

Ivent Solutions Market Trend Update

September 2020

Supply Chain Price Pressure

Some might say that the COVID-19 pandemic has provided an excuse to increase prices throughout the supply chain. Although there is some substance to the reason for price increases it is problematic in such perilous financial times. What Ivent is now experiencing throughout most of the supply chain is an increase in costs throughout all aspects of product importation. Raw materials for instance are almost all on the increase, evidence of this can be easily seen in the cost of metals on the London Metal Exchange (noted later in this edition). Additional to this is the reduced capacity that some factories are now running at, reducing the availability of raw materials and driving pricing up. Finally, freight companies are under pressure due to the massive decrease in passenger aircraft operations, which in turn reduces available freight capacity. Many of Ivent's freight providers have added "COVID" surcharges to cover the increased cost of freight and the additional workload (cost) in moving shipments around the world. Ultimately all of this pressure relates to an increased landed cost for imported products. This has been eased a little by the strength of the NZD versus the USD however this easing is still not enough to completely negate the price pressure.

High Contrast Displays

Xiamen Ocular have released high contrast VA TN display technology. The viewing direction of these displays is optimized for high performance from the 6 o'clock, 3 o'clock and 9 o'clock viewing directions. Please contact Ivent for your custom or "off the shelf" LCD requirements.



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Cobalt Free Lithium Battery Research Breakthrough

For decades, researchers have been looking for ways to eliminate Cobalt from high-energy batteries, due to its high cost and the environmental ramifications of its mining. However past attempts have not lived up to the performance standards of batteries still utilising Cobalt. Researchers from the Cockrell School of Engineering at The University of Texas at Austin say they have cracked the code to a Cobalt-free high-energy Lithium-ion battery, eliminating the Cobalt and opening the door to reducing the costs of producing batteries while boosting performance in various aspects. The team reported a new class of cathode, the electrode in a battery where all the Cobalt typically resides, anchored by high nickel content (the cathode in their study is 89% Nickel). Manganese and Aluminum make up the other key elements. Essentially more Nickel in a battery means that it can store more energy. That increased energy density can lead to a longer battery life and better overall performance stability.

Typically, increased energy density does lead to some trade-offs, such as a shorter cycle life (the number of times a battery can be charged and discharged before it loses efficiency and can no longer be fully charged). Eliminating Cobalt usually slows down the kinetic response of a battery and leads to a lower rate capability (how quickly the cathode can be charged or discharged). However, the researchers said they have overcome the short cycle life and poor rate capability problems through finding an optimal combination of metals and ensuring an even distribution of their ions. Most cathodes for Lithium-ion batteries use combinations of metal ions, such as Nickel-Manganese-Cobalt (NMC) or Nickel-Cobalt-Aluminum (NCA). Cathodes can make up roughly half of the materials costs for the entire battery, with Cobalt being the priciest element. At a price of approximately USD28,500/ton, it is more expensive than Nickel, Manganese and Aluminum... combined! Cobalt actually makes up 10% to 30% of most Lithium-ion battery cathode costs.

The key to the researcher's breakthrough can be found at the atomic level. During synthesis, they were able to ensure the ions of the various metals remained evenly distributed across the crystal structure in the cathode. When these ions bunch up, performance degrades, and this is the issue that has plagued previous Cobalt-free, high-energy battery designs. By keeping the ions evenly distributed, the researchers were able to avoid performance loss.

Industry has jumped on the Cobalt-free push, most notably an effort from Tesla to eliminate the material from the batteries that power their electric vehicles. With large government organizations and private companies focused on reducing dependence on Cobalt, it is no surprise that this pursuit has become competitive. The researchers said they have avoided problems that hindered other attempts at Cobalt-free, high-energy batteries with innovations on the right combination of materials and the precise control of their distribution.

Watch this space for further updates as this technology becomes further commercialised into mainstream markets.

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Home School Day 22:
My child asked why I was
talking to myself. I told her it
was a Parent/Teacher
Conference

Quarantine day 58:
I built myself a Doberman



**MY BODY
ABSORBED SO
MUCH SOAP AND
DISINFECTANT
LATELY**

**THAT WHEN I PEE IT
CLEANS THE TOILET**

Stages of Quarantine



RULE NUMBER 1:



NEVER SET IT TO 2020

The amount of jokes
about coronavirus
virus has reached
worrying numbers.
Scientists claim we
are in the middle of a
pundemic

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NZD versus AUD - AU\$0.915 vs NZ\$1.00



