING	ADIABATIC SPRAY	ADIABATIC PAD	HYBRID	CASCADE	COOLING TOWER
APPROACH	4 - 5K to DB	4 - 5K to Inlet Air	4 - 5K to Inlet Air	4K to DB | 2K to WB (<WB w/dir. cooling)	2K to WB	2K to WB
ADIABATIC EFFICIENCY	-	Up to 60% (LP) Up to 80% (HP)	Up to 95%	Up to 95%	Up to 100%	Up to 100%
WATER QUALITY	-	Potable & Filtered	Grey Water	Grey Water	Poor Water Quality Sea Water	Poor Water Quality Sea Water
WATER CONSUMPTION	-	1 (HP) / 2 (LP)	3	4	5	6

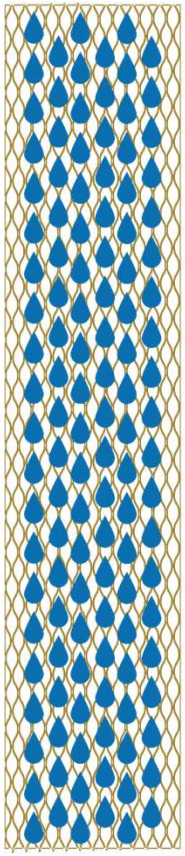
WHAT IS ADIABATIC?

Fluid Dynamics
Heat Exchange Solutions since 1981

Adiabatic cooling is the process of **reducing** temperature through a **change** in air **humidity**

To **evaporate** water, **energy** in form of **heat** is required. This **evaporation energy** is extracted from the ambient air which **cools** it.





WARM DRY AIR

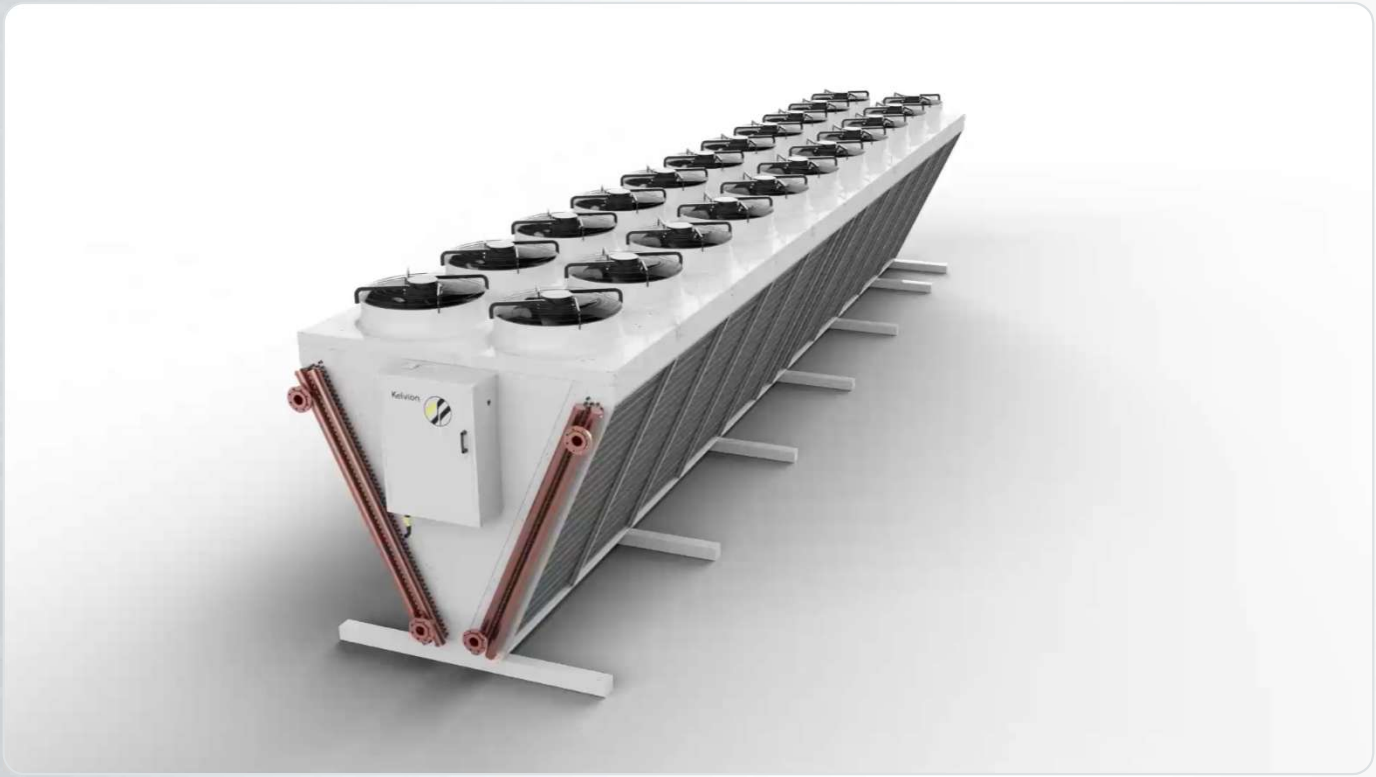
COOL & HUMID AIR

Kelvion

ADIABATIC SPRAY SYSTEM

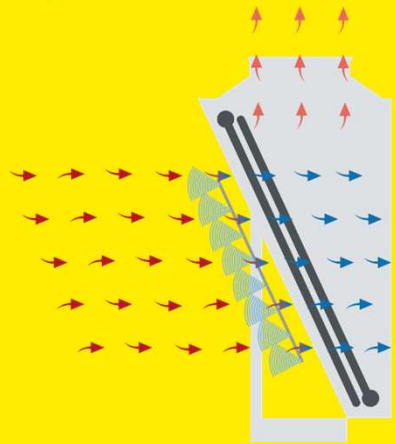
HVAC Scale

Fluid Dynamics
Heat Exchange Solutions since 1981



KEY FEATURES

- More Free Cooling per year
- Smaller Footprint
- Less Water Consumption than Adiabatic Pad System
- 95% Evaporation in the Air
- Not on the coil
- Reduced fouling
- Booster pumps and Actuated Flow Valves
- 30-years of Expertise with Adiabatic Systems



The evaporating energy of water is used to cool the incoming air.

