MSP TECHNOLOGY

PROUD MEMBERS OF THE UNITED STATES GREEN BUILDING COUNCIL

INTRODUCTION

Mechanical dehumidification systems work by cooling air below its dew point temperature and then reheating the air to avoid overcooling. A simple method to accomplish dehumidification is by using the cold side of a refrigeration system to cool the air and the warm side to reheat the air.

More advanced systems use heat exchangers to precool air and reduce the load and energy draw on the refrigeration system. The efficiency of these heat exchangers controls the amount of precooling and energy savings. The most common form of heat exchangers is plate and heat pipe.

Plate heat exchangers offer significantly higher efficiencies when compared with heat pipes, yet heat pipes have enjoyed greater popularity. The reason; heat pipes although inefficient, are compact and plates have been notoriously bulky.

MSP has solved this problem with Multiple Small Plate (MSP) Technology. This truly unique technology is a quantum leap in energy efficiency that comes at a time when it is sorely needed. The slides that follow this introduction will help to explain the benefits of MSP® Technology and the MSP® Dehumidifying Coil.

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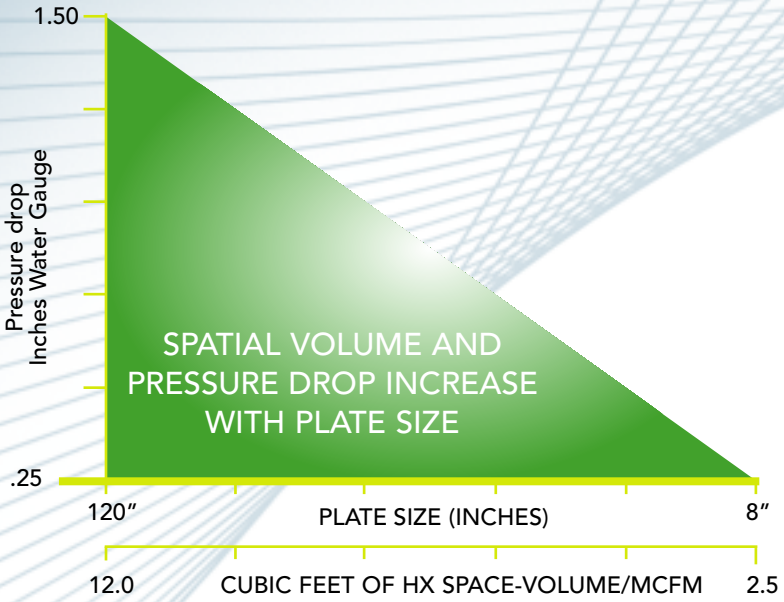
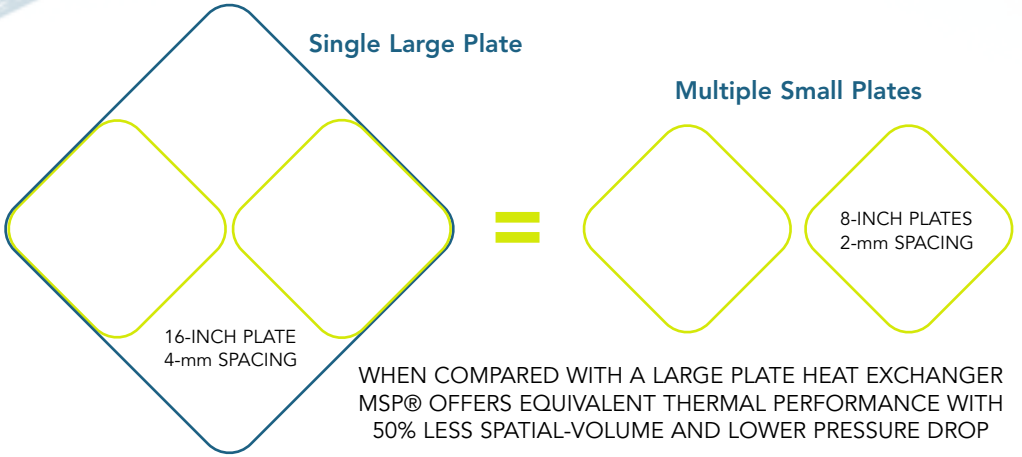
MULTIPLE SMALL PLATES VS. SINGLE LARGE PLATE





WHEN COMPARED WITH A LARGE PLATE HEAT EXCHANGER
MSP® OFFERS EQUIVALENT THERMAL PERFORMANCE WITH
50% LESS SPATIAL-VOLUME AND LOWER PRESSURE DROP

GENERAL RULES FOR PLATE HEAT EXCHANGERS:

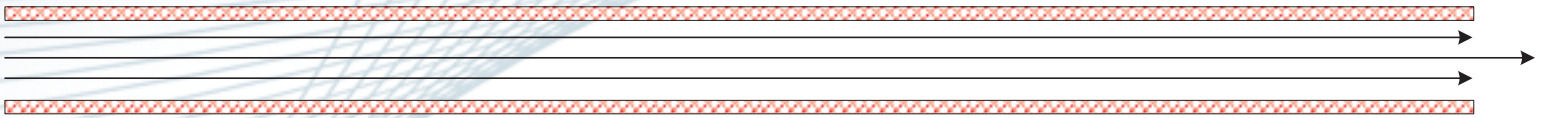
PLATE SPACING INCREASES TO A RATIO EQUIVALENT TO THE INCREASE IN PLATE EDGE DIMENSION.
HEAT TRANSFER SURFACE, PER UNIT OF AIR VOLUME IS VIRTUALLY CONSTANT.
SPATIAL VOLUME AND PRESSURE DROP INCREASE WITH PLATE SIZE.

