Core Solutions for Diesel, Gas, Alternative Fuels & E-Fan Integration

Engine Cooling

Extruded Tube
Plate & Bar
Seam Welded Tube

We COOL what you POWER

thermaltransfer.com  tpsales@apiheattransfer.com
Simplistic in Design

**T-BAR** is a proprietary extrusion design and one of the most clever cooling technologies available on the market today. Highly engineered on the front end, equals simplicity on the application end. **T-BAR** has unrivaled strength and rigidity, which ensures reliable field performance. **T-BAR** is factory zinc coated for cathodic protection, seam/leak free extruded and ultimately reliable.

**Flexible Cooling Solutions**

With **T-BAR** technology, our OE-focused Application Engineers are ready to solve the most challenging system requirements for non-standard cooling modules.

Using proprietary **T-BAR** technology, our engineers design cooling solutions for rigorous performance and design requirements. We can custom-engineer solutions for even the most extreme requirements. **T-BAR** is the perfect fit for OEMs with low to medium production volume and high performing needs.

**ADVANTAGES**

- Superior performance - Aluminum has up to 25 percent higher heat transfer capacity in comparison to a traditional copper/brass cooling package.
- Rugged structure
- Zinc coated for salt spray & salt air resistance
- Handles high viscosity fluids
- No tooling requirements
- Seam/leak free
**T-BAR** is manufactured with Alloy 1100 aluminum micro channel and bars in our patented in-house tube-to-bar brazing process using a Nocolok CAB (Controlled Atmosphere Brazing) brazing technology furnace. Because our tubes are a solid extrusion, T-BAR is very robust—with no tube seams to fail and leak.

T-BAR core sizes can range in core height/width from 1 sq.ft. to 6 sq.ft. in various geometries. Core depths can vary from 1.25 inches to 5.5 inches. Cooling capability of these cores can range from 50-1000+ HP engines.

**CORES**

- Fully pressure and leak tested, assembled and packaged.
- T-BAR provides numerous tube geometries to optimize performance for radiators, charge air coolers (CAC), oil coolers and after coolers.
- T-BAR components can be mixed and matched to provide multiple circuit cooling within one core—or multiple cores combined to form a module.
- Thermal Transfer Products can supply complete cooling packages, including in-house designed framing, fan shroud, finger guard, expansion tank, etc.

**TURN-KEY COOLING MODULES**

- **HIGH-PERFORMANCE**
- **LOW-CLOGGING**

**UNIQUE SOLUTION**

Look to T-BAR for demanding applications where performance is an absolute.
P-BAR is the most efficient design solution in heat transfer today, utilizing an aggressive hot side turbulator. Perfect for all fluid medias in diesel engine cooling applications demands, while offering remarkable heat rejection levels for new Tier systems. P-BAR is a cost effective solution and excels in core combination packaging.

P-BAR MANUFACTURING PROCESS:

1. SELECT CORE DEPTH & POSITION PLATES
   - 1: CUT TOP & BOTTOM PLATE

2. CUT & ASSEMBLE FLUID SIDE
   - 2: POSITION TURBULATOR, SIDE SPACER BARS BETWEEN TOP AND BOTTOM PLATES

3. CUT & ASSEMBLE AIR SIDE
   - 3: CUT & POSITION END SPACER BAR & AIR SIDE COOLING FIN

4. BUILD & STACK CORE LAYERS
   - 4: REPEAT SEQUENCE UNTIL CORE HEIGHT IS ACHIEVED & METAL BAND CORE

Industry Standard

With P-BAR technology, we offer an industry accepted standard solution for the majority of engine cooling requirements. Manufactured domestically and internationally, P-BAR is available and cost effective.

ADVANTAGES

- Superior performance – Aluminum has up to 30% higher heat transfer capacity in comparison to traditional copper/brass cooling package
- Air-side fin design minimizes fouling and static pressure ensuring long-term, reliable performance
- Welded Aluminum fittings/ports and manifolds ensure structural integrity
- Standard ports – SAE, NPT and BSPP ports available
- High performing turbulator
- No tooling charges required
- Great dollar value per BTU
- Customized units are available to meet your specific performance requirements
P-Bar heat exchangers are manufactured entirely of aluminum alloys. Our patented in-house brazing process uses aluminum alloys and our modern brazing furnace. The core components are available in a wide variety of types and sizes.

These robust coolers have high working temperatures and operating pressures. Units can be manufactured with any connection type and mounting elements.

