MARLEY Olympus**MAX**®

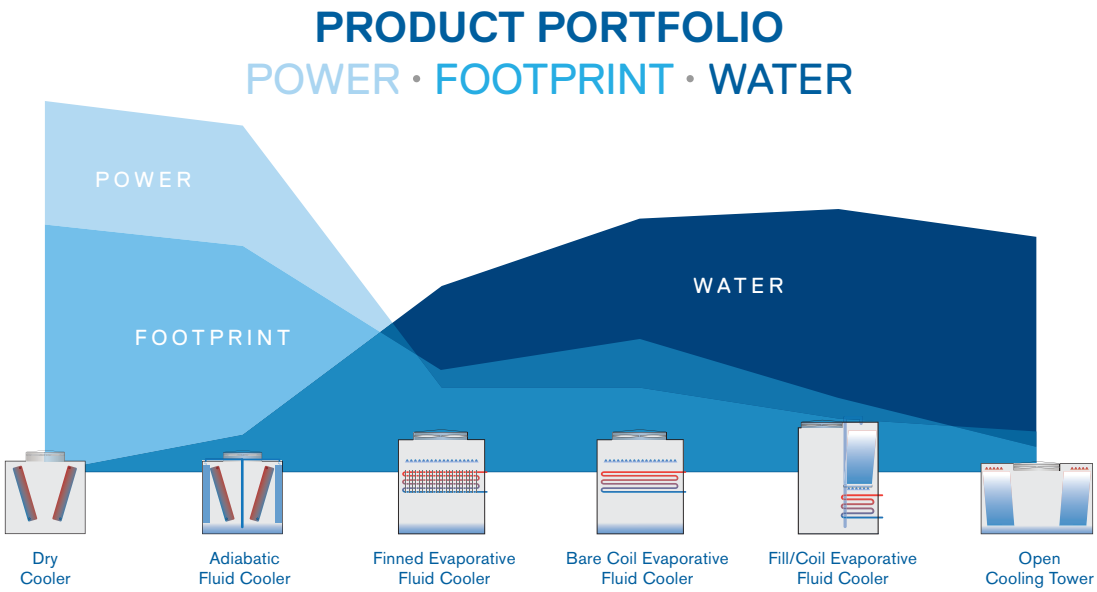
The Peak of Fluid Cooler Performance



MARLEY®

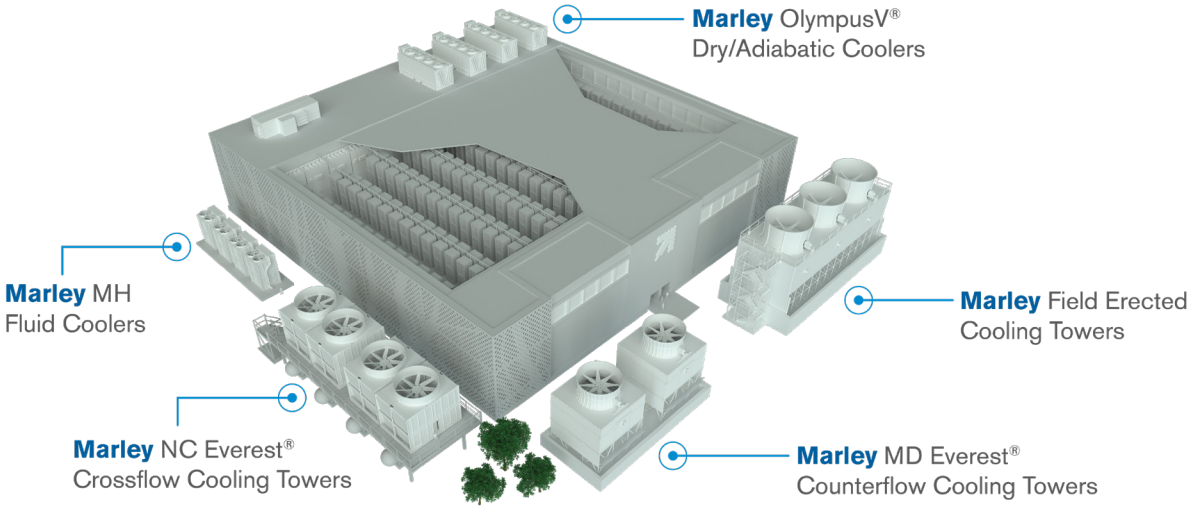
Balancing Energy and Water

No single heat rejection solution is right for all applications. Selecting the right product involves trade-offs between energy consumption, water usage, footprint and other site-specific concerns. Our experienced Marley representatives can help you select the optimal product for your application, whether you're building from the ground up or scaling up your cooling needs.