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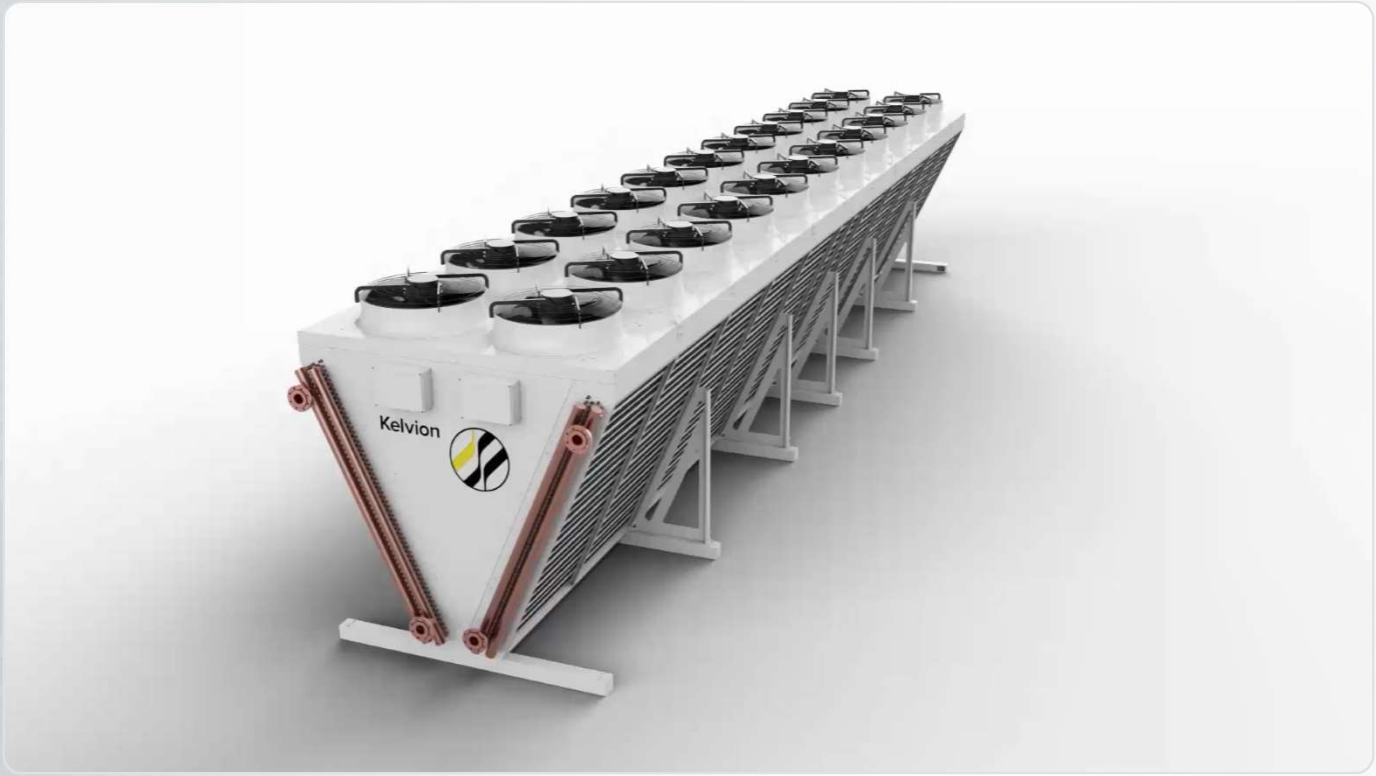
ADIABATIC PAD SYSTEM

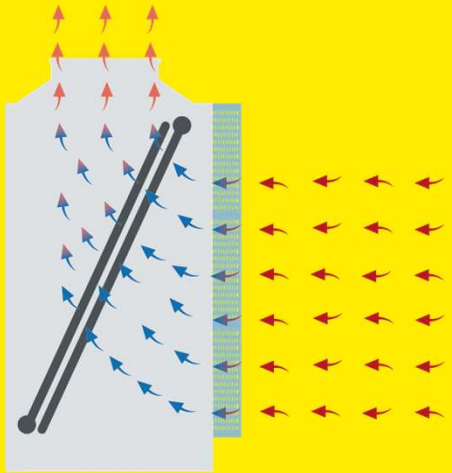
HVAC Scale

Fluid Dynamics
Heat Exchange Solutions since 1981



KEY FEATURES

- More Free Cooling per year
- Smaller Footprint
- Recirculation Pump
- Reduced Water Loss
- Easy Install and Removal
- Dirt and Debris Screens
- Extend Pad Service Life
- 30-years of Expertise with Adiabatic Systems



The evaporating energy of water is used to cool the incoming air.

Kelvion

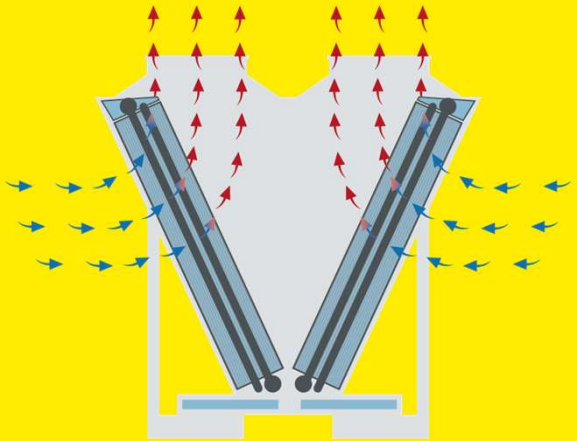
HYBRID V-BANK COOLER

HVAC Scale

Fluid Dynamics
Heat Exchange Solutions since 1981

KEY FEATURES

- Automatic switch from dry to wet mode
- Superior water distribution system ensures uniform wetting of entire coil
- Efficient recirculation system
- Special coating for fin protection
- Perfect balance between water and energy consumption
- Auto drain system and advanced water control management



Switch from DRY to WET whenever it is beneficial & optimizing electrical & water consumption

