

ADX™ ADVANCED DIRECT EXPANSION

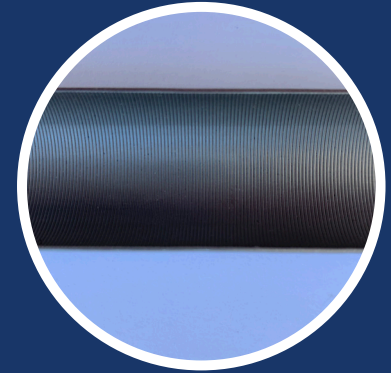
HOW DOES IT WORK?

Many years ago we were asked the question: “What makes it so difficult to get DX ammonia to work at low temperatures?” We found that as suction temperatures were decreased below +20 deg F it became impossible to make the coil operate properly regardless of how the coil was circuited and what type of expansion valve was used.

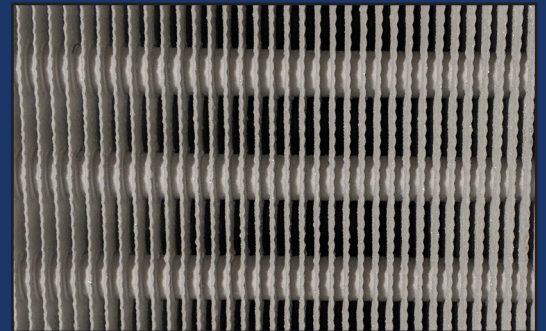
The heart of ADX™ technology is a patented enhanced surface applied to the inside of our evaporator tubes. The key to good performance is keeping the liquid evenly coating the inside surfaces of the tubes where it can boil and absorb heat which cools the air passing over the outside of the tubes. If the ammonia liquid and vapor separate inside the tubes the amount of heat transferred and hence the cooling effect falls off dramatically. The physical properties of ammonia that make it such an efficient refrigerant (high latent heat of vaporization, high heat transfer coefficients) also make this separation of liquid and vapor and the associated performance penalty impossible to avoid at low temperatures when operating with direct expansion and tubes having smooth internal surfaces.

Colmac engineers discovered that it is possible using the phenomenon of capillary pressure to cause the liquid ammonia in the evaporator tubes to climb up the tube walls by capillary action and cancel the negative effects of separated flow. This patented surface enhancement is called a “wicking structure” and uses capillary forces to coat the inside of the tubes with liquid without incurring any additional pressure drop.

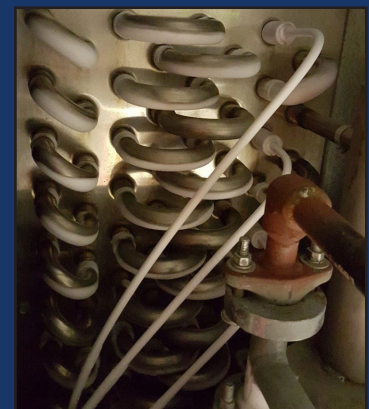
Patents: US 7,958,738, US 8,474,276, US 8,966,934, and US 9,689,621



ADX™ Enhanced Tubing
with patented wicking
structure



Complete, uniform frosting and
good performance with ADX™
Enhanced Tubes



Separated flow and poor
performance without ADX™
Enhanced Tubes



Products



Heating and Cooling Coils



Heat Pipes for Heat Recovery



A+Series™ Air Coolers



Air Cooled Condensers



Dry Coolers for Glycol or Gas Cooling

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"The Heat Transfer Experts"

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CRN



CSA

ASME Sec. VIII, Canadian Registration Number,
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