

We are a company that makes products that exchange heat.



Custom Applications:

We should mention our custom design capabilities. As an example, here is our copper tube charge air cooler (top section) in combination with a water radiator. The package includes a fuel cooler mounted in front of the radiator, and a remote-mounted MESABI® RTTS® tube and shell heat exchanger used for transmission cooling.

Often a custom design results from an unforeseen market need, and evolves into a production MESABI® heat exchanger. We see many custom designs driven by demand for higher operating pressure and temperature requirements.

There are three different ways to exchange heat:

1. **Liquid-to-liquid**
Ex. Engine coolant to ocean water
2. **Liquid-to-gas**
Ex. Engine coolant to outside air
3. **Gas-to-gas**
Ex. Compressed air from a turbocharger to outside air

Note that we make products that exchange heat all three ways; however our products do not cover all heat exchange applications. At this time we have pressure and temperature restrictions (see inside fold-out).

A recap of where our products are used:

Radiators –

- Diesel engines
- Some mining plant processes

Charge Air Coolers –

- Diesel engines

Air-to-Air Coolers –

- Compressor intercoolers and aftercoolers

Air-to-Oil Coolers –

- Compressors
- Crushers (bearings)
- Hydraulics
- Transmissions
- Gearboxes

Tube and Shell Heat Exchangers –

- Transmissions
- Brakes
- Engines (jacket water or charge air)
- Gearboxes
- Crushers (bearings)

Alex Chisholm

Seeing that this is primarily an engineering Encore, we could not resist an engineering shaggy dog type pun –

There were three medieval kingdoms on the shores of a lake. There was an island in the middle of the lake, over which the kingdoms have been fighting for years. Finally, the three kings decided that they would send their knights out to do battle, and the winner would take the island.

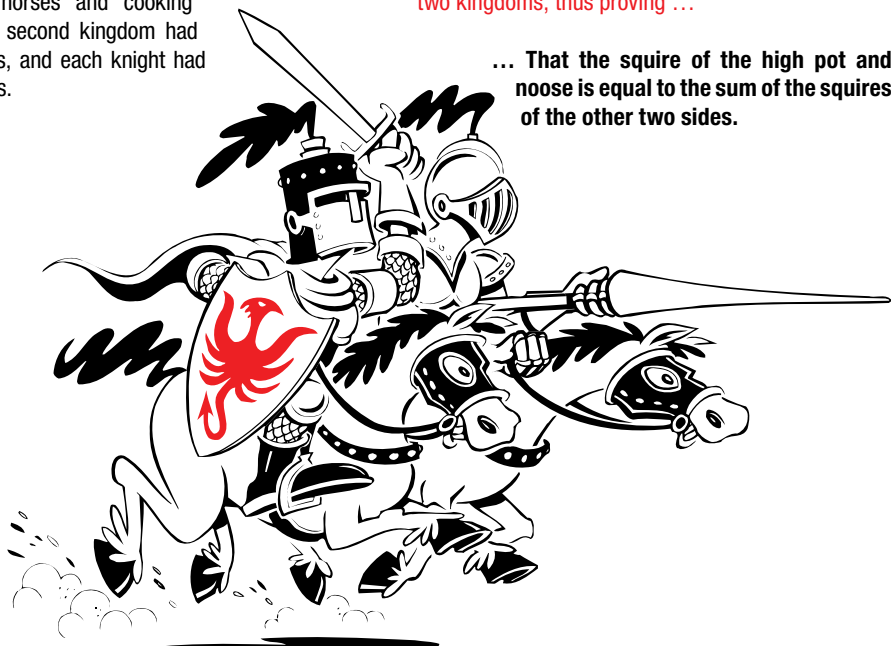
The night before the battle, the knights and their squires pitched camp and readied themselves for the fight. The first kingdom had 12 knights, and each knight had five squires, all of whom were busily polishing armor, brushing horses and cooking food. The second kingdom had 20 knights, and each knight had ten squires.

Everyone at that camp was also busy preparing for battle. At the camp of the third kingdom, there was only one knight, with his squire. This squire took a large pot and hung it from a looped rope in a tall tree. He busied himself preparing the meal, while the knight polished his own armor.

When the hour of the battle came, the three kingdoms sent their squires out to fight (this was too trivial a matter for the knights to join in).