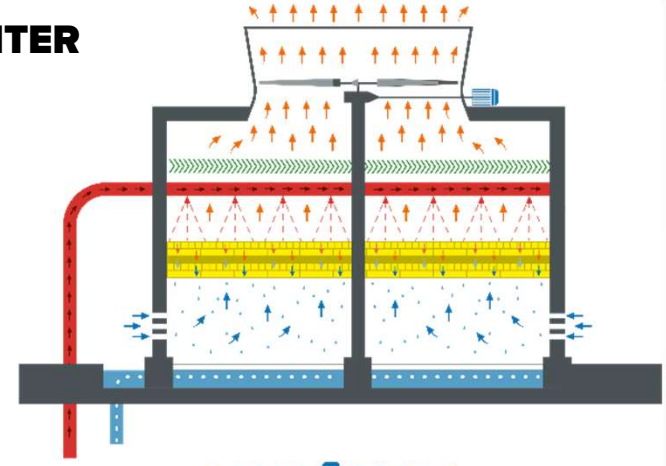
Kelvion

WET COOLING

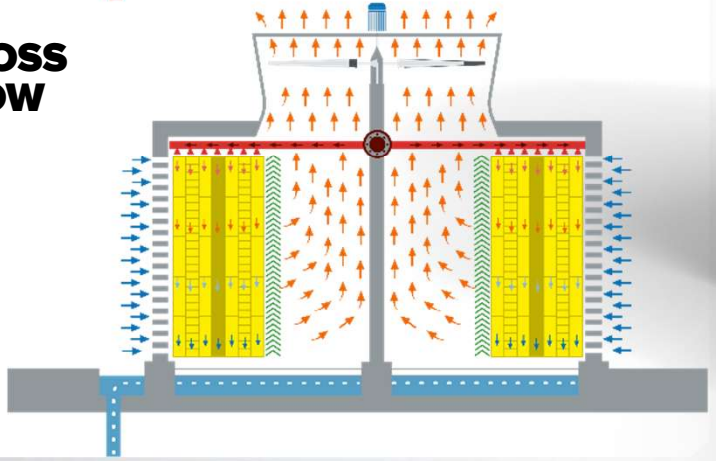
HVAC Scale & Utility Scale

Fluid Dynamics
Heat Exchange Solutions since 1981

COUNTER FLOW



CROSS FLOW



KEY FEATURES

- Capacity 0.5 MW to 100 MW per cell
- Excellent CAPEX/OPEX vs alternative heat rejection methods
- Applicable to all regions
- Minimum approach temp. 2°C
- Various water qualities, incl. sea water, recycled water, lake water

Kelvion

CASCADE COOLING

Utility Scale

Fluid Dynamics
Heat Exchange Solutions since 1981

KEY FEATURES

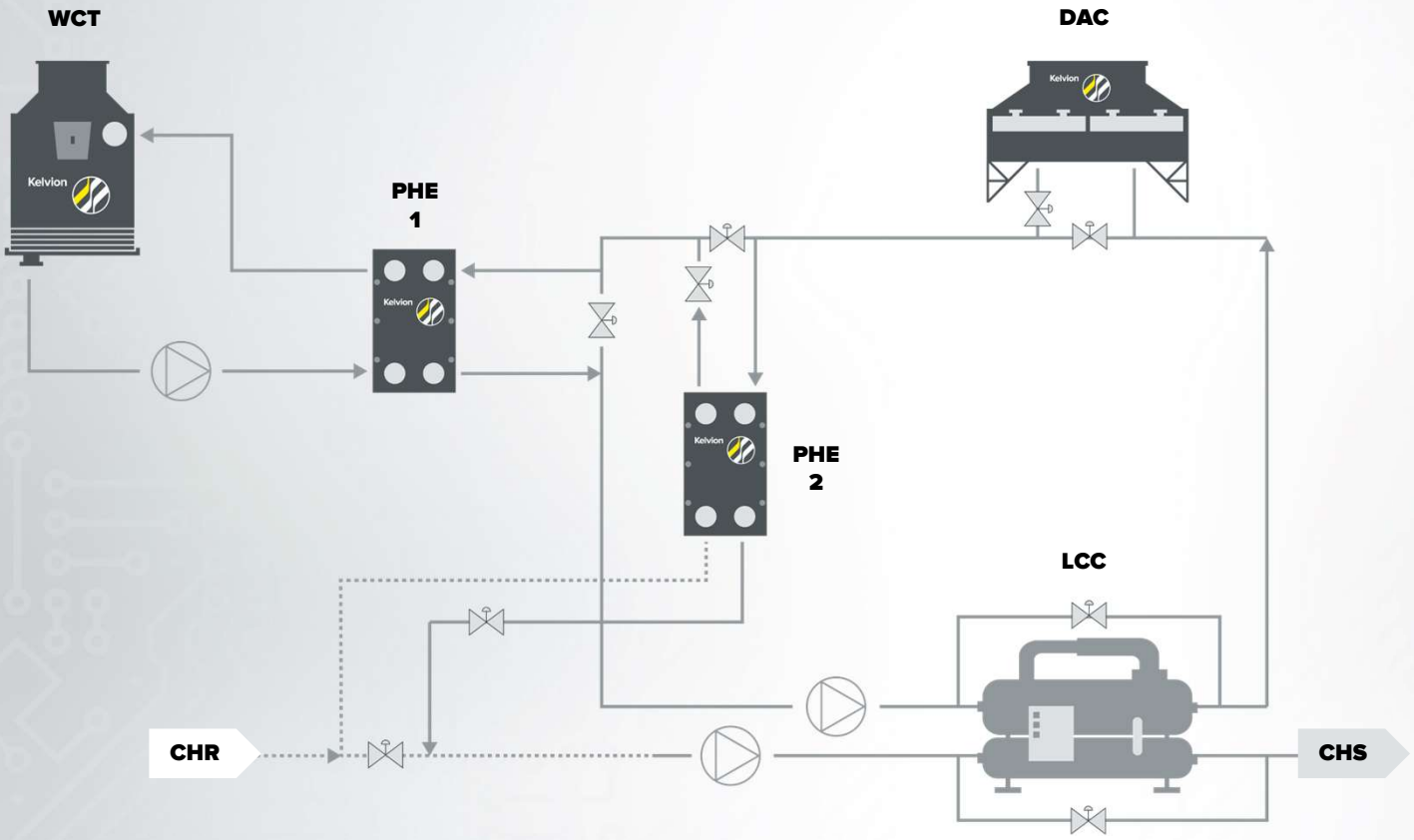
- Combining Dry & Wet Cooling
- Reducing Energy & Water Consumption
- Optimised OPEX / CAPEX

- **Approach of 2K to Wet Bulb** (compared to 4-5K Adiabatic/Hybrid V-Bank)
- **Up to 100% adiabatic efficiency** (compared to 95% Adiabatic/Hybrid V-Bank)
- **Suitable for Poor Water Quality / Sea Water**

- Customised selection to suit application
  - Set water usage preference
  - Design Dry Coolers for reduced water
  - Align Cooling Towers for peak load
  - Process fluid runs in series Dry Cooler to Cooling Tower