Full Range of Product Solutions

With a full portfolio of options, Marley dry fluid coolers, adiabatic fluid coolers, evaporative fluid coolers and evaporative cooling towers will make your selection process easier with single-supplier solutions for your mission-critical facilities.



The Peak of Fluid Cooler Performance



Flexible Design Options
Offered as both dry and adiabatic fluid cooler configurations, with post-installation, bolt-on adiabatic kit option available.

Simplified Installation
Controls are factory assembled with electrical station access platform fully assembled and a single-point wiring connection to the unit.

Improved Efficiency
Unique recirculating water system minimizes water use, improves adiabatic efficiency, limits scaling and helps extend pad life.

Optimized Energy Usage
User-friendly control system included to regulate water/energy usage, with option to convert dry units to adiabatic in the field.

CTI Certified Thermal and Sound Performance
The OlympusMAX is CTI Thermal and Sound certified, ensuring specified heat rejection and noise levels with the long-term reliability expected from Marley.

Built for Uptime
Quality materials, robust construction methods and proven mechanical equipment designed for lasting performance and reduced downtime.

High Density
Designed to maximize dry cooling capacity for available footprint.

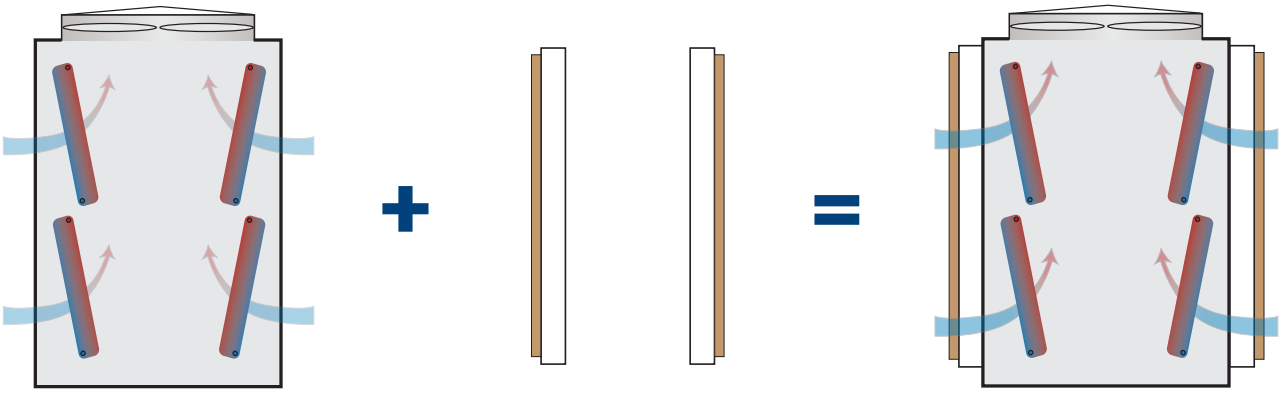
Mission-Critical Design

- Extended heat rejection capabilities over 131F (55C)
- High-density design maximizes usable space–available in 120, 160, 200 and 240hp versions
- Safer, easier access to all potential failure points, including interior mechanicals and control panels
- Unique upgrade option allows your facility to expand units from dry to adiabatic with in-field conversion package
- Integrated redundancy on mission-critical components like fans and VFDs

Design Element	Detail
Unit Sizes	Double Stacked, Modular 4 Fan
Air Flow Type	Induced Draft, Vertical Discharge
Fans	High-efficiency Low Sound or Ultra Quiet Gear-driven
Drive System	Marley Geareducer® gear drive
Motors	Premium Efficiency TEFC
Coil Construction	Stainless steel or copper tube and aluminum or coated aluminum fin
Unit Construction	Galvanized steel with stainless steel wet areas; all stainless steel option
Adiabatic Design	Pad/Media – Recirculating (adiabatic units only)
Water System	Integral Recirculating Pump (adiabatic units only)