**TURN-KEY COOLING MODULES**

- Modules are pressure and leak tested, assembled and packaged
- Prototypes and production products can be completed in short lead times
- P-BAR provides core geometries for radiators (water-air), oil coolers (oil-air), air coolers for engines (CAC), air coolers for compressors (air-air), fuel coolers, air-oil welded combos, and turn-key engine cooling modules
- Complete cooling packages can be equipped with fan, motor, finger guard, expansion tank, etc.

Look to P-BAR as an industry standard solution & available globally.
S-BAR is a high strength automotive design, utilizing a seam welded, free flowing tube design. Constructed in a tube to header plate fashion, with options for multiple rows, fin types and tank material (plastic or metal). S-BAR is the choice for engine water jacket cooling in lower HP ranges and OEM production volumes. Engineered for challenging heat loads and demanding ambient conditions.

S-BAR NOCOLOK™ BRAZED ALUMINUM MANUFACTURING PROCESS:

1: CUT SEAM WELDED ALUMINUM TUBING
2: ASSEMBLE TUBE & FIN IN A HIGH SPEED CONTINUOUS CORE STACKER
3: ASSEMBLE TUBE & HEADER PLATES TO FORM CORE UNIT
4: FLUX CORE UNIT TO PREPARE FOR BRAZING

High Performing Radiators

With S-BAR technology, our OE-focused Application Engineers are ready to solve the most challenging system requirements for custom water jacket radiators.

Using S-BAR technology our engineers design clever engine radiators for performance and compact space claims. We can custom-engineer manifold connection requirements to suit the customers need. For higher volume applications, tooled and molded plastic top and bottom tanks can be designed.

ADVANTAGES

- Superior performance - S-BAR high flow tubes offer higher heat transfer capacity in comparison to traditional radiator cooling package designs
- Resistant to salt spray and salt air
- Compact & light weight
- Lower HP Application
- Fabricated or stamped aluminum tanks
- Plastic tank molding options
S-BAR is manufactured with a close-tolerance tube that has a longitudinal seam butt-welded by a high frequency (H.F.) welding process. This permanently leak-tight tube, produced in a high speed single pass operation, provides a high burst pressure. Diameters can be held within +/- .002”. Tubes can be manufactured from copper, brass, clad aluminum and a variety of other materials.

S-BAR cores are manufactured in a wide variety of standard and custom sizes. Standard widths of 14.87” and 18.18” are available and a range of 8 standard core lengths from 17” up to 26.25”. Any custom size core design is tooled to the OE requirement. One and two row cores are available with the capacity of building multiple pass units.

- Fully pressure and leak tested, to 25 - 28 PSI assembled and packaged.

- Thermal Transfer Products can supply complete cooling packages, including in-house designed removable core guards, fan shroud, electric fan, and overflow bottle, etc.

Look to S-BAR for high volume OE applications in small HP ranges.
Cooler Specifications

Fluid compatibility
- Petroleum/mineral oils
- Oil/water emulsion
- Phosphate ester
- Water/ethylene glycol
- Heated air

Core Ratings
- Radiator
  Maximum Operating Pressure: 30 psi
  Maximum Operating Temperature: 250°F
- Charge Air Cooler
  Maximum Operating Pressure: 30 psi
  Maximum Operating Temperature: 475°F
- Oil Cooler / Transmission Cooler
  Maximum Operating Pressure: 250 psi
  Maximum Operating Temperature: 350°F

Fluid Compatibility
- Petroleum/mineral oils
- Oil/water emulsion
- Phosphate ester
- Water/ethylene glycol
- Heated air

Core Ratings
- Radiator
  Maximum Operating Pressure: 30 psi
  Maximum Operating Temperature: 250°F
- Charge Air Cooler
  Maximum Operating Pressure: 30 psi
  Maximum Operating Temperature: 475°F
- Oil Cooler / Transmission Cooler
  Maximum Operating Pressure: 250 psi
  Maximum Operating Temperature: 350°F

Fluid compatibility
- Water/Glycol
  Mixtures rated for aluminum radiators

Core Ratings
- Aluminum (3003) Tank Radiators
  Maximum Operating Pressure: 25 psig
  Maximum Inlet Temperature: 250°F
  Maximum Coolant Flow Rate: 5 ft/sec through the tubes
- Plastic (Nylon 6/6) Tank Radiators
  Maximum Operating Pressure: 25 psig
  Maximum Inlet Temperature: 250°F
  Maximum Coolant Flow Rate: 5 ft/sec through the tubes

We COOL what you POWER

Contact Thermal Transfer Products

Thermal Transfer Products
An API Heat Transfer Company

5215 21st Street
Racine, Wisconsin 53406-5096 USA
+1.262.554.8330

ttpsales@apiheattransfer.com
www.thermaltransfer.com

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