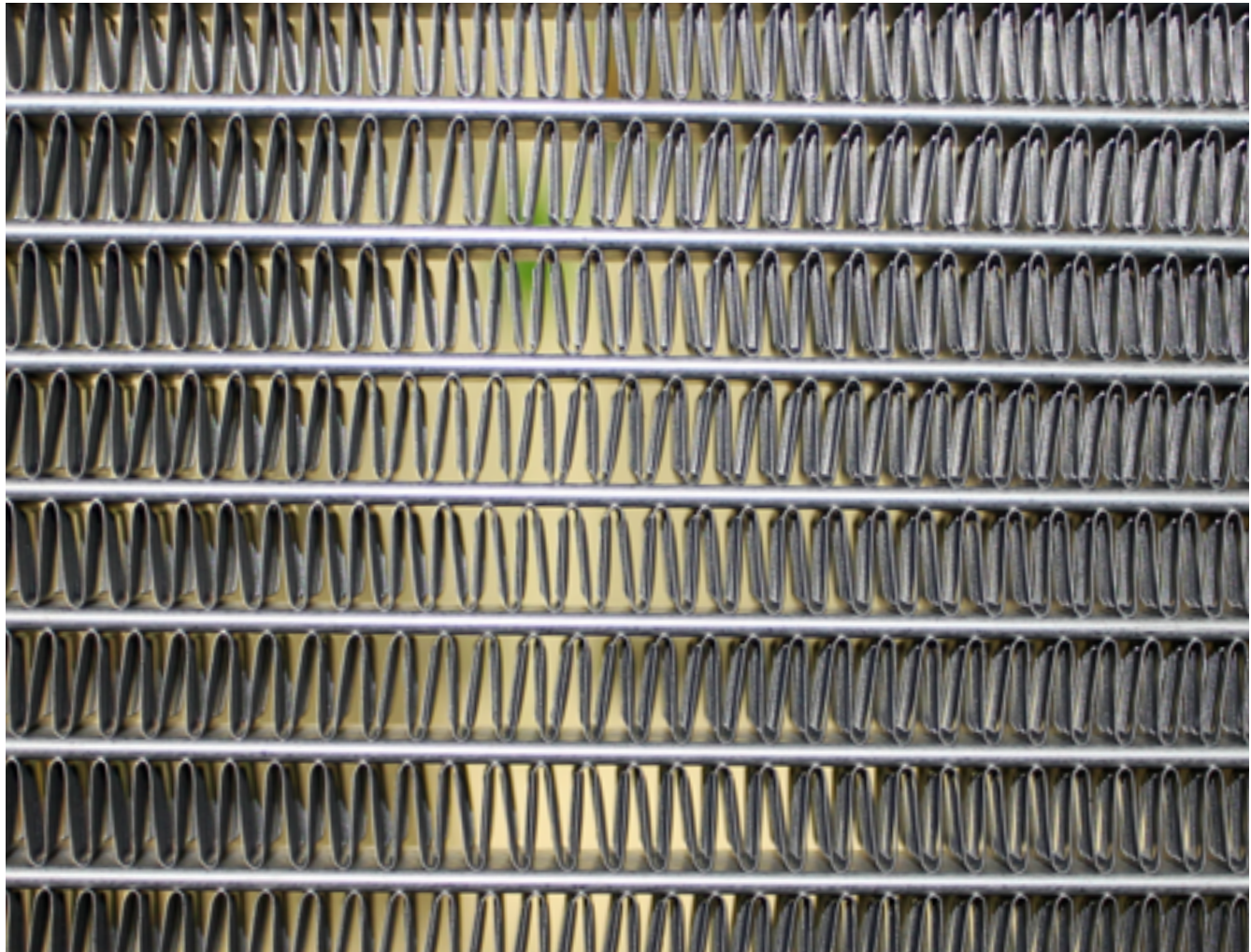




Mobile Climate Control



Microchannel Aluminum Coils



PN: 89-3084

Enhanced Performance

Technology

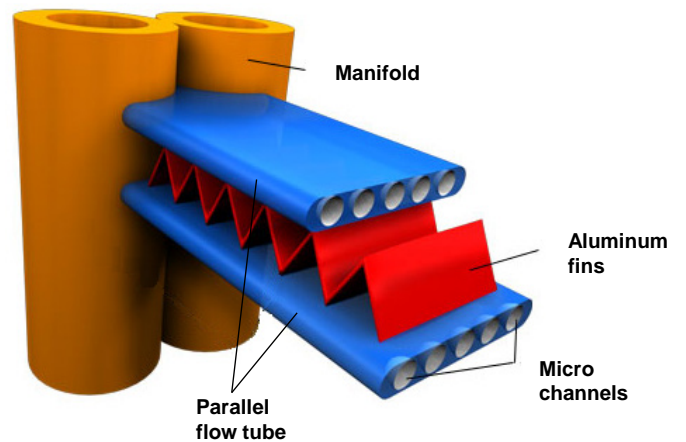
What are microchannel aluminum coils?

Microchannel coils are all aluminum coils with multiple flat tubes containing the microchannels through which refrigerant flows

Heat transfer is maximized by the insertion of angled or louvered fins inbetween the flat tubes

The components are joined together into a single coil using a controlled atmosphere brazing furnace

Product quality and integrity are maximized since only one braze is required compared to 50 plus manually brazed connections with traditional copper/aluminum coils.



Features

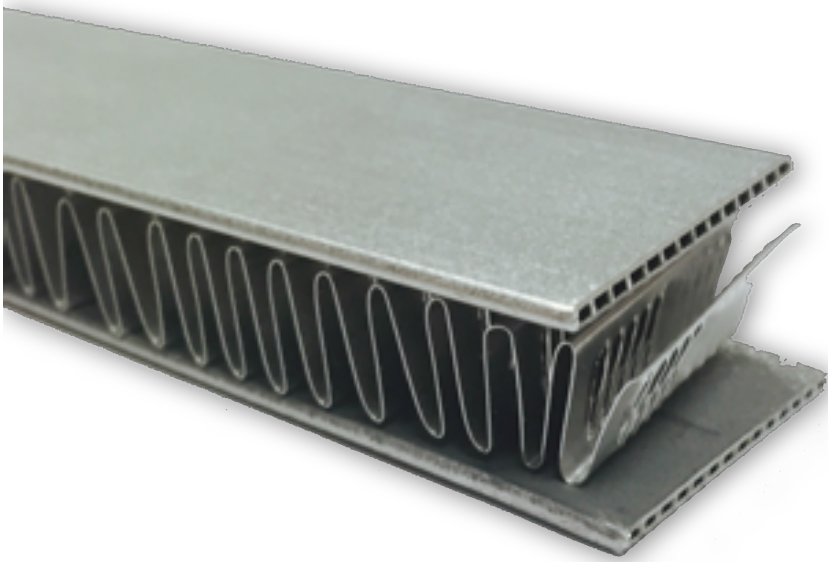
- Thermal performance
- Reduced surface sizes
- Single-row coil design
- Aluminum fin plate coil

Benefits

- Increased efficiency
- Reduced size and weight
- Improved sustainability
- Structural robustness
- Corrosion protection

Performance

The major benefits



- **Increased efficiency**
 - Thermal performance is significantly better than a standard aluminum fin and copper tube coil due to higher air-side heat transfer, higher refrigerant-side heat transfer, and high fin-to-tube surface contact
- **Reduced size and weight**
 - Increased efficiency results in the possibility to reduce surface sizes for same performance
- **Improved sustainability**
 - Less material is used per coil which is also easier to recycle and reuse
 - The single-row coil design with smaller volume also contributes to lowering refrigerant volume from 20 up to 40%
- **Corrosion Protection**
 - The rate of the corrosion of the aluminum fins in the microchannel coil is lower than that of the standard copper tube, aluminum fin plate coil due to the material differences within the two designs
- **Structural Robustness**
 - The construction of the coil inherently leads to a more durable coil that is less likely to be damaged. In addition, the single row coil design provides a significant weight reduction opportunity

Markets

Microchannel aluminum coils can be used in any market segment

- A microchannel aluminum coil is an alternative to traditional tube and fin based heat exchangers as
 - Condensers
 - Evaporators
 - Heater coils
- Microchannel aluminum coils are already on the market replacing tube and fin coils
- Microchannel aluminum coils can be sold separately as single units or integrated into MCC's products
- Microchannel aluminum coils are needed in a multitude of sizes and dimensions to fit diverse applications

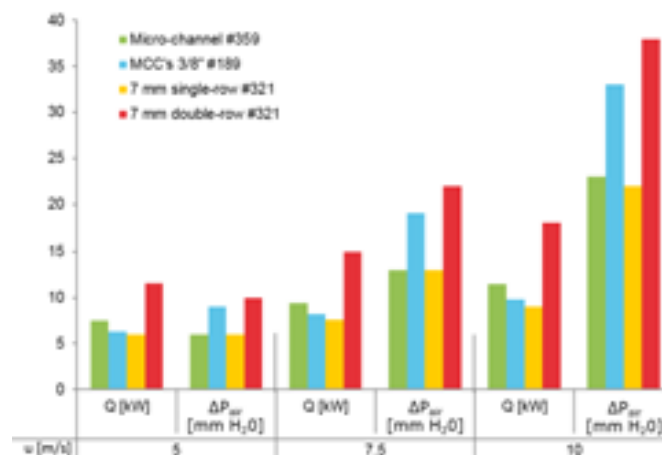
Efficiency

The chart compares the capacity (Q) and air side pressure drop (ΔP_{air}) between the MCC microchannel design with conventional fin and tube designs

This is for a typical off-road radiator mounted design at 3 different airspeeds (u)

A double row fin and tube coil (red in graph) is required to exceed the capacity of the microchannel coil (green in graph) however the air side pressure drop becomes then generally unacceptably high

Double row coils also require larger spacing and have higher production cost





MCC Microchannel production facility



CAB furnace

- The furnace is a universal batch type and comes equipped with controls, purge/atmosphere cooling chamber and final air blast cooling chamber
- Supporting equipment includes:
 - CNC Spray Fluxer
 - Dry Off Oven
 - Atmosphere Scrubber

Core builder cell

- The core building cell consists of:
 - Fin mill
 - Core builders
 - Roll form tooling

Our mission is
TO CREATE CLIMATE COMFORT
by providing
EXCEPTIONAL PERFORMANCE