The battle raged, and when the dust had cleared, the only person left was the lone squire from the third kingdom having defeated the squires from the other two kingdoms, thus proving ...

... That the squire of the high pot and noose is equal to the sum of the squires of the other two sides.



Past **encores** online at mesabi.com

L&M RADIATOR, INC.
Manufacturers and Distributors of MESABI® Flexible Core Heat Exchangers

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L&M Radiator, Inc.
Independence, Iowa

L&M Radiator, Inc.
El Paso, Texas

L&M Radiator, Inc.
Yankton, South Dakota

AUSTRALIA

L&M Radiator Pty. Ltd.
East Victoria Park, W.A.

MEXICO

L y M de Mexico S.A. de C.V.
Hermosillo, Sonora



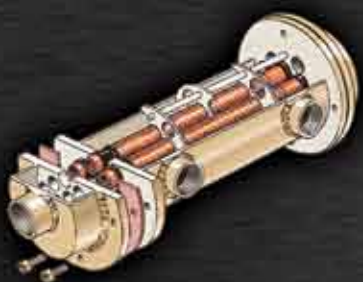
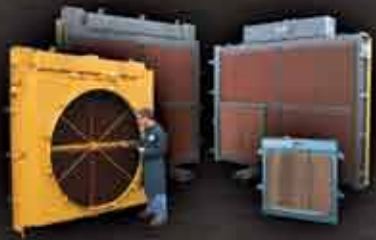
L&M AND LMI encores

February 2009

Question: What do we make?
Answer: Lots!



MESABI® HEAT EXCHANGER PRODUCTS



PRODUCT DESCRIPTION AND COMPONENT MATERIALS

MAXIMUM PRESSURE (PSI) MAXIMUM TEMP (F°)

RADIATORS		
Radiator Cores with .050 and .100 brass headers	15	240
Radiator Cores with .375 headers (depending upon tank design)	15 to 50	240
Tubes: Copper/Brass and Copper Nickel (optional)		
Frame: Steel/Stainless Steel (optional)		

CHARGE AIR COOLERS		
Charge Air Coolers with .375 headers	50	400 continuous
Consult factory for higher temperature options		425 intermittent
Tubes: Copper/Brass (optional) or Aluminum		
Tanks: Stainless Steel or Aluminum		
Frame: Stainless Steel or Aluminum		

AIR-TO-AIR COOLERS:		
Consult factory for higher temperature options		
Tubes: Copper/Brass and Copper Nickel (optional) – Standard Wall Thickness	50	400
Copper/Copper Nickel (optional) – Heavy Wall Thickness	150	400
Aluminum – standard	175	400
Aluminum – CSC™ 350	350	400
Aluminum – CSC™ 500	500	400
Tanks: Steel/Stainless Steel (optional)		
Framework: Steel/Stainless Steel (optional)		

HIGH EFFICIENCY OIL COOLERS:		
Tubes: Copper/Brass (optional) – Standard Wall Thickness	50	275
Copper – Heavy Wall Thickness	150	275
Turbulator: Stainless Steel		
Frame: Steel/Stainless Steel (optional)		

STANDARD OIL COOLERS:		
Tubes: Aluminum	175	275
Turbulator: Steel/Stainless Steel (optional)		
Frame: Steel/Stainless Steel (optional)		

HIGH PRESSURE OIL COOLERS:		
CSC™ 350	350	275
CSC™ 500	500	275
Tubes: Aluminum		
Turbulator: Steel/Stainless Steel (optional)		
Frames: Steel/Stainless Steel (optional)		

RTTS® TUBE AND SHELL HEAT EXCHANGER:		
Shell side	150	
Tube side	50	
Water		240
Oil		275
Tubes: Copper/Copper Nickel (optional)		
Baffles: Steel/Stainless Steel (optional)		
Shell: Steel/Stainless Steel (optional)		
End Caps/Plates: Steel/Stainless Steel (optional)		

SYSTEM PROTECTOR™ TUBE AND SHELL HEAT EXCHANGER:		
Shell side	150	
Tube side	50 std./150 optional	
Water		240
Oil		275
Tubes: Copper/Copper Nickel (optional)		
Baffles: Steel/Stainless Steel (optional)		
Shell: Steel/Stainless Steel (optional)		
End Caps/Plates: Steel/Stainless Steel (optional)		