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MICHAEL GROTTICELLI, BROADCAST ENGINEERING /
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Monitoring the Market for Program Evaluation

These days perhaps the toughest professional equipment category to see a profit is video monitors; used for broadcast applications like inside video control rooms and mobile production trucks. The problem is that relatively inexpensive 42-inch flat-screen LCD panels from a variety of manufacturers, and made for consumer uses, have penetrated the once scared domain of much heavy and more expensive CRT-style program monitoring. It's caused customers to hesitate before buying.

Some companies have seen their revenue for the category drop off by a whopping 60 percent, as customers have flocked to the less costly models that are now deemed "good enough" for most professional uses. As a response, manufacturers have introduced lower-cost LCD panels with embedded multiviewer software, which many broadcasters say are more than adequate for most television station applications.

However, as the vendors that make the more expensive, and more fully featured models will quickly tell you, consumer-grade monitors are not for the critical eye. And, they'll tell you, there's a bit of education that needs to happen to help broadcasters understand the difference. These companies, including Ikegami, JVC, Marshal Electronics, Panasonic, Sony and TVLogic, all offer (or are about to) 4K-capable monitoring and a host of features and functionality (like 10-bit processing) that often does not compare to a consumer display. Basically "good enough" quality is in the eye of the beholder.

"I think consumer-grade monitors are inappropriate for critical applications where you are looking at more than just the picture itself," said Teri A. Zastrow, Director of Sales & Marketing, Ikegami Electronics (U.S.A.), Inc., "especially considering availability of highly affordable broadcast LCD monitors."

At this year's NAB Show, Ikegami will show a variety of monitors from its existing line of LCD monitors (HLM-1751WR and HLM-1705WR), a new low cost LCD (the ULE-185) as well as new Grade 1 OLED models (HEM-2570W and HEM-1770WR) and a prototype 4K monitor.



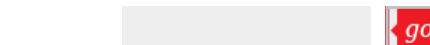
The Ikegami HEM-2570W is a 24.5-inch, grade-1 OLED HD monitor with built-in audio functions, such as speakers and headphone terminal, as well as 3G-SDI, Multi-SDI, DVI-D, VBS inputs.

Zastrow said that customers should expect to pay more for OLED technology, but it's worth it, "for the Grade 1 applications (final program monitoring) that offer better for contrast ratio, including reproduction of blacks and speed of response (refresh rate)." Some refer to "Grade 1" monitors as "master monitors," from which all other images are compared to during a telecast.

"Off the shelf monitors are not color calibrated and lack the control that a broadcast monitor has," said Devan Cress, Director of Sales for the Broadcast AV Division at Marshall Electronics Inc. "If you are looking for a simple confidence monitor, something off the shelf will work, if you are looking for accurate reproduction of content a broadcast monitor is a must."

Marshall will exhibit its 31-inch 4K monitor, QVW 2k/4k cable quad view monitors (models QVW-1708, QVW-2410 and QVW-2710), full resolution camera top monitors, and the Lynx-702 line of feature-rich monitors.

Cress said for them the market for broadcast monitors has increased, but the mix of format sizes has changed.



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"By and large, the few mistakes made were human and, if anyone noticed them, just reminded the viewer that the show was live." ~ Robert Dickinson, lighting designer "The Sound of Music Live"



Marshall Electronics' 2K/4K compatible quad view monitors offer two Dual-input 3G SDI modules and four 3G SDI inputs.

"We are seeing larger displays replace smaller racks with quad view monitors," he said, "so one monitor can accomplish what used to take four monitors to display."

He said OLED technology offers superb blacks and the cost continues to be reduced, but "The downside is the continued need to calibrate the

monitor to produce an accurate picture."

At the Panasonic booth at NAB, visitors will see a number of existing HD monitors (like the 21.5-inch BT-LH2170 and 18.5-inch BT-LH1850 HD/SD LCD monitors) but also the company's new 31-inch BT-4LH310 4K monitor (for \$28,000). Michael Bergeron, Senior Vertical Sales Manager, at Panasonic said the new 4K monitor addresses the "many holes" in the emerging 4K production market.

"This [monitor] has better color performance from anything we've done in LCD so it could be used for post," Bergeron said. "But as a true 4K monitor—4096 horizontal pixels—which is rare, with four 3G HD-SDI inputs, it's designed as a field monitor."



Panasonic's new 31-inch BT-4LH310 4K LCD monitor offers a 10-bit IPS (in-plane switching) panel and four common connections.

The new 31-inch display offers a 10-bit IPS (in-plane switching) panel and four common connections (HD-SDI, 3G-SDI and HDMI) that work well with almost any 4K imaging system. The unit's 178-degree vertical/horizontal viewing angles and 28V DC operation are ideal for native 4K location shoots, Bergeron said.

Meanwhile at Sony's NAB booth, a company that has led the OLED charge for the past five years, it will show a new line of HD LCD and an evaluation-grade 30-inch 4K OLED monitor that can display full 4096 x 2160 at the same level of performance as Sony's current 25-inch models.

All of the monitors on display are designed around an entirely new chassis. The chassis and processing engine are tied to both LCD and OLED panels. The new LCD models are the LMD-A170, LMD-A220, and LMD-A240. The new OLED Trimaster EL models are the PVM-A170 and PVM-A250.

Gary Mandle, senior product manager, professional displays, Sony Electronics, said these new models feature a number of enhancements, weigh less and are much lighter and better suited for portable, on-set or field use. They use less power and all the LCD models have DC inputs. The OLED panels have also been redesigned using a