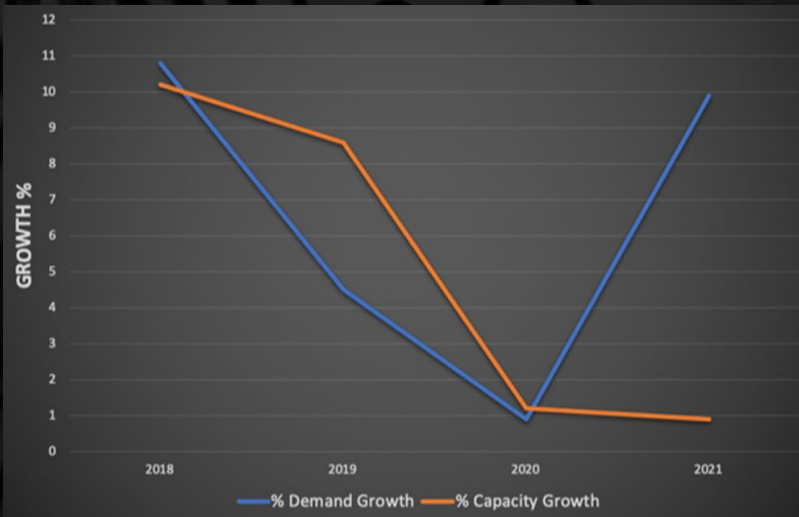


Ivent Solutions Market Trend Update

November 2020

TFT Supply Chain Pressure Increasing

Ivent's key TFT LCD manufacturer in China, DLC Display is continuing to warn about the TFT supply situation. The trade war with the United States seems to be at the core of the problem, however other factors as mentioned later in this report are also contributing. The warnings received from DLC over the last few months are now culminating in longer leadtimes (some up to 6 months) and increased prices in the ranges of 10-50%. We are seeing purchase orders for some small size TFT LCD that are simply unable to be confirmed in terms of price and delivery. The market does appear very unstable based on external research conducted by Ivent so now is the certainly the time to lock in additional demand to protect your supply chain. It is a situation we have never seen before.



Shipping Lines Continue to be Problematic

We are getting continuous feedback on the tightness of shipping lines around the world. Our key freight forwarder partners, one of which is DHL Global are providing regular updates, all of which point to difficulty in maintaining normal shipping leadtimes. An example is one of our ships is arriving in Auckland on November 6th but cannot berth until the 15th due to port congestion. The boat was originally due on October 28th!



TFT Demand Spike Exceeds Capacity

The flat-panel display market is starting to recover after a period of oversupply and lackluster growth, fueled by new technologies as well as more people working from home. The TFT display market is complex. Several different technologies are at play, such as liquid-crystal displays (LCDs) for TV screens and other products, as well as organic light-emitting diodes (OLEDs) for smartphones. Cars, industrial equipment, PCs and tablets all incorporate these TFT displays in one form or another. And for many products, the display is the main selling point for consumers.

Looking back, for the flat panel market as a whole, 2019 was a tough year. Oversupply caused prices to drop, which in turn sparked some major changes in the landscape. Two South Korean suppliers — LG Display and Samsung — are retreating from the low-margin LCD business to focus on higher-end display technologies.... continued over...

IVENT CHRISTMAS CLOSEDOWN DATES:
23RD DECEMBER TO 11TH JANUARY



Ivent Solutions Market Trend Update

November 2020

continued...

Meanwhile, China-based suppliers have been building up a massive amount of fab capacity, with plans to dominate several sub-segments in the arena. 2020 was supposed to be another gloomy year. Then, the COVID-19 pandemic struck. A large segment of the population was (and is still) forced to work at home due to the pandemic, disrupting the world's economies. If there is a silver lining, the work-at-home economy is fueling demand for several products, thereby jumpstarting the display market. "In 2020, who would have thought that the three fastest growing segments on an area basis would be tablets, notebooks and monitors? Those three segments had been in decline," said Ross Young, CEO at Display Supply Chain Consultants (DSCC), during a presentation at the recent Display Week 2020 conference. "We are now talking about double-digit growth in display revenues in 2021 with a brighter outlook post-COVID than pre-COVID."

Not all products categories are robust. Smartphone demand is a mixed bag, while TVs are plodding along. So in total, worldwide display demand is projected to grow by 1% in 2020 over 2019, according to Omdia. Display capacity also will grow by 1%, meaning supply and demand are in balance in 2020, they said. "In the meantime, we are expecting the industry will experience a 'V' shape recovery for 2021. Flat-panel display area demand growth will increase by 9.5% in 2021," said David Hsieh, an analyst at Omdia. Capital spending for displays also appears to be a bright spot, which is welcome news for flat-panel display equipment suppliers. "(There is a) continuing investment in large panels for TVs and a recovery in investment for OLED for mobile applications," said Toshiki Kawai, president and CEO of TEL, in a recent presentation. In terms of capital spending, the industry "is expecting approximately 15% year-over-year growth in CY2000," Kawai said.

LCDs and OLEDs are manufactured in fabs using an assortment of equipment. Korea is still the OLED leader in terms of fab capacity with a 67% share, according to Omdia. But China is making a big push here, as the nation's share of OLED fab capacity has jumped from 1% in 2014 to 31% in 2020, according to the firm. By 2022, China is projected to have 21 small to mid-sized display fabs, including LCD and OLED. Some 14 fabs are in production in China with 7 in the works, according to the firm. China also is building new fabs for large-screen LCDs for TVs. "In case of the OLEDs, China is aggressively investing in new capacity. But long-term, we also see that Korean OLED capacity will dominate," Omdia's Hsieh said. On the product front, meanwhile, 70% of all smartphones use traditional LCD screens today, while 30% incorporate OLEDs, according to Omdia. By 2024, OLEDs will represent about 43% of the smartphone display market, they added.