CASCADE COOLING SCHEMATIC

Utility Scale



OVERVIEW

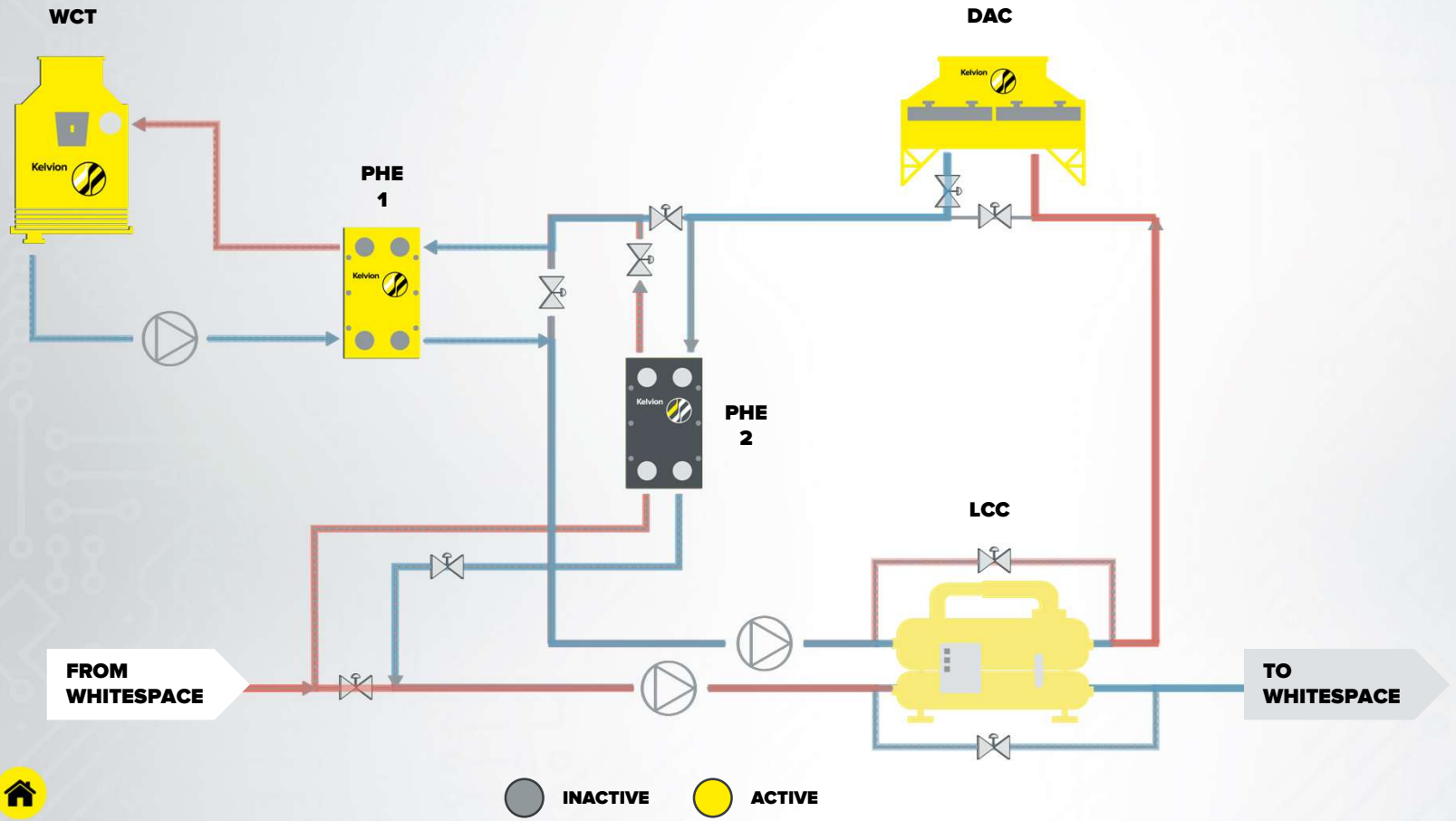
- Heat Rejection in conjunction with Liquid Cooled Chillers
- Mode of operation (power conserving):
  - Free cooling Dry
  - Free cooling wet
  - Mixed mode (cascade + Chiller) Wet
  - Full mechanical mode (Wet)
- Mode of operation (water conserving):
  - Free cooling Dry
  - Mixed mode (Dry + Chiller)
  - Full mechanical mode Dry
  - Full mechanical mode wet
- Bypass valves for control
- **The chiller with the lowest possible Temperature range for condenser (2K T approach CT): minimise compressor lift**

Fluid Dynamics
Heat Exchange Solutions
since 1981

CASCADE COOLING SCHEMATIC

Operation Modes

Fluid Dynamics
Heat Exchange Solutions since 1981



FREE COOLING MODE

MIXED COOLING MODE

FULL MECHANICAL MODE DRY

FULL MECHANICAL MODE WET

KELVION CONTROLS

Overview

Fluid Dynamics
Heat Exchange Solutions
since 1981

KELVION CONTROLS DIGITAL

- Programmable controller
- Detailed system information (fan speed, -power, -status)
- Building Management System (BMS) integration via Modbus RTU or TCP
- Night setback & Scheduler for fan reversal to clean coils
- Emergency mode with capped fan speed override
- Logging
- Dual alarm relays
- Controller bypass
- Multiple languages and unit settings
- 3 levels of PIN code protection for settings

- Optional interfaces BACnet MSTP, IP, Profibus over RS-485 or optical, Profinet

AC, EC & Adiabatic digital controls
for Dry Cooler, Condenser & Gas Cooler

KELVION CONTROLS ANALOG

- Parametric fan speed controller for temperature or pressure
- EC fan control with analogue control signal
- AC fan step control

AC & EC analog controls
for Dry Cooler & Condenser

OEM SOLUTIONS

Overview

Fluid Dynamics
Heat Exchange Solutions since 1981

COILS PORTFOLIO

COILS

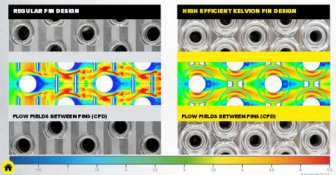
APPLICATION LIMITS

max. operation temperature: 150 °C

max. operation pressure: 90 bar

REGULAR FIN DESIGN

HIGH EFFICIENT KELVION FIN DESIGN

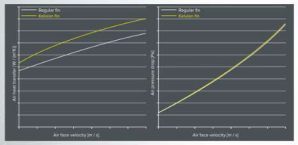


KEY BENEFITS AT A GLANCE

- Advanced and reliable thermal selection capabilities
- Unique and patented high-performance find design
- Excellent customer service and support
- Fast delivery even for 100% custom designed units
- Long life cycle / durability