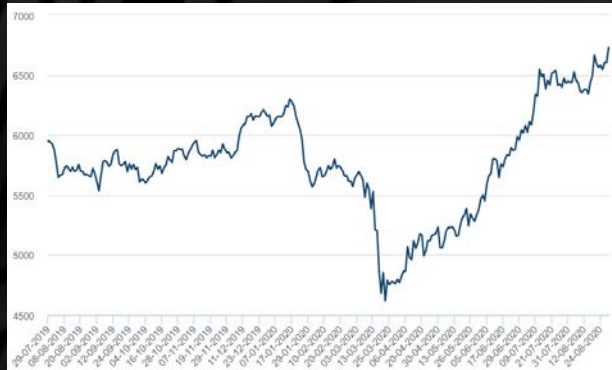
NZD versus USD - US\$0.675 vs NZ\$1.00



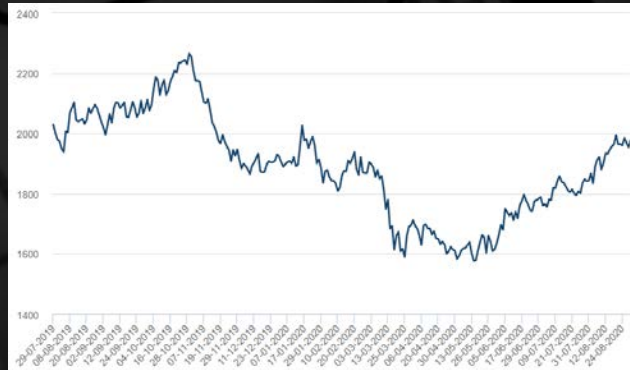
NZD versus EUR - EU\$0.565 vs. NZ\$1.00



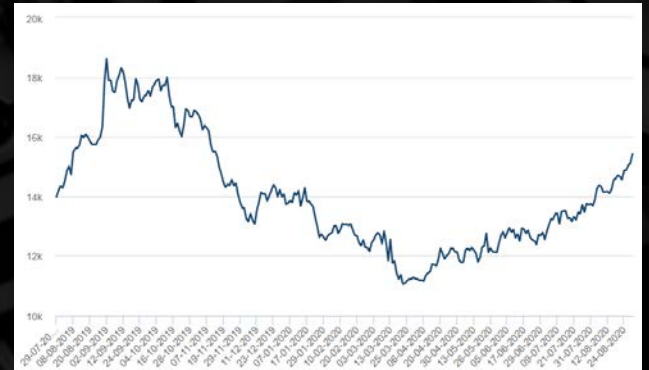
Copper - USD6700 / tonne



Lead - USD1950 / tonne



Nickel - USD15500 / tonne



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This Month in Tech History...

September 9, 1947 – The first recorded instance of an actual computer “bug” being found. The problem was traced to a moth stuck between relay contacts in the computer, hence the term now widely used by software engineers (and users!).

September 10, 1948 – Microsoft Word architect Charles Simonyi was born.

September 12, 1958 – Jack Kilby successfully tests the first integrated circuit at Texas Instruments to prove that resistors and capacitors could exist on the same piece of semiconductor material. His circuit consisted of a sliver of germanium with five components linked by wires. Along with Bob Noyce, he is considered the inventor of the integrated circuit (IC).

September 8, 1966 – The first episode of Star Trek airs... enough said!

September 1, 1977 – Pioneer 11 becomes the first man-made object to fly past Saturn.

September 5, 1980 – The last IBM super-computer “Stretch” is finally shut down. It was called Stretch as it was designed to stretch technology on multiple fronts. Stretch incorporated transistors instead of vacuum tubes, had 32MB disk drives and a large high-speed magnetic core memory of 2MB. It did however start to incorporate modern architecture traits such as pipelining, lookahead, multi-programming and error correction.

September 22, 1986 – In a decisive victory for the makers of a computer's insides, a federal judge ruled that code used to run computers and other electronic devices could be copyrighted like printed material.

September 29, 1994 – Programmers first demonstrated the HotJava prototype to executives at Sun Microsystems, Inc. A browser making use of Java technology, HotJava attempted to transfer Sun's new programming platform for use on the World Wide Web. Java is based on the concept of being truly universal, allowing an application written in the language to be used on a computer with any type of operating system or on the web, televisions or telephones.

September 21, 1996 – A software programming error may have contributed to the crash of American Airlines Flight 965 in Colombia in December 1995. The pilots apparently selected the first choice of a beacon to guide the plane's autopilot to a landing without checking that it was what they actually wanted. As a result, the plane was directed 100 miles off course, with the devastating result of 159 deaths.

September 2, 2008 – The first initial release of the Google Chrome web browser.

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