

**Markku Ainali**

*Lic.Tech., R&D Director, Finnradiator Oy*

## *CuproBrazed Heat Exchangers – For heavy duty applications*

### **Introduction**

*The CuproBrazed process was specifically developed for the manufacture of heavy-duty mobile and stationary industrial heat exchangers. The word CuproBrazed is trademarked and owned by International Copper Association (ICA). The ICA responded to the industry need for a new generation of copper-brass heat exchangers by developing CuproBrazed technology, which is now being applied globally in the manufacture of advanced heat exchangers.*



*Fig1: Heavy duty CuproBrazed heat exchangers by Finnradiator. From the left water radiator, charge air cooler and oil cooler.*

### **What is special with CuproBrazed?**

The use of thin gauge materials in compact heat exchangers required new processes. By using high-strength and high-conductivity copper alloys, it is possible to manufacture strong, efficient and compact heat exchangers with an environmentally friendly process. New brass and copper alloys, developed for this technology, offer high strength as well as excellent retention of strength even at elevated operating temperatures. The dedicated alloys have been developed and patented by Aurubis ([www.aurubis.com](http://www.aurubis.com)).

Specialized production machinery is available for all capacities of production lines. CuproBrazed Alliance ([www.cuprobrazed.com](http://www.cuprobrazed.com)) is an organization formed in 2003 to promote and support the widespread adoption of the technology. CuproBrazed Alliance itself does not deliver heat exchangers, but some of its member companies, including Finnradiator, do.

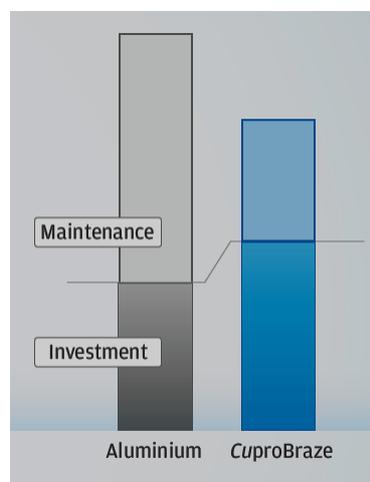
### Strong and efficient heat exchangers

- The high thermal conductivity and high strength of new copper and brass alloys have changed the rules of design for mobile heat exchangers. In recent years, designers have demanded, depending on application, lighter fins and tubes and hence stronger alloys for more-compact heat exchangers. An important advantage of thin gauge material is that, besides reducing weight, the lower cross-sectional area allows air to pass more freely through the core of the heat exchanger. The relative ease with which air flows through a heat exchanger is measured as a lower air pressure drop for a given thermal performance. A low air pressure drop is highly desirable in advanced design of efficient compact heat exchangers for energy-efficient vehicles. Less fan power means also less noise. The pressure drop, the thermal performance and the physical size are interrelated. Therefore, depending on the design preference, the pressure drop advantage can be converted to higher thermal performance or smaller core size or an optimized combination of them. This is valid provided that optimized component thicknesses are commercially available for the specific application.

### Lower life cycle costs

The key driver to profitable business lies in predictable and continuous flow of processing, with high material volumes. The heavy-duty industry, terminal tractors, multipurpose machinery, piling rigs and other type of off-road vehicles, is characterized by its high capital intensiveness, in comparison to many other fields of business. This is due to investment for machinery and equipment are economically significant. This results to situation where unplanned downtimes, such as machine breakdowns, are unacceptable, because those are cutting the productivity and decreasing the profits. Equipment out of commission constitutes a significant on-cost for any operation, and often one that cannot be passed to the customer.

Minimizing the early investment cost does not result in profitable business, as availability of the machine is reduced by unplanned downtimes, profits are cut due to capital invested in spare part logistics, and customer satisfaction and brand reputation is sacrificed by failing to deliver what was promised.



*Fig. 2: CuproBraze reduces life-cycle costs through savings in maintenance*

## Summary

In summary, CuproBrazed technology is a breakthrough for heavy duty heat exchangers because it provides probably the best combination of durability and performance that is available today. CuproBrazed heat exchangers deliver the level of reliability, cleanability and long service life that is essential in heavy duty applications.

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More information:

[www.finnradiator.com](http://www.finnradiator.com) ,  
[www.cuprobraze.com](http://www.cuprobraze.com), [www.copperinfo.com](http://www.copperinfo.com), [www.copper.org](http://www.copper.org), [www.antimicrobialcopper.com](http://www.antimicrobialcopper.com)

Feedback:

[markku.ainali@finnradiator.com](mailto:markku.ainali@finnradiator.com)

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