EFFECT OF PLATE SURFACE ENHANCEMENT

(TURBULENT VS. NON-TURBULENT FLOW)

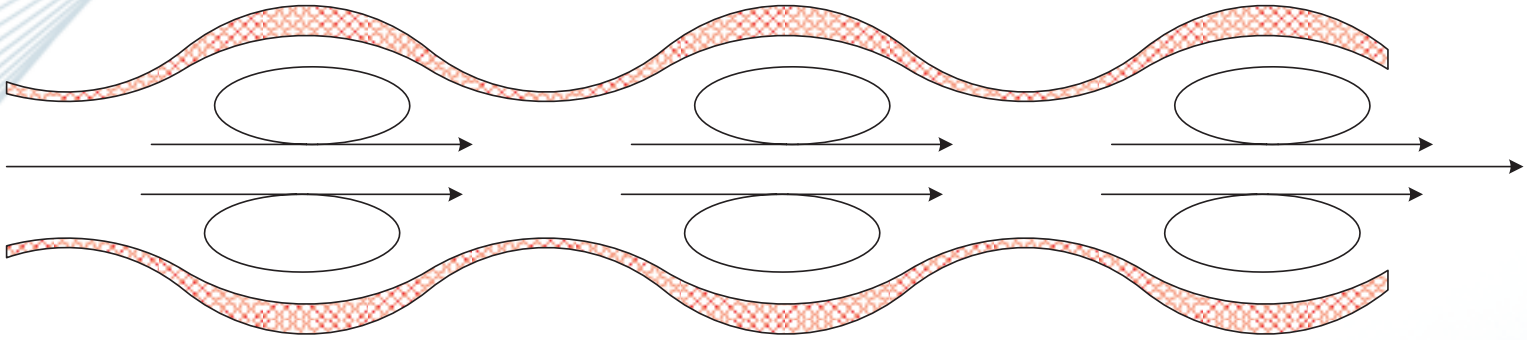
SMALL PLATES = LAMINAR FLOW

COMPACT, NARROW PLATE SPACING, LOW PRESSURE DROP



LARGE PLATE = TURBULENT FLOW

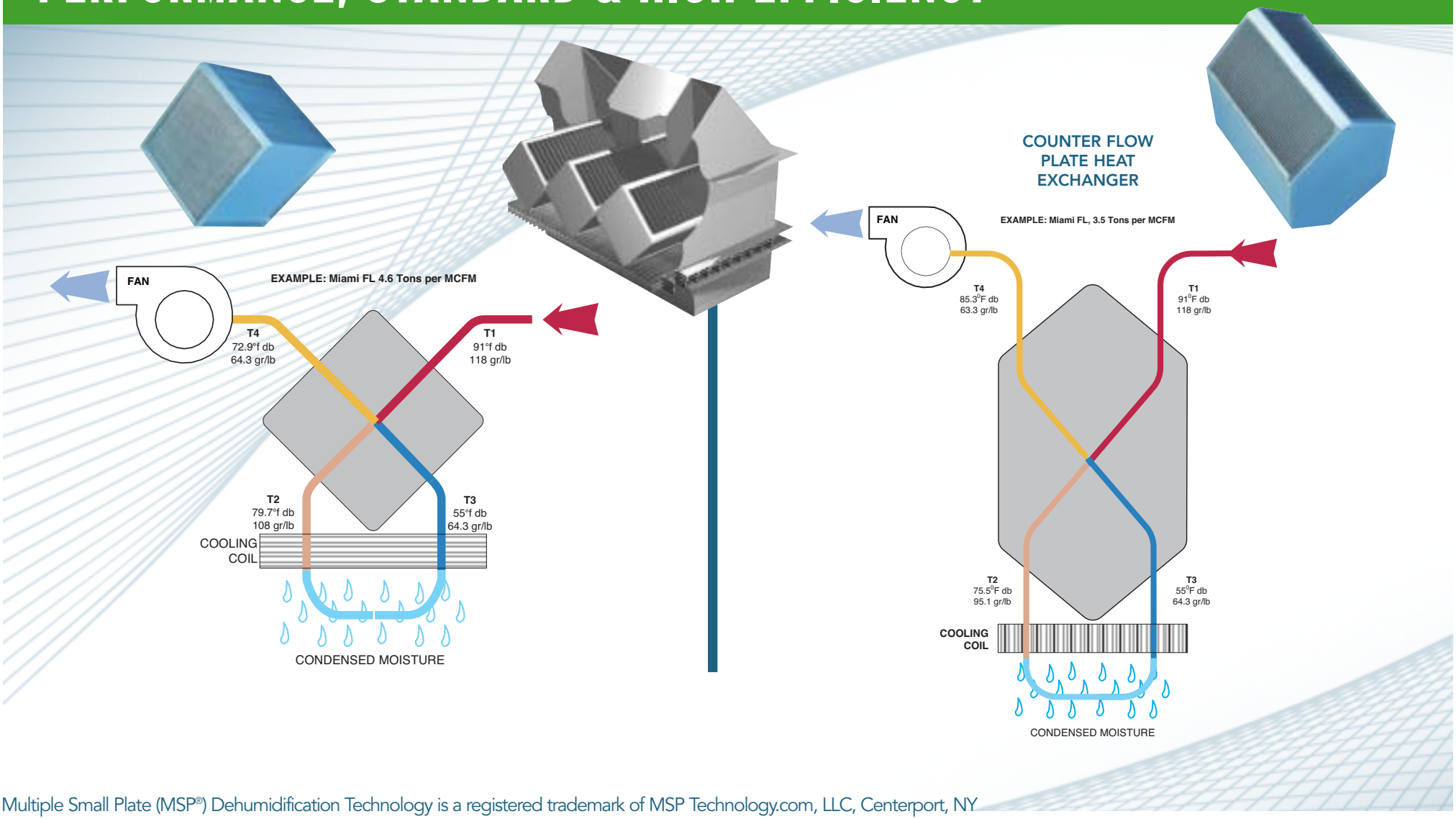
BULKY, WIDE PLATE SPACING, HIGH PRESSURE DROP



BOUNDARY LAYER

TYPICAL MSP® DEHUMIDIFYING COIL PSYCHROMETRIC PERFORMANCE, STANDARD & HIGH EFFICIENCY