Bolt-On Flexibility

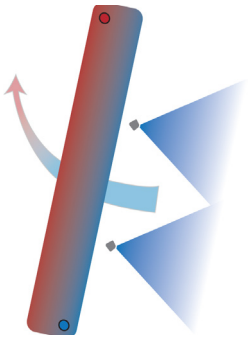
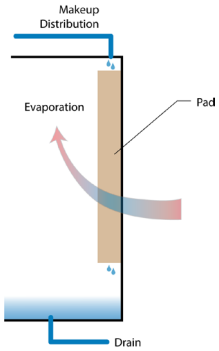
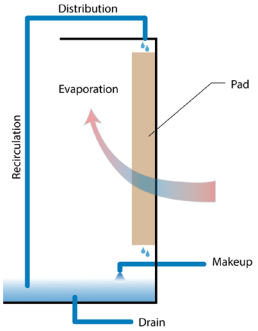
The innovative construction of the Marley OlympusMAX allows for the recirculating adiabatic pre-cooling system to be installed in the field, providing more flexibility on cooling capacity. This option allows for applications initially specified as dry to be converted to adiabatic later by using an easy-to-install bolt-on kit as cooling demand increases.



Dry Cooler + **Bolt-On Adiabatic Pad Assembly** = **Adiabatic Fluid Cooler**

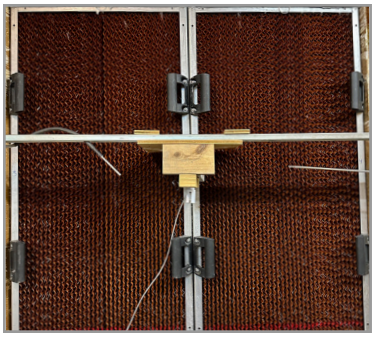
Optimized Adiabatic Design

The OlympusMAX recirculating design collects and reuses water in the adiabatic system, decoupling water distribution from water usage. The design allows users to dial in water capacity by cell to further optimize usage.

	Spray	Once-through Pad	Recirculating Pad
			
Strengths	▪ Simple design ▪ Carryover on coil improves performance	▪ No recirculation pumps ▪ No water management	▪ Reduced water use ▪ Higher flow rate across coils ▪ More adiabatic pre-cooling
Weaknesses	▪ Lowest saturation efficiency ▪ Evaporation of carryover water leaves minerals on coil	▪ High amount of wasted water (high flow) OR reduced capacity (low flow)	▪ Higher weight ▪ More water system components

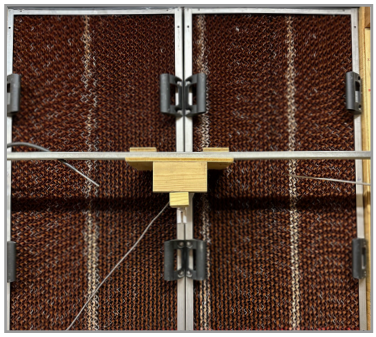
Efficient Water Delivery

Higher flow rates typically associated with recirculation systems help limit dry spots and ensure uniform wetting of the pad, maximizing efficiency and lengthening pad life. Recirculating systems also limit total water usage; once-through or spray systems typically run lower flow rates or risk excessive water use.



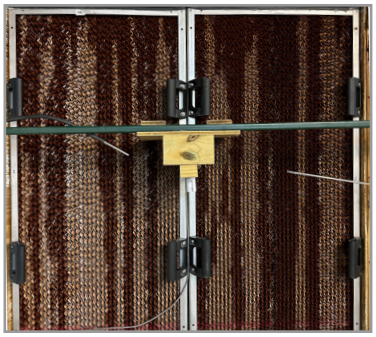
Recirculating, higher water delivery rate

Higher delivery rate extends pad life



Recirculating, lower water delivery rate

Scale deposits form faster, hurts efficiency and lessens pad life

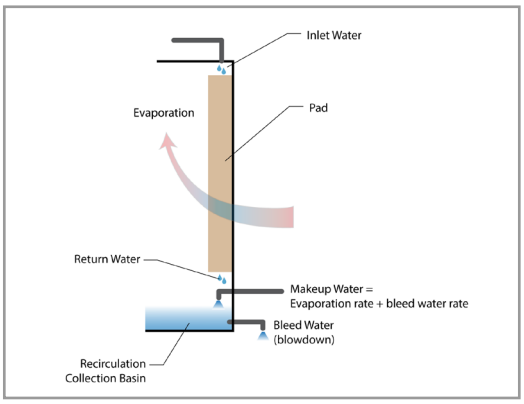


Once-through, very low water delivery rate

Incomplete wetting hurts efficiency – more water needed, more fan energy

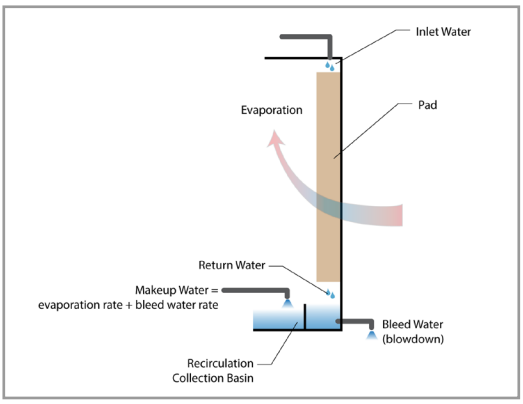
Unique Recirculation System Design – *Patent Pending*

Traditional designs pull from a mixture of blowdown and makeup water, but Marley's adiabatic design segregates the two streams to minimize wasteful discharge of cleaner water and ensure the most concentrated stream is rejected.



Traditional Design
(Blowdown from Common Sump)

Blowdown is taken from diluted water mixture in basin

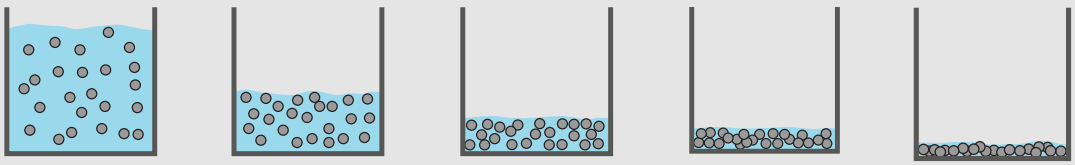


Marley Design
(Blowdown from Pad)

Blowdown is taken from concentrated water off the pad

How do Cycles of Concentration Work?

Cycles of Concentration (COC) measure how efficiently water is used in an evaporative cooling system. Higher cycles mean less water waste and lower costs - but require proper water treatment to avoid scale and corrosion.



Makeup | **2 COC** | **4 COC** | **6 COC** | **10 COC**

M = E + B

Makeup = Evaporation + Blowdown

B = E / (COC-1)

Blowdown = Evaporation / (Cycles of Concentration - 1)

COC = M / B

Cycles of Concentration = Makeup / Blowdown

Trusted Performance

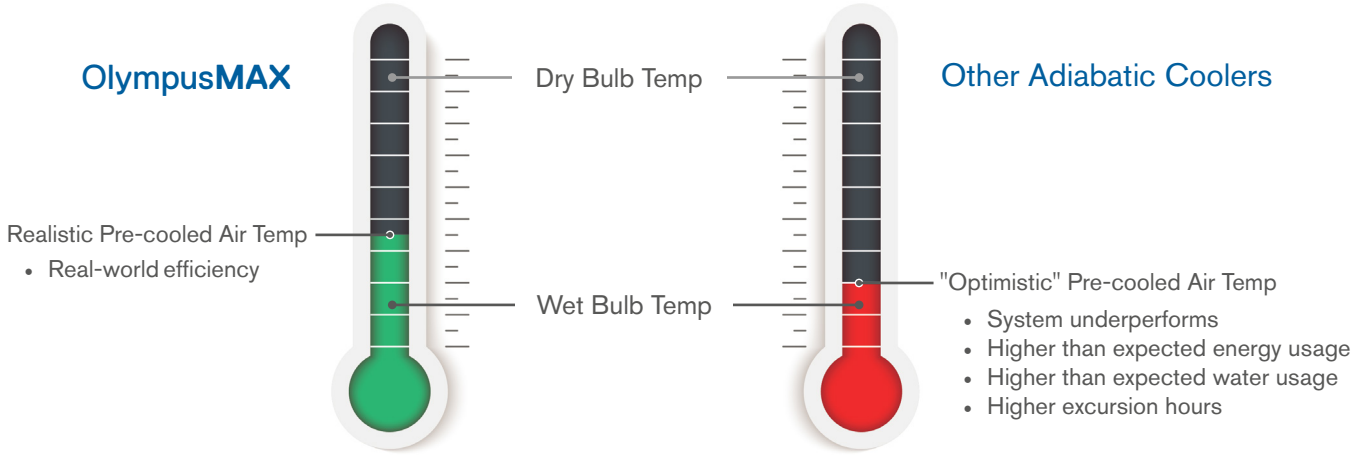
Real Efficiency. Real Results.

