Vacuum Brazed & Power Heatsinks
Transportation Industry

Railway
New Manufacturing Technologies

Friction Stir Welding

Rotating shoulder creates friction heat and welding pressure

Downward force maintains pressure and friction heat
New Manufacturing Technologies

Aluminium Vacuum Brazing

Source of Liquid

Base Material

Contact Angle

Joint Gap

Base Material
New Manufacturing Technologies

**Internal Resources**

**Thermal Testing** (pict.1 & 2)
- Wind tunnel testing
- Cold plate performance testing
- Heatpipe performance testing

**Leak Testing** (pict.3)
- Compressed air
- Nitrogen
- Helium

**Extended life testing** (Graph.1)
- Up to 20 years

![Pulsation Graph](graph.png)

**Pulsation**

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<th>Pressure (Bar)</th>
<th>Timing (5sec period)</th>
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sales@etronics.fr  www.etronics.fr  (+33)1 39 10 29 00
Infrared Thermal Testing (pict.4)

Mechanical Testing (pict.5)
- 2D linear CCM
- 3D Optical
- Pull Testing
- Hardness Testing
Etronics Sarl

8, rue de Temara
z.a. du bel-air
F-78108 St. Germain-en Laye
FRANCE
Phone: (+33) 1.39.10.29.00
Mail: sales@etronics.fr