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App News

Copper & Aluminum Costs Continue to Rise

DESIGN ACTIVITY

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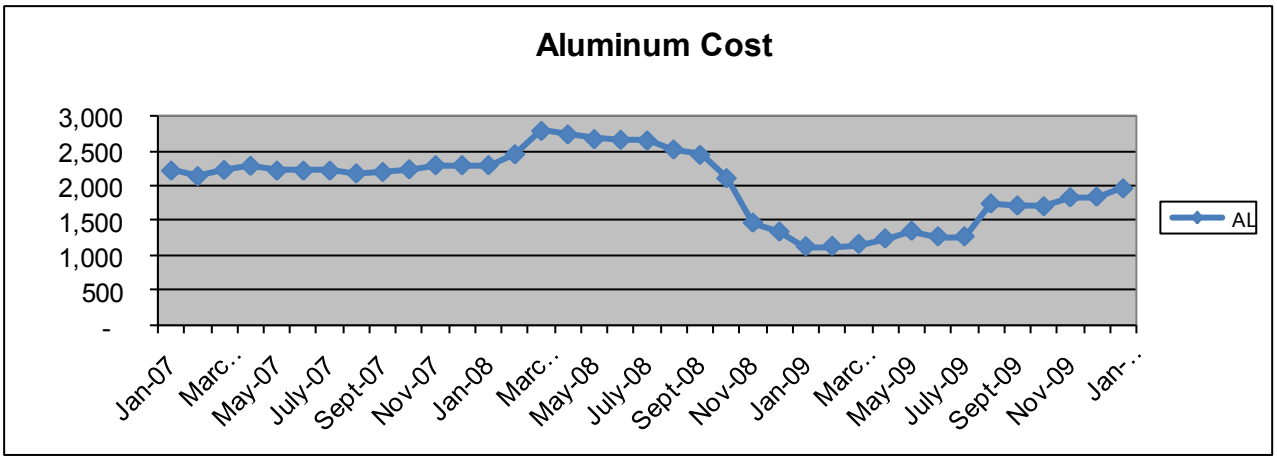
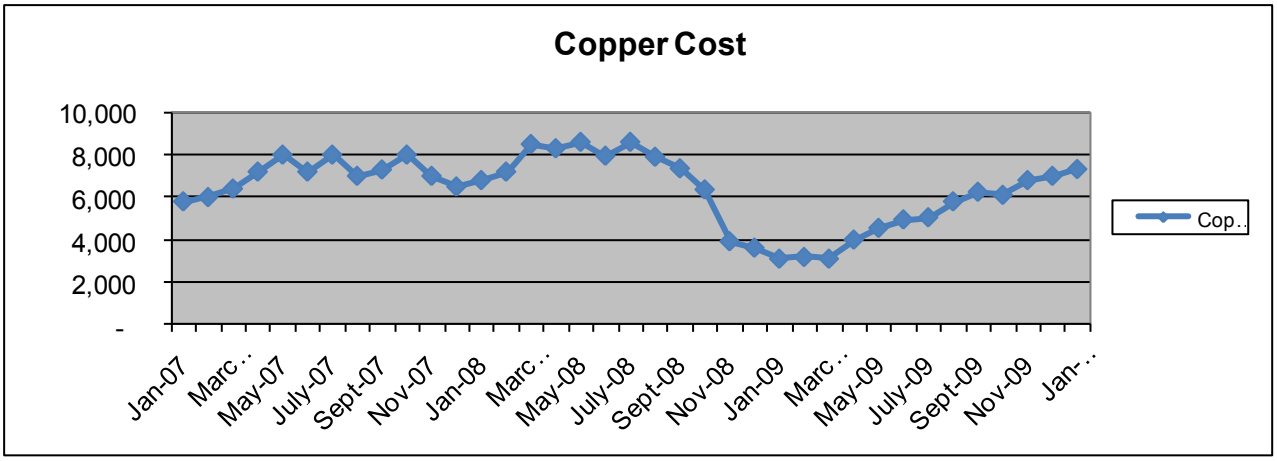
Raw material costs continue to rise and are approaching their all time highs that were set in 2007 and 2008. In early 2009, raw material costs pulled back enabling better pricing to customers but as the cost continue to rise, we all need to make sure that incoming orders have been recently quoted.

This is particularly true for high material content and high weight parts. Copper cost is 3X that of Aluminum Large copper heat sinks are normally quoted using a COMDEX rate., smaller Aluminum parts are not usually tied to an industry standard but will now need a recent quote for orders to be accepted and processed smoothly.





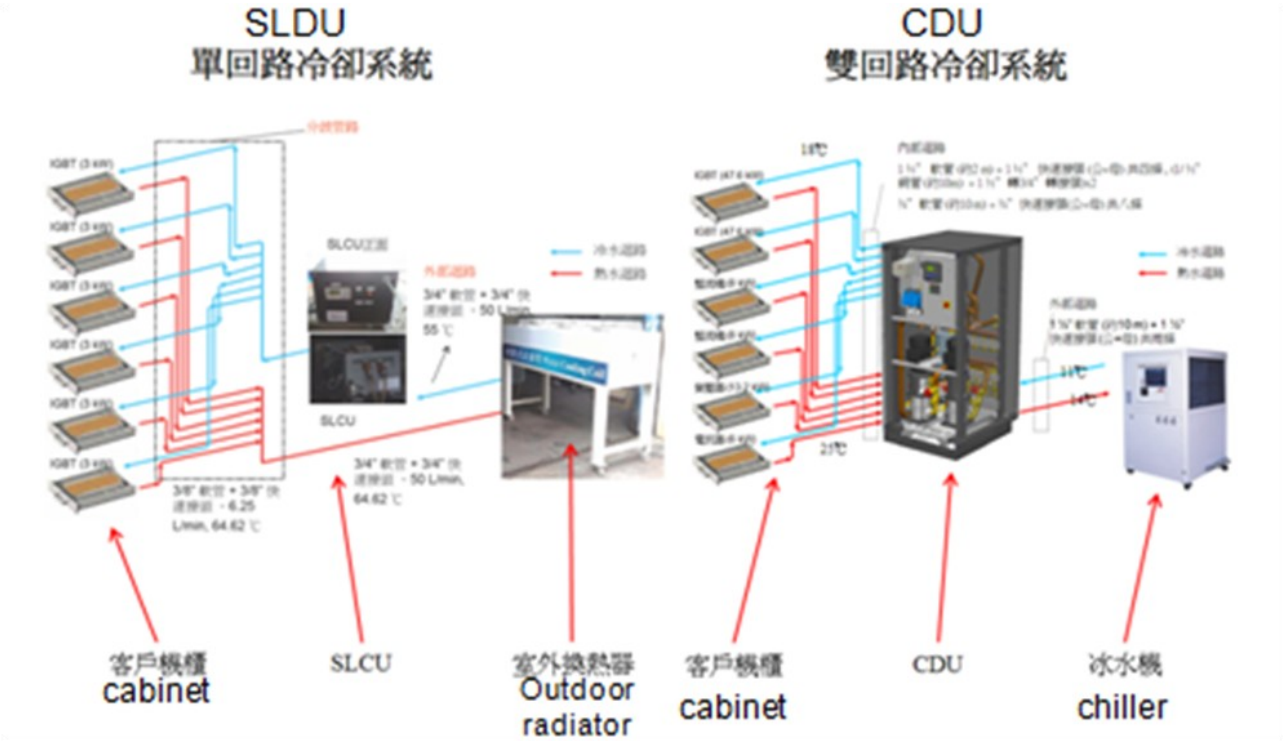
Data from the London Metal Exchange, 30 day buyer alloy contracts., US $ per metric tonne.

Need more information ? Please contact your local Vette Applications Engineer or Salesperson.

Coolant Distribution Control & Loops

Typically there are two common coolant loop configurations, single and double. A single coolant loop has the same working fluid flowing through both the heat collection and the heat dissipating portions of the system, this is similar to the cooling system in an automobile. A double coolant loop will have a secondary fluid that absorbs the which is then transferred to a primary fluid which dissipates the heat in another location. In both cases, some kind of distribution unit is employed to control the secondary coolant flow and temperature with emphasis on keeping the secondary loop coolant above dew point to avoid condensation.

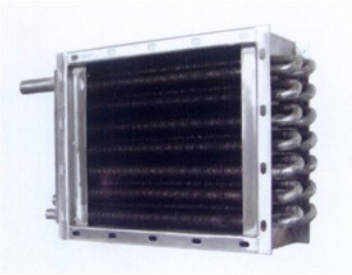
Coolant distribution configurations are shown in the pictures below to illustrate single and dual loops



Single Loop Distribution Unit (SLDU) or Single Loop Coolant Unit (SLCU) - here the coolant at the cabinet level is the same fluid that flows through the outdoor radiator. Systems often use a glycol/water solution for freezing protection along with inhibitors to prevent corrosion and biological growth, but this mixture has a lower heat carrying capacity than treated water. A 50/50 glycol/water mixture has 22% less thermal capacity than 100% water and 4x the viscosity, increasing the energy required to pump it.

CDU—Coolant Distribution Unit, this is a dual loop system where the secondary loop is between the cabinet and the CDU, the secondary loop uses specially treated water for maximum thermal heat transfer, while avoiding corrosion and biological growth. CDU's and dual loop systems are often used in higher performing systems and/or where the primary loop (where the heat is actually dissipated) is fed by an outside cooling source such as a chiller, radiator, or cooling tower.

Where Does a Liquid Cooling System Dump the Heat?



Radiator

Several people have asked what happens to the heat after it is removed from the customers system, where does it go?
The pictures show a variety of common installations where the heat is dissipated by either a chiller or an outdoor radiator. Some customers already have cooling towers that these systems can be connected to.
Cooling towers can be large radiators that water is sprayed on to cool them, the water evaporates cooling down the liquid in the radiator (if this was in your home in in the US we would call these evaporative coolers or in some areas “swamp coolers”, just on an industrial scale).

A major advantage of liquid cooling is that it saves energy that would otherwise be needed to operate CRAC units (Computer Room Air Conditioners). As we all know air conditioners are expensive.

A second advantage of liquid cooling is that it can also greatly reduce the number of needed system fans.

Small-scale Radiator

These system fans are costly to buy, expensive to run and usually very noisy. If you ever have the chance to visit a computer room or Datacenter you will see and hear immediately just what we mean.
Operating costs electricity alone for Data Centers and computer rooms are staggering. Liquid cooling is far more efficient, costs much less to run and has a greener environmental footprint.
The use of a chiller is not as green but still saves on fan power and noise.

Side-blown Radiator

Cooling Tower

Evaporative Cooler

Chiller

Vette can provide complete liquid cooling system and support services, including the controller, cold plate, hose kits, and treated water.

Vette Corp to Deliver Cooling Infrastructure for New Green Data Center

LiquiCool® Helps IBM Clients Increase Energy Efficiency, Reduce Space, Cut Capital and Operating Costs

PORTSMOUTH, N.H.--(BUSINESS WIRE)-- Vette Corp, a leading global provider of data center thermal management solutions, has been selected by IBM (NYSE: IBM) as a global partner in providing an energy efficient, sustainable cooling solution for the IBM Portable Modular Data Center (PMDC).

IBM's PMDC provides a fully functional data center in a shipping container with complete physical infrastructure including systems for power, cooling and remote monitoring. It has all the elements of secure operating environments found in traditional "raised-floor" data centers, including fire protection, smoke alerts, humidity control, physical security, external environmental isolation and temperature controls. PMDC can support multiple technology and system vendors in an industry-standard rack environment and IBM's unique PMDC design enables complete access to both the front and rear of IT equipment from within a closed, secure container without operational disruptions or downtime.

The IT equipment within the PMDC can be cooled using Vette Corp's LiquiCool Rear Door Heat Exchangers rather than with traditional air cooling. Vette's LiquiCool Rear Door Heat Exchanger is a water cooled door that mounts to the back of IT enclosures and cools computer equipment exhaust air before it re-enters the data center operating environment. The Rear Door Heat Exchanger utilizes a low impedance fin and tube heat exchanger that does not have fans, moving parts or electrical connections, resulting in a dramatic reduction of cooling energy consumption and an increase in efficiency gains and cost savings. When compared to traditional air-cooled solutions, Vette's Rear Door Heat Exchanger may permit up to 5 times more compute power per IT enclosure and reduce electrically active white space by up to 84%.

Vette's LiquiCool Rear Door Heat Exchanger went head-to-head with leading competitor liquid cooling products in a "Chill-Off" competition sponsored by the Silicon Valley Leadership Group (SVLG). The results are publically available and provide third party validation that Vette's Rear Door Heat Exchanger solution delivers top performance in efficiency and cooling capacity.

The low profile of the Rear Door Heat Exchanger and the ability for it to be used on a wide variety of IT enclosures supports the PMDC's goal of supporting multiple system vendors while optimizing the use of available data center power and space. The Rear Door Heat Exchanger is now available to be deployed on leading brands of enclosures by AFCO Systems, APC, Chatsworth Products, Damac, Data Center Resources, Dell, Electrorack, Great Lakes, HP, IBM, IMS Engineered Products, NER, Rittal, SMC and Wright Line.

"IBM is pleased to partner with Vette Corp to provide an energy and space efficient cooling solution for the PMDC" said Steven Sams, vice president Global Site and Facilities Services. "The energy savings and scalability of Vette's LiquiCool solution helps the PMDC approach be a cost effective and flexible data center alternative."