KELVION FINS

Increased heat transfer at the same level of pressure drop



BETTER BY DESIGN

- State of the art R&D labs
- Using computational fluid dynamics (CFD),
- Innovative, high performance design
- Aerodynamic gas flow between the fins
- Considerably increased heat transfer
- Pressure drop remains at a comparable level
- Considerably higher performance

CERTIFICATES

- ISO 9001
- PED (2014/68/UE)
- PZH (hygienic certificate HK/B/0228/02/2015)
- EAC N RU Д-PL.ПТ08.В.03266

APPLICABLE TUBE SIDE MEDIA

- Water
- Water-glycol
- Thermal oil

APPLICABLE TUBE SIDE REFRIGERANTS

- R744
- R134a
- R404A
- R407C
- R410A
- R1233ze
- R1234yf
- R290
- R32

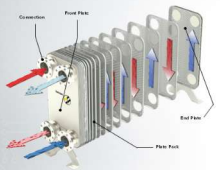
APPLICABLE FIN SIDE MEDIA

- Air
- Natural gas exhaust fumes
- Customized composition of N2, CO2, O2, H2 and water steam

Further media and refrigerants on request

BRAZED PLATE HEAT EXCHANGER

BPHE SPECIFICATIONS



-196 °C 200 °C

-1 bar 140 bar

KEY BENEFITS AT A GLANCE

- Highest flexibility
- Compact design
- Optimal corrugation design
- Wide range of applications
- Solid construction
- Precision-made heat exchanger

GASKETED PLATE HEAT EXCHANGERS

GPHE SPECIFICATION

-30 °C 210 °C

-1 bar 40 bar

KEY BENEFITS AT A GLANCE

- Made to measure for your requirements
- Optimum design for highest efficiency and lowest fouling
- Passloc assembly or a perfectly aligned plate pack
- Ecoloc gasket system for easy & reliable fixation and removal

PLATE HEAT EXCHANGER PLACEMENT

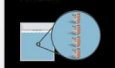
The positioning of plate heat exchangers within a double loop system can make significant differences

Dry Cooler or Adiabatic Dry Cooler

Cooling Tower

Plate Heat Exchanger

CARD LEVEL PLACEMENT

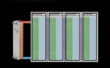


Very small units to be utilized at the card to minimize charge of coolant

RACK/TANK LEVEL PLACEMENT

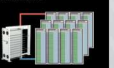
Positioning PHE with additional degree of separation to reduce number of units

AISLE / GROUP LEVEL PLACEMENT



Flexible placement to service an entire aisle for easy maintenance and control

HALL LEVEL PLACEMENT

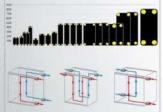


A single PHE unit for the entire hall means fewest number of PHE's but size and scale are more significant

PLATE HEAT EXCHANGER

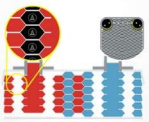
Dealing with the challenges

SPACE CONSTRAINTS



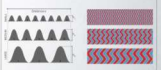
VARIOUS OPTIONS
A full range of connections, sizes and types combined with various pass designs ensures finding the right design for your criteria

REDUCE DOWNTIME



SAFETY CHAMBER
Absorbs the stress from thermal shock and pressure in the port area and prevents internal leaks and premature failure

DEALING WITH DIELECTRIC FLUIDS



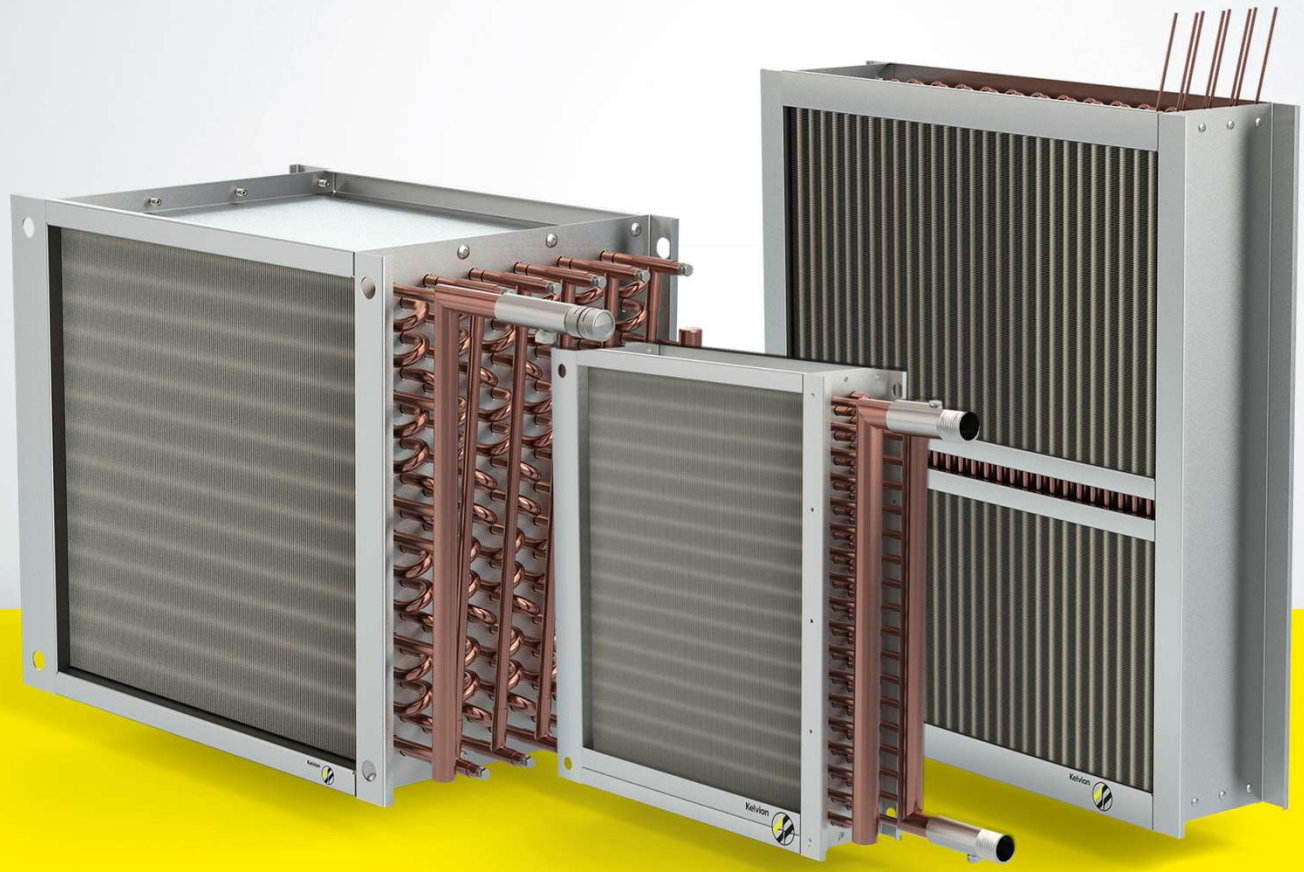
Various media can be used in different gap sizes:

- **Small gaps** can only handle clear and low-viscous media. Even small particles would block the gap.
- **Medium size gaps** are suitable for viscous media or small particles.
- **Large gaps** gently treat highly-viscous media or can handle media containing particles.

Kelvion

COILS PORTFOLIO

Fluid Dynamics
Heat Exchange Solutions since 1981



Kelvion

COILS

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APPLICATION LIMITS

max. operation temperature: **150 °C**

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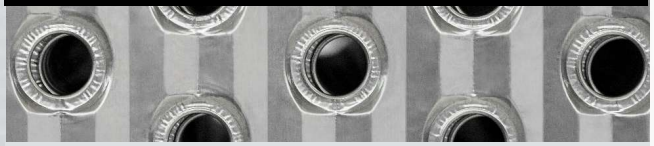
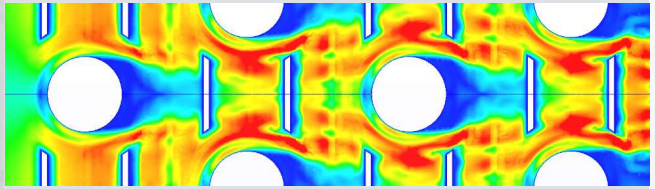
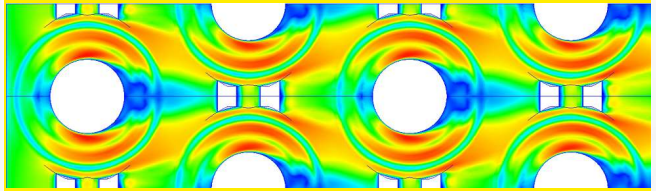
REGULAR FIN DESIGN





FLOW FIELDS BETWEEN FINS (CFD)

HIGH EFFICIENT KELVION FIN DESIGN



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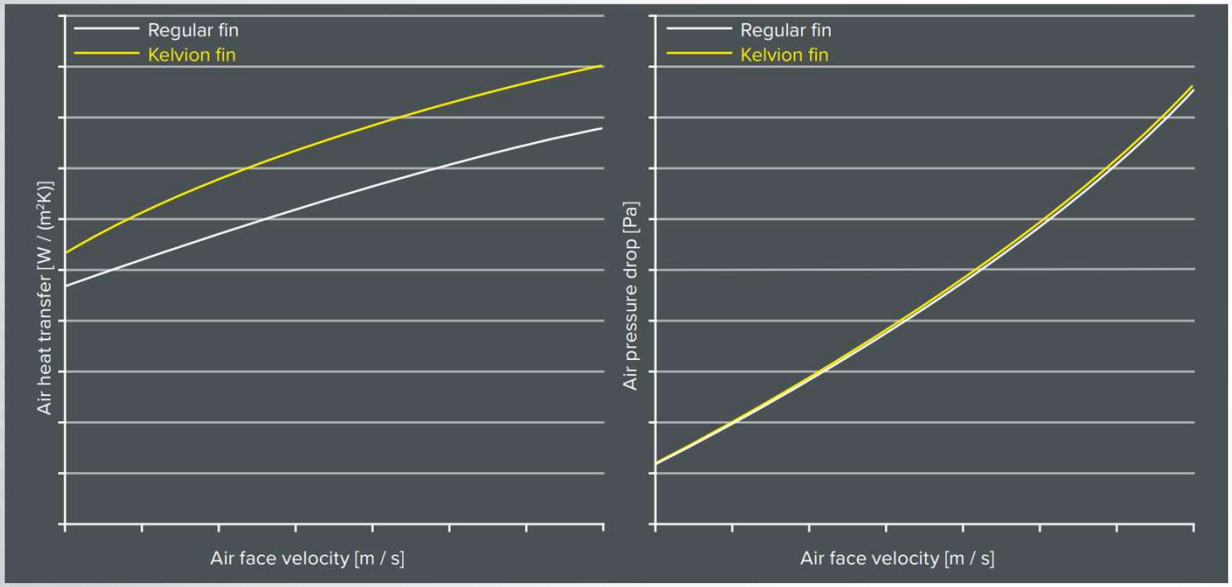
Fluid Dynamics
Heat Exchange Solutions since 1981



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- Water-glycol
- Thermal oil

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- R744
- R13a
- R404A
- R407C
- R410A
- R123ze
- R1234yf
- R290
- R32

APPLICABLE FIN SIDE MEDIA

- Air
- Natural gas exhaust fumes
- Customised composition of N2, CO2, O2, H2 and water steam