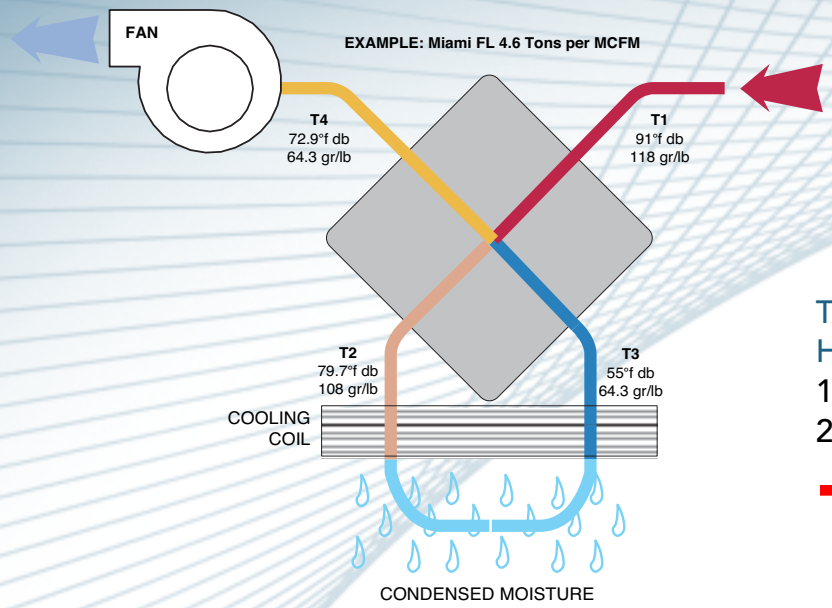
> MSP Product line and specs



MSP® VS. HEAT PIPES

> MSP Vs. Heat Pipe Comparison

> MSP Product line and specs



TWO STEP MSP HEAT TRANSFER PROCESS

1. Air to Plate
2. Plate to Air

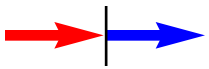
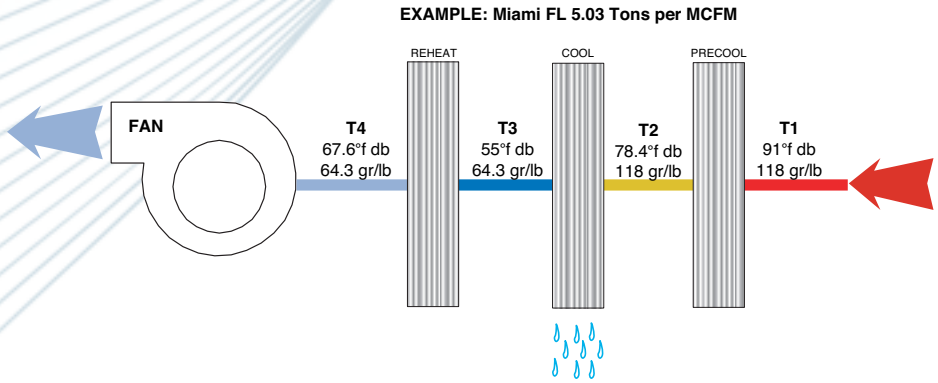


Plate exchangers maintain the same efficiency throughout the full range of temperature differences.