Unlike many adiabatic systems that assume ideal conditions, the Marley OlympusMAX Fluid Cooler is engineered and rated using real-world saturation efficiencies. This ensures:

- Reliable performance ratings
- Accurate energy and water consumption estimates
- Reduced frequency and severity of temperature excursions

CTI Certified Thermal and Sound Performance – Offering exceptional thermal and sound performance, the OlympusMAX design is CTI Thermal and Sound Certified, ensuring specified heat rejection and noise levels are delivered with confidence.

Engineers and owners need data they can trust – especially when specifying mission-critical cooling systems.



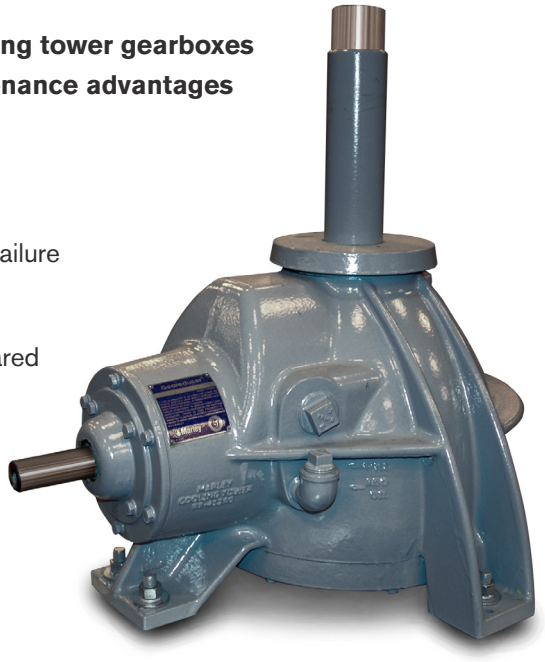
Saturation Efficiency is a measure of how effectively the air is precooled by the adiabatic system.

- Determines pre-cooled air temperature for unit sizing
- Realistic values (6" pad depth) typically range from ~60% to ~75%
- Varies with pad depth, pad design, air velocity and water rate

$$\% = \frac{\text{(Dry Bulb – Pre-cooled Dry Bulb)}}{\text{(Dry Bulb – Wet Bulb)}} * 100$$

Reliable Gear Drives and Motors

The Marley Geareducer® has set the standard for excellence in cooling tower gearboxes since introduced in 1935. Marley gear drives offer significant maintenance advantages and proven reliability through decades of performance.



ENGINEERED RELIABILITY & SIMPLIFIED MAINTENANCE

- Warranted for a full five (5) years, regardless of service hours, against failure from oil degradation
- Gear sets are AGMA Quality Class 9 to 11, increasing gear life compared to lower quality class gear sets
- Heavy-duty gray cast iron castings with epoxy coatings ensure long life in a humid cooling tower environment
- Five-year oil change interval with Marley Gearlube can save thousands in maintenance costs compared to belt-driven systems
- Options available for oil level monitoring, enhanced corrosion protection, premium seals and more

Proven & Durable Fan Blades

Marley OlympusMAX offers two optimized fan options to meet customer requirements for sound, performance and cost.