Further media and refrigerants on request

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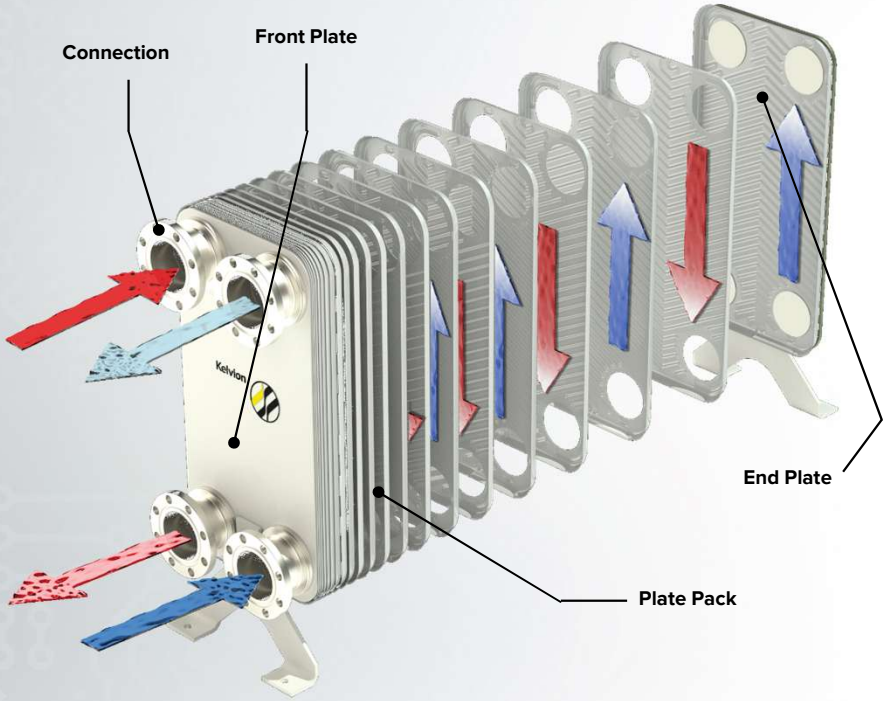
BRAZED PLATE HEAT EXCHANGER

Fluid Dynamics
Heat Exchange Solutions
since 1981

Kelvion

BPHE SPECIFICATIONS

Fluid Dynamics
Heat Exchange Solutions since 1981



KEY BENEFITS AT A GLANCE

- Highest flexibility
- Compact design
- Optimal corrugation design
- Wide range of applications
- Solid construction
- Precision-made heat exchanger

Port size up to DN100 (4”)

-196 °C — **200 °C**

-1 bar — **140 bar**

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GASKETED PLATE HEAT EXCHANGERS

Fluid Dynamics
Heat Exchange Solutions
since 1981

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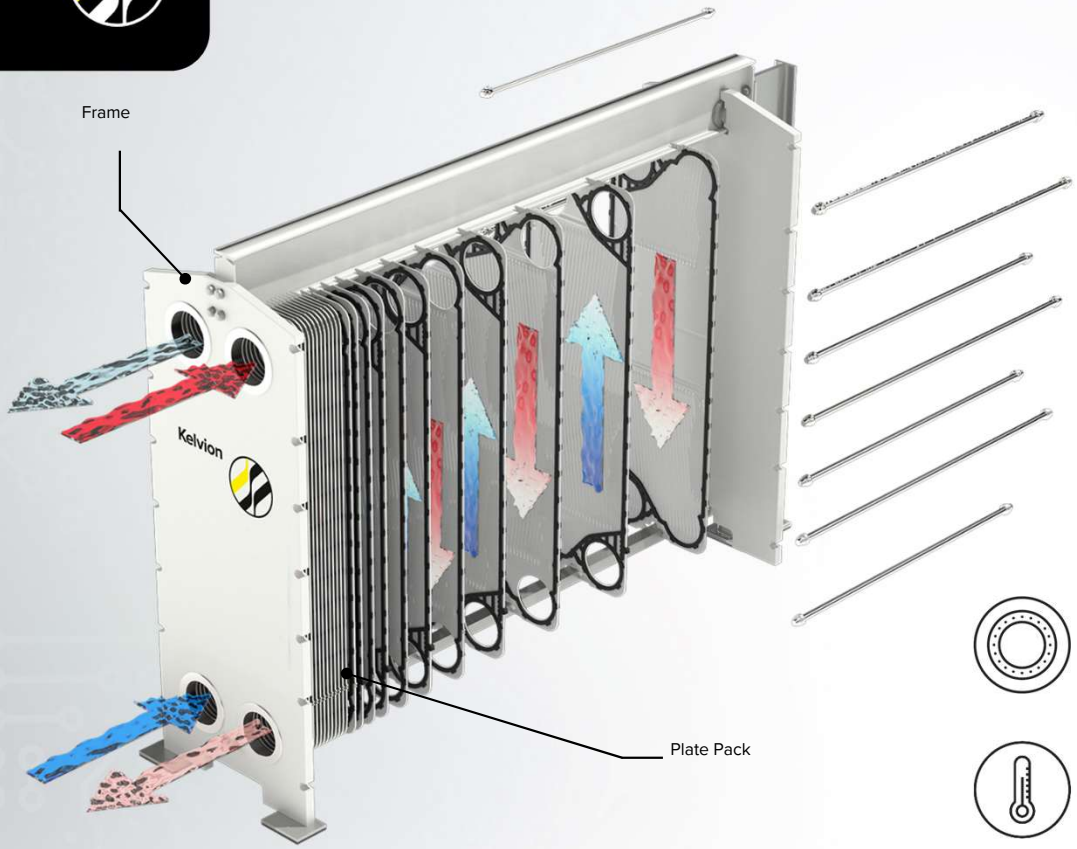
GPHE SPECIFICATION

Fluid Dynamics
Heat Exchange Solutions since 1981



KEY BENEFITS AT A GLANCE

- Made to measure for your requirements
- Optiwave design for highest efficiency and lowest fouling
- Posloc assembly or a perfectly aligned plate pack
- Ecoloc gasket system for easy & reliable fixation and removal

Port size up to DN500 (20”)

-30 °C — **210 °C**

-1 bar — **40 bar**

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PLATE HEAT EXCHANGER PLACEMENT

The positioning of plate heat exchangers within a double loop system can make significant differences

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Dry Cooler or
Adiabatic Dry Cooler

Cooling Tower

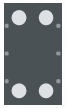
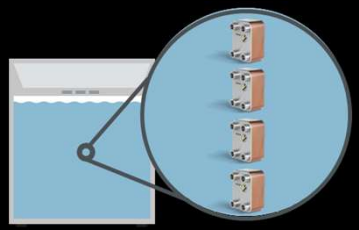


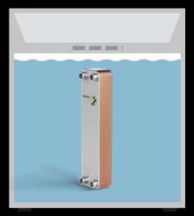
Plate Heat Exchanger

SWITCH LEVEL PLACEMENT



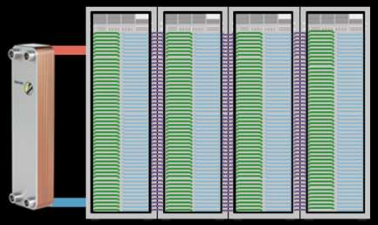
Vey small units to be utilized at the card to minimize charge of coolant