SIX STEP HEAT PIPE HEAT TRANSFER PROCESS

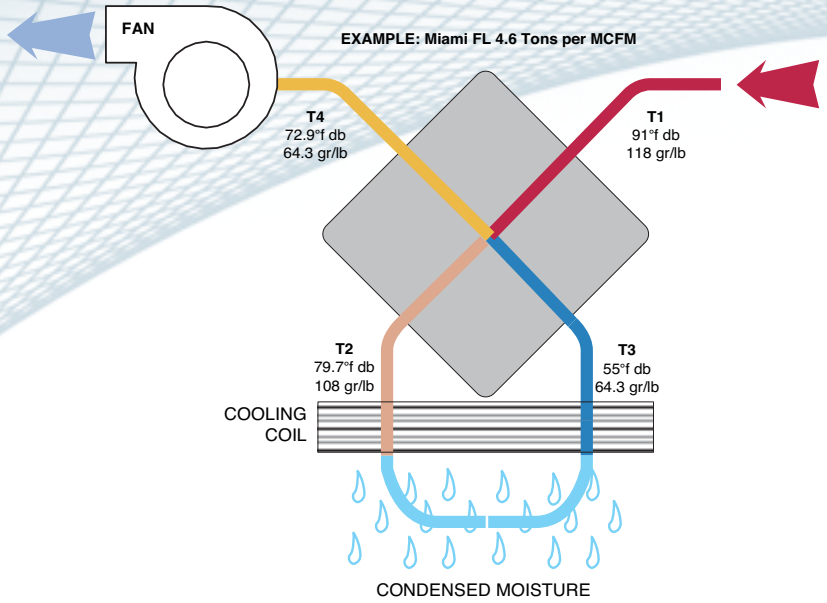
1. Air to Fin
2. Fin to Tube
3. Tube to Fluid
4. Fluid to Tube
5. Tube to Fin
6. Fin to Air

Heat pipe efficiency is a function of the temperature difference that drives circulation speed of the fluid. Consequently efficiency changes with temperature difference.

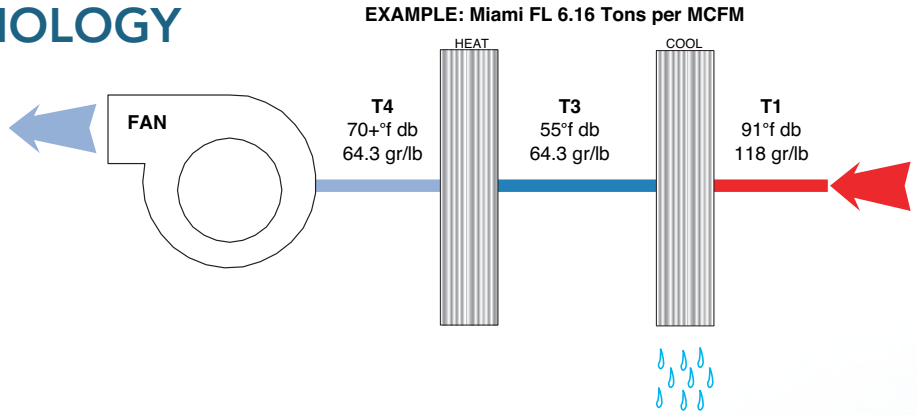
MSP® VS. BRUTE FORCE

> MSP Product line and specs

MSP® TECHNOLOGY



BRUTE FORCE TECHNOLOGY



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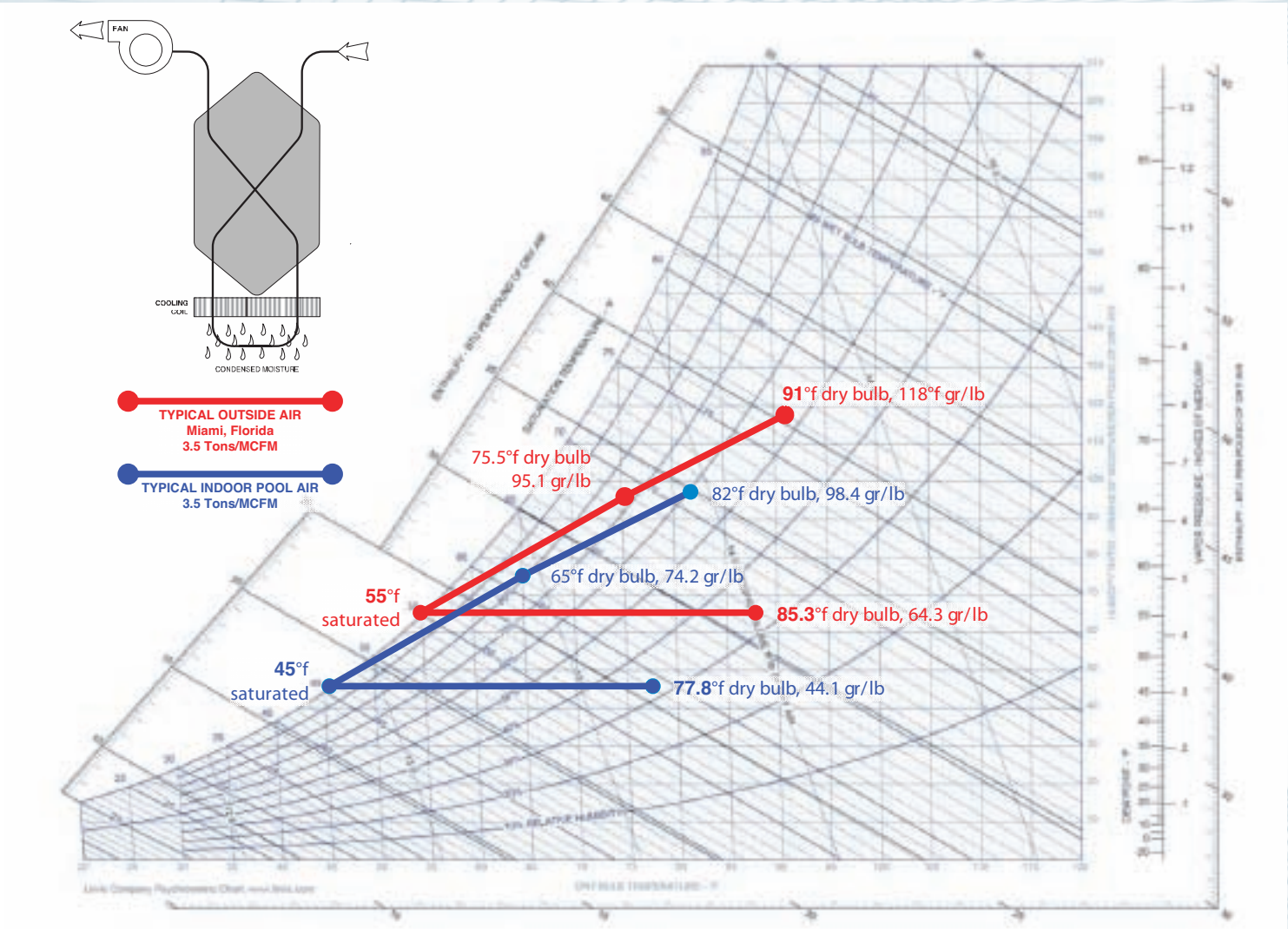
PSYCHROMETRIC PROCESSES MSP® HIGH EFFICIENCY DEHUMIDIFYING COIL