Low-Sound Fan

The standard low-sound, high-efficiency X7 axial fan has adjustable-pitch fan blades to permit maximum utilization of rated horsepower – allowing field adjustments to optimize performance.



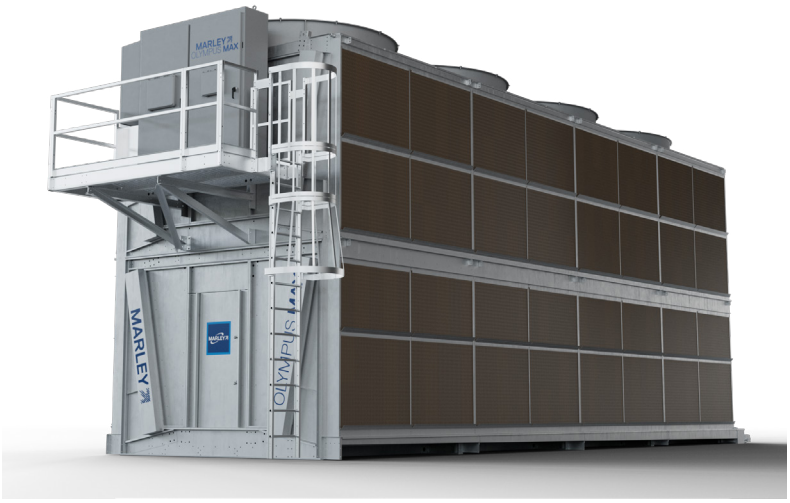
Ultra Quiet Fan

The Ultra Quiet Fan uses a wide-chord blade design well suited for low sound operation, delivering superior air flow and pressure capability at reduced speed. Blades can be rotated easily to achieve necessary pitch for precise utilization of fan horsepower.

NOTE: The Ultra Quiet Fan has an extended fan cylinder and fan blade which must be installed in the field.



OlympusMAX Dry Fluid Cooler



OlympusMAX Adiabatic Fluid Cooler



Ease of Installation

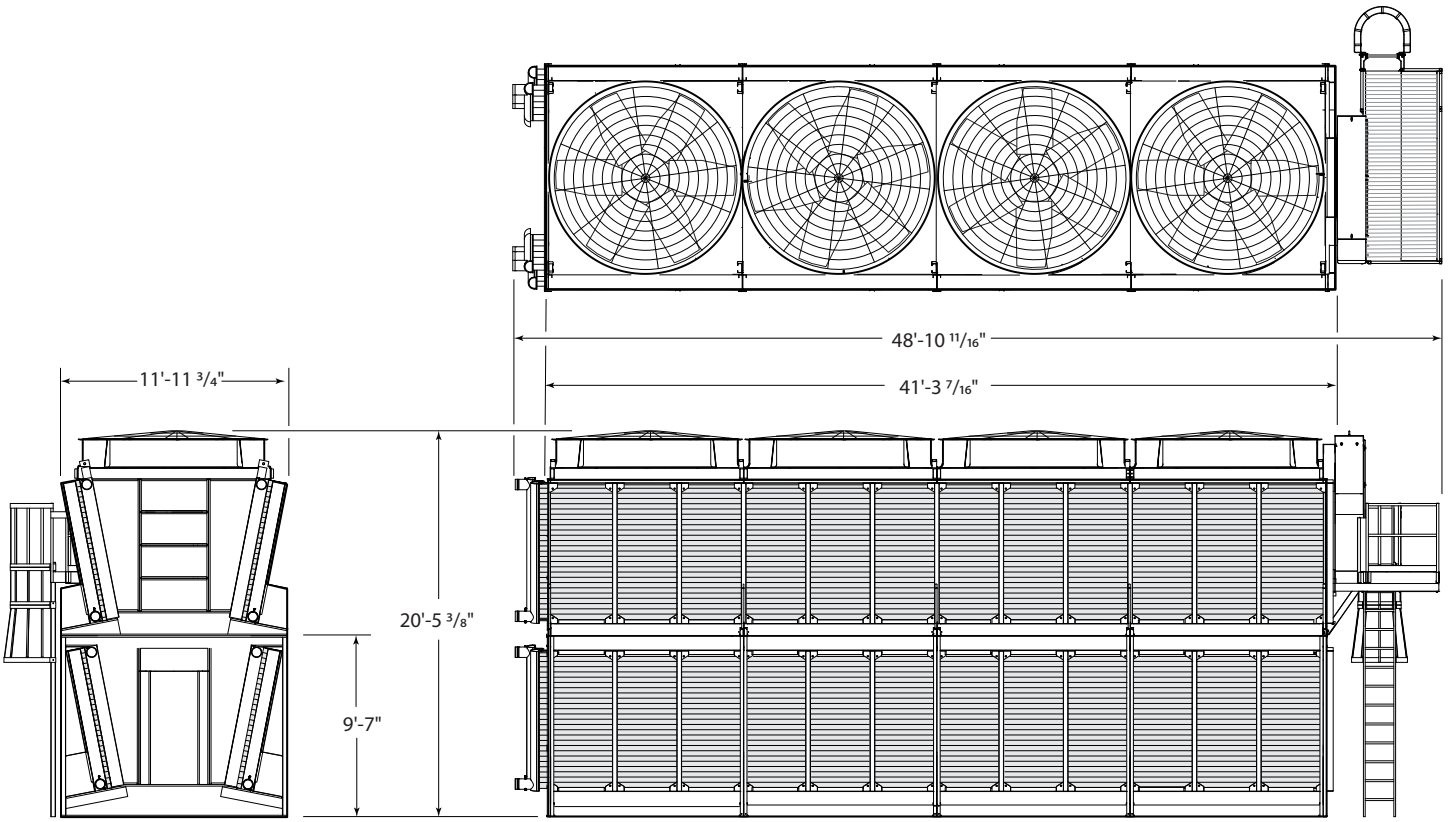
- Single-point power and wiring connections between top and bottom module
- Electrical panel access platform ships assembled and installed on the unit as standard
- VFD and control panel ship installed on unit with Programmable Logic PLC controls
- Off-shelf components (MEP) for ease of future replacement retrofits/upgrades

Safer, Easier Service and Access

- Full-size access doors and internal walkways making regular inspections easier
- Safe and durable platform for easy access to control panels
- Geareducer motors facilitate reliable long-term operation

Product Data – Dry

Marley® OlympusMAX™ Dry Fluid Cooler

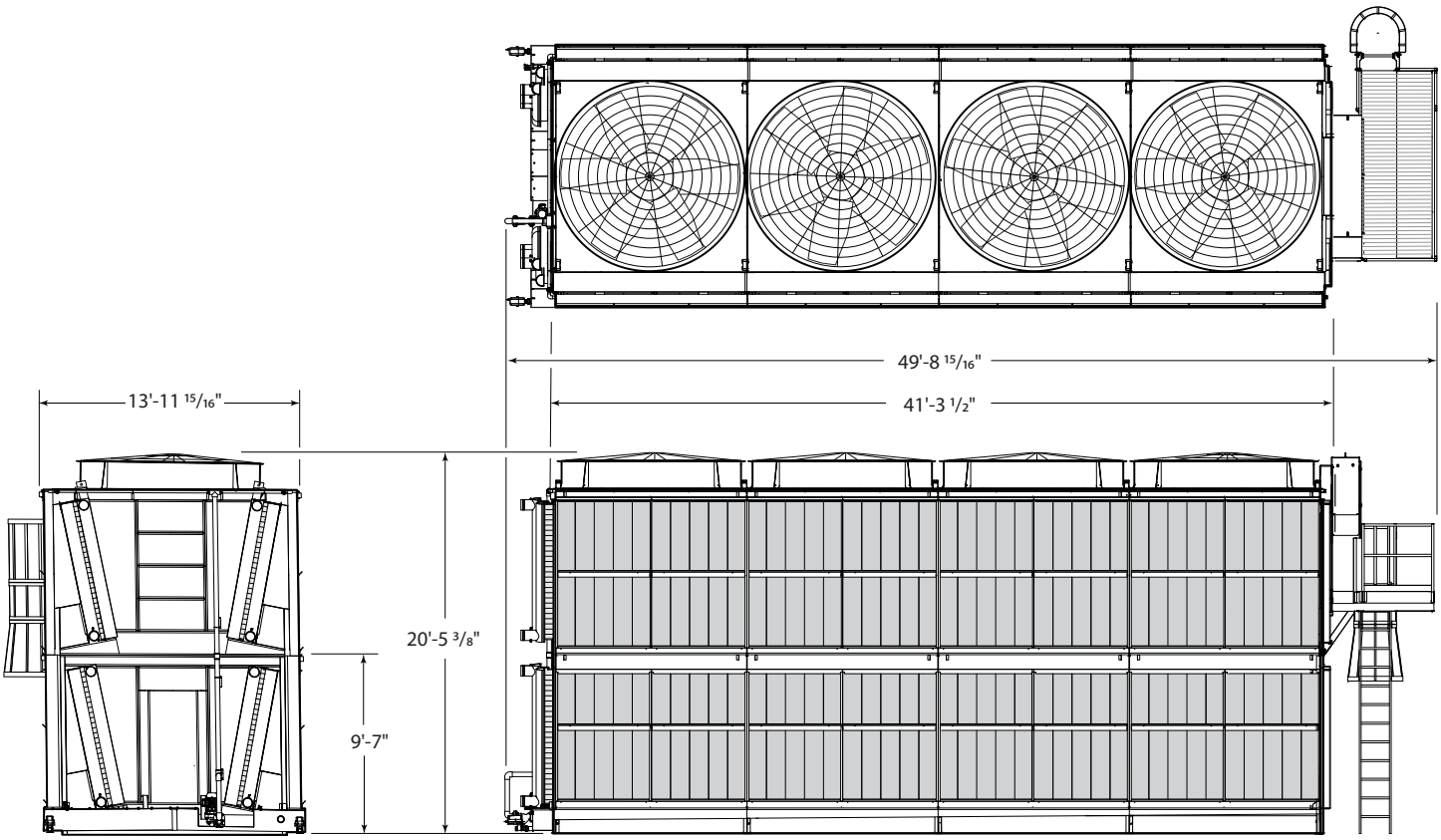


Unit Model (note 2)	Fan Qty	Heat Rejection (note 3)	Fan Motor	Airflow Rate	Shipping Weight	Heaviest Lift	Design Operating Weight	Coil Volume
DWSA4S	4	7,984 MBH	30 hp (22.4 kW)	572,900 CFM	58,900 lb	34,700 lb	66,200 lb	882 gal
DWSA4T		8,494 MBH	40 hp (29.9 kW)	617,700 CFM				
DWSA4U		9,038 MBH	50 hp (37.3 kW)	665,400 CFM				
DWSA4V		9,553 MBH	60 hp (44.8 kW)	710,900 CFM				

NOTE
1. Use this bulletin for preliminary layouts only. Obtain current drawings from your Marley sales representative.
2. Additional configurations available beyond those shown. Consult CoolSpec™ Product Selector for selection details.
3. Heat Rejection while operating dry at 115F-105F-95F. This is the CTI standard rating condition for dry coolers.

Product Data – Adiabatic

Marley® OlympusMAX™ Adiabatic Fluid Cooler



Unit Model (note 2)	Fan Qty	Heat Rejection (note 3)	Fan Motor	Airflow Rate	Pump Motor	Shipping Weight	Heaviest Lift	Design Operating Weight	Coil Volume
VWSA4S	4	9,690 MBH	30 hp (22.4 kW)	553,600 CFM	1.5 hp	66,200 lb	38,000 lb	76,100 lb	882 gal
VWSA4T		10,117 MBH	40 hp (29.9 kW)	598,200 CFM					
VWSA4U		10,543 MBH	50 hp (37.3 kW)	644,000 CFM					
VWSA4V		10,900 MBH	60 hp (44.8 kW)	687,000 CFM					

NOTE
1. Use this bulletin for preliminary layouts only. Obtain current drawings from your Marley sales representative.
2. Additional configurations available beyond those shown. Consult CoolSpec™ Product Selector for selection details.
3. Heat Rejection while operating at 105F-95F-95F-75F. This is the draft CTI standard rating condition for adiabatic coolers.



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