RACK/TANK LEVEL PLACEMENT



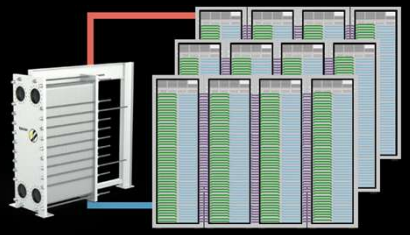
Positioning PHE with additional degree of separation to reduce number of units

AISLE / GROUP LEVEL PLACEMENT



Flexible placement to service an entire aisle for easy maintenance and control

HALL LEVEL PLACEMENT



A single PHE unit for the entire hall means fewest number of PHE‘s but size and scale are more significant

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PLATE HEAT EXCHANGER

Dealing with the challenges

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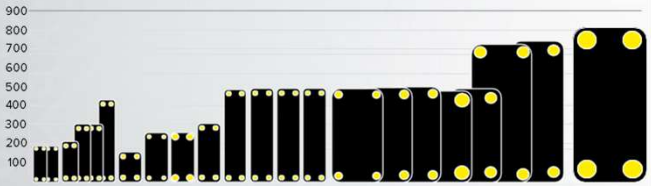
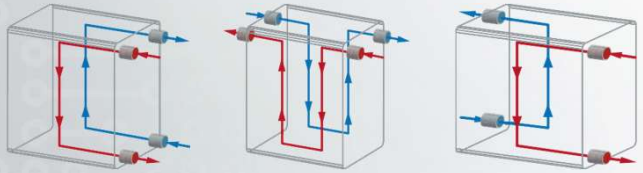
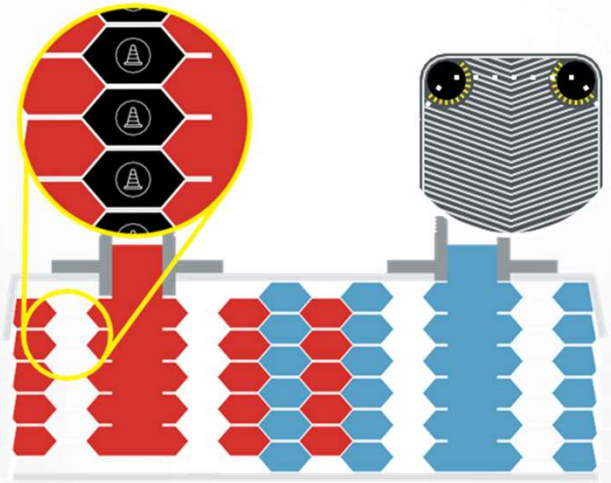
SPACE CONSTRAINTS





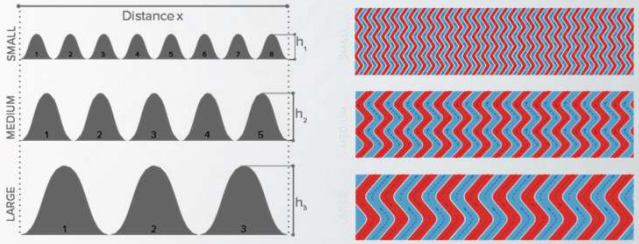
VARIOUS OPTIONS
A full range of connections, sizes and types combined with various pass designs ensures finding the right design for your criteria

REDUCE DOWNTIME



SAFETY CHAMBER
Absorbs the stress from thermal shock and pressure in the port area and prevents internal leaks and premature failure

DEALING WITH DIELECTRIC FLUIDS



Various media can be used in different gap sizes:

- **Small gaps** can only handle clear and low-viscous media. Even small particles would block the gap.
- **Medium size gaps** are suitable for viscous media or small particles.
- **Large gaps** gently treat highly-viscous media or can handle media containing particles.

SERVICE OFFERINGS

Fluid Dynamics
Heat Exchange Solutions since 1981

EARLY LIFE

- Products are delivered safely and fully validated
- Experienced Field Service technicians are at your disposal to investigate and.correct any malfunctions during installation and after the equipment is fully commissioned

REPAIRS, OVERHAULS & MAINTENANCE

- Trained engineers respond quickly in case of an emergency
- Review and reparation of your components
- Overhaul work in our service centers or in situ with supervision of our qualified staff
- Regular inspections and maintenance

SPARE PARTS & SPARE PART SOLUTIONS

- Use of highest quality spare parts, designed to match the excellence of the originals
- This ensures that the optimum interaction between components is maintained
- By safeguarding the original design: maximum security of your investment

MONITORING, CONSULTING & TRAINING

- Knowledge of the equipment's condition allows a reliable production, improves safety and energy efficiency, increases equipment lifetime and prevents breakdowns
- Offering of consultancy services
- Close collaboration with our customers

UPGRADES & REPLACEMENTS

- Replacement of components to keep heat exchangers running smoothly and to prevent downtime
- Suitable upgrades for obsolete parts due to age
- Offering of new, state-of-the-art technology

SERVICE PACKAGES

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Heat Exchange Solutions since 1981

SUPPORT PACKAGE

PERIODIC INSPECTION

- Visual inspection of heat exchanger

HELPDESK

- Prioritized telephone/Email assistance during normal working hours
- Service technician callout during working hours

SPARE PARTS

- Recommended spare part list with fixed pricing

CORRECTIVE PACKAGE

PERIODIC INSPECTION

- Visual inspection of heat exchanger
- Audits - Performance and power measures incl. recommendation for corrective actions

HELPDESK

- Telephone/Email assistance during normal working hours
- Service technician callout during working hours
- Unique contact person

SPARE PARTS

- Recommended spare part list with fixed pricing
- Check of recommended spare parts during periodic inspection

TRAINING

- Operator training incl. troubleshooting

PREVENTIVE PACKAGE

PERIODIC INSPECTION

- Visual inspection of heat exchanger
- Audits - Performance and power measures incl. recommendation for corrective actions
- Preventive analysis - Periodic remote collection and interpretation of data; Periodic recommendations on performance improvements

HELPDESK

- Helpdesk 24/7
- Callout 24/7 with 8 hr response time

SPARE PARTS

- Recommended spare part list with fixed pricing
- Check of recommended spare parts during periodic inspection
- Stocking of critical spare parts

TRAINING

- Operator training incl. troubleshooting
- Maintenance training

Kelvion

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YEARS OF EXPERTISE 100+

EXPERTS IN HEAT EXCHANGE SINCE 1920