> MSP Product line and specs



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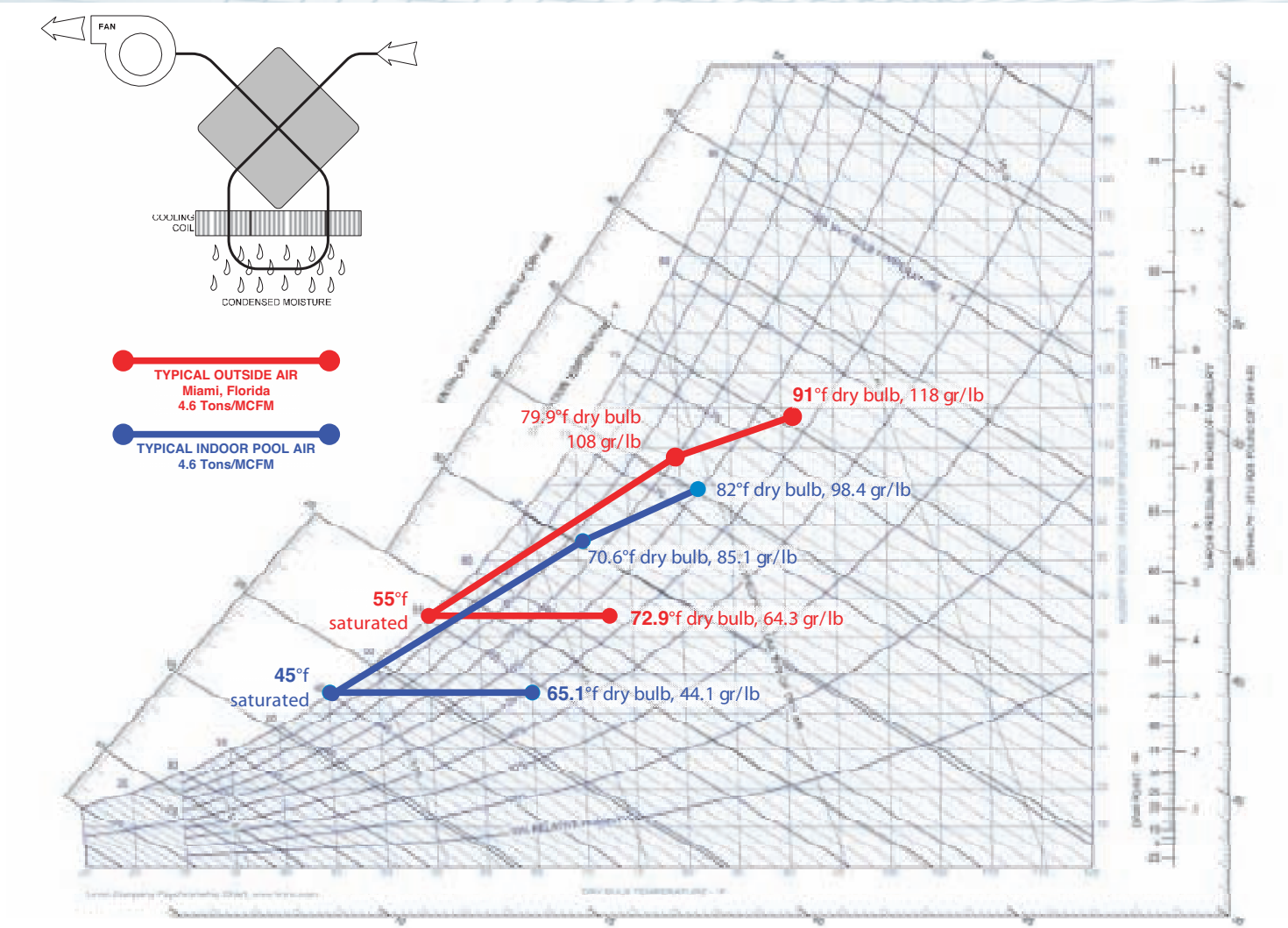
PSYCHROMETRIC PROCESSES MSP® STANDARD EFFICIENCY DEHUMIDIFYING COIL

> MSP Product line and specs

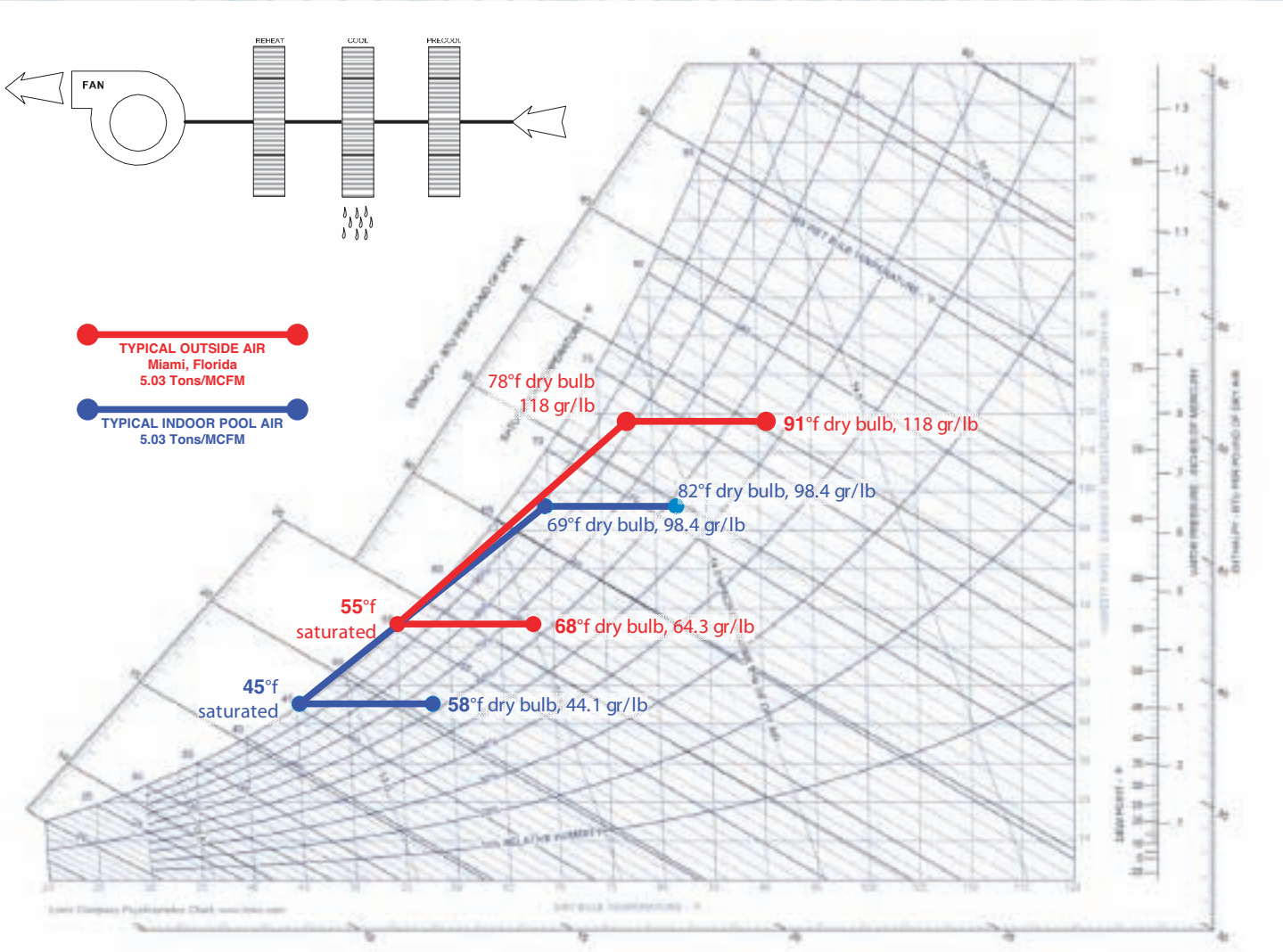


MSP TECHNOLOGY

PSYCHROMETRIC PROCESSES HEAT PIPE DEHUMIDIFYING COIL

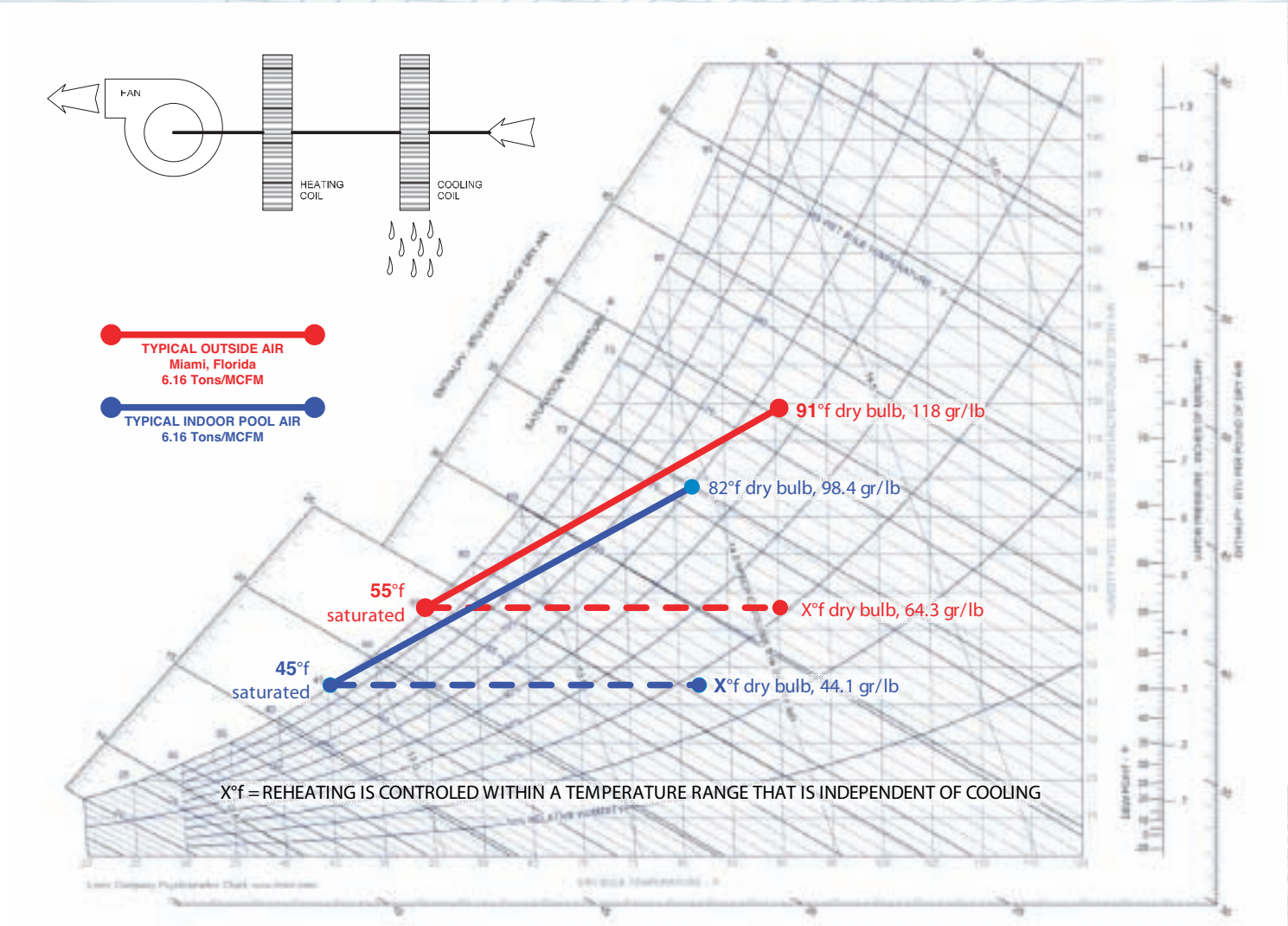
> MSP Product line and specs

> MSP Vs. Heat Pipe Comparison



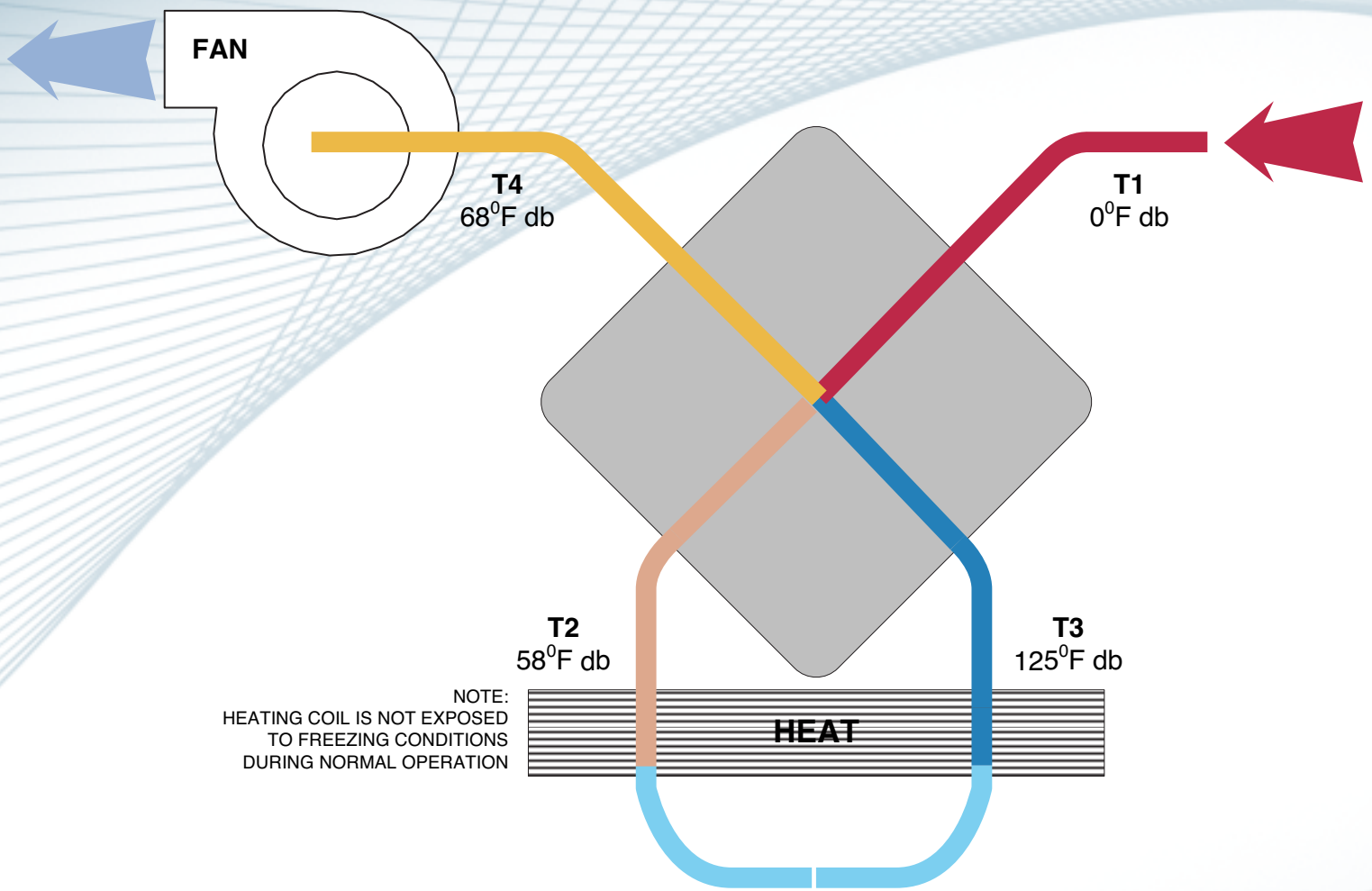
PSYCHROMETRIC PROCESSES BRUTE FORCE DEHUMIDIFICATION

> MSP Product line and specs



MSP® COIL IN WINTER HEATING MODE

> MSP Product line and specs



MSP TECHNOLOGY

12,000-CFM MSP® DEHUMIDIFYING AIR HANDLER

> MSP Product line and specs

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TECHNICAL BENEFITS OF MSP® COIL

> MSP Product line and specs

COMPACT

- Narrow plate spacing
- Cooling coil fixed to heat exchangers
- Small U-turn chamber/drain pan

SUPERIOR PERFORMANCE

- Plate heat exchangers are naturally more efficient
- Uniform coil circuit loading
- Low pressure drop
- Standard and high efficiency models
- Operates to 38°F dew point

VERSATILE

- Dimensional options to fit most applications
- Also works as pre-heater in heating (heat pump) applications

NO REHEAT ENERGY REQUIRED

- Great for use in chilled water or DX systems

PRE-ENGINEERED

- Performance guaranteed

NO MOVING PARTS

- Low Maintenance

More Advanced Than Heat Pipes and Large Plate Heat Exchangers

CLOSING

> MSP Product line and specs

The MSP® Wrap-around Dehumidifying Coil is truly a unique product. Hundreds of installations across the US and overseas have proven this technology to be a superior dehumidification option. It is eligible for LEED® credits in at least 3 of the 5 Green building categories and uses ordinary refrigeration for cooling. Unlike traditional dehumidification options, it can be used with chilled water and no reheat is required.

Designed specifically for high efficiency dehumidification in air handling systems that process outside air or recirculated air, the compact MSP Dehumidifying Coil is pre-engineered and guaranteed for high performance. It achieves the highest possible dehumidification capacity per unit of energy consumed with the lowest air pressure drop. More than 90% of its energy is used to remove moisture.

The difference is in the MSP plate heat exchangers, not exotic materials or expensive machinery. It's the simplest, most cost-effective solution for combining plate heat exchangers and cooling coils for dehumidification.

MSP® Dehumidifying Coils are offered in a wide range of super-efficient, pre-engineered solutions. Capacities are available from 200 to 20,000 CFM, and larger models can be built to specification.

The MSP Dehumidifying Coils is designed to provide every benefit that you could possibly offer building engineers and owners. Now you can offer super-efficient dehumidifying solutions by specifying the MSP® Wrap-around Plate Dehumidifying Coil. Give your clients the extraordinary economic benefits of multiple small plate technology with up to 50% energy savings.

SPECIFY THE MSP® DEHUMIDIFYING COIL ON YOUR NEXT DEHUMIDIFICATION PROJECT