IVENT CHRISTMAS CLOSEDOWN DATES:

23RD DECEMBER TO 11TH JANUARY



2020 CHRISTMAS WISHLIST



TOILET PAPER

When I try my best to shop for Christmas presents for my family, but then I see something and think, you know who would like that? Me...



WHAT DID YOU GET FOR CHRISTMAS?



FAT. I GOT FAT

THE LAST THING A CHRISTMAS ORNAMENT SEES



BEFORE IT DIES

CHRISTMAS COOKIES?



NO, I HAVEN'T SEEN ANY CHRISTMAS COOKIES

I FIND YOUR LACK OF CHRISTMAS SPIRIT



DISTURBING

Ivent Solutions Market Trend Update

November 2020

NZD versus AUD - AU\$0.940 vs NZ\$1.00 ↑



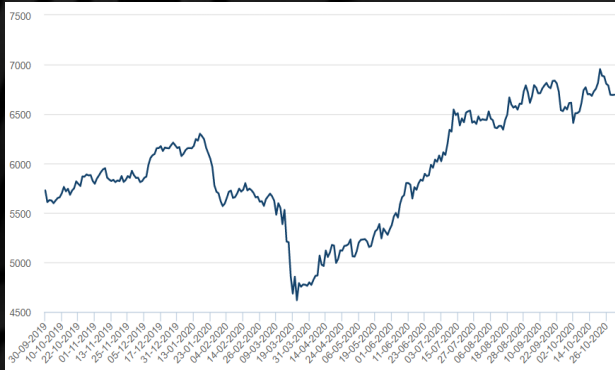
NZD versus USD - US\$0.660 vs NZ\$1.00 —



NZD versus EUR - EU\$0.570 vs. NZ\$1.00 ↑



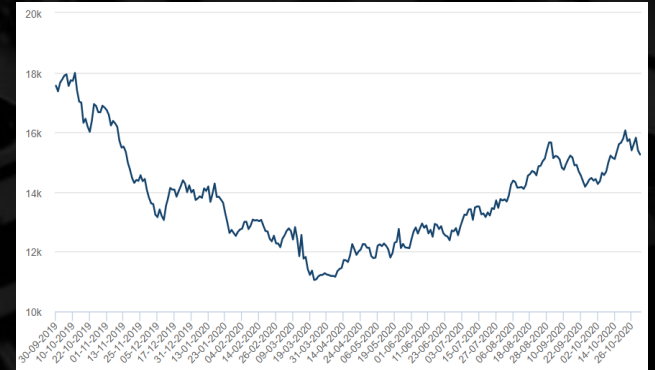
Copper - USD6700 / tonne ↓



Lead - USD1800 / tonne ↓



Nickel - USD15400 / tonne ↑



IVENT CHRISTMAS CLOSEDOWN DATES:
23RD DECEMBER TO 11TH JANUARY



This Month in Tech History...

November 1, 1870 – The U.S. Weather Bureau makes its first meteorological observations using 24 locations that provided reports via telegraph. For the first time, weather observations from distant points could be “rapidly” collected, plotted, and analyzed at one location.

November 2, 1988 – Robert T. Morris, a computer science graduate student at Cornell University, releases a self-replicating computer worm on ARPANET (a predecessor of the Internet) and, unwittingly, launches what will become the cybersecurity industry, a \$75 billion market as of 2015. The worm was part of a research project meant to determine the size of the Internet by infecting UNIX systems in order to count the number of existing connections. Because of a programming error, the worm began infecting machines repeatedly, causing clogged networks and system crashes. Morris was dismissed from Cornell, sentenced to three years’ probation and fined \$10,000. He eventually became a tenured professor at MIT...!

November 22, 1995 – Toy Story opened in U.S. theaters, the first feature-film to be made entirely with computer-generated imagery (CGI).

November 17, 1970 – Douglas Engelbart receives a patent for his invention of the first computer mouse. Early models had a cord attached to the rear part of the device looking like a tail, resembling a mouse.

November 12, 1936 – Alan Turing delivers to the London Mathematical Society his paper “On Computable Numbers, with an Application to the Entscheidungsproblem.” In the paper, Turing described the Universal Machine, later to be known as the Turing Machine, an idealized computing device that is capable of performing any mathematical computation that can be represented as an algorithm. In subsequent decades, it became a conceptual framework for modern computers.

November 1, 1954 – The Industrial Development Engineering Associates company begins selling the Regency TR-1, the world’s first commercial transistor radio. Texas Instruments designed and developed the transistor technology who then partnered with IDEA to design and manufacturer the completed radio. The TR-1 sold over 100,000 units, ushering in the commercial transistor industry.

November 20, 1985 – Two years after initially being announced, Microsoft finally ships the first version of Windows. Originally slated to be shipped in April of 1984, the long delay caused skeptics to began to accuse Windows of being “vaporware”. Due to the relatively high demands of then-current PC technology, Windows 1.0 was generally considered too slow to be usable. It wasn’t until Windows 3 that the operating system began to generate significant sales.

November 12, 1990 – Tim Berners-Lee submits a proposal for a hypertext project he calls “WorldWideWeb”. In this proposal he lays out his vision for what will, of course, become the modern web. In about three months, he will have a web browser ready. And in only another three months, the first web server will go online, marking the launch of the world wide web.

IVENT CHRISTMAS CLOSEDOWN DATES:
23RD DECEMBER TO 11TH JANUARY



DON'T FORGET THE CHINESE NEW YEAR DATES:
12TH FEBRUARY TO 26TH FEBRUARY

新年快乐
HAPPY CHINESE NEW YEAR
2021
YEAR OF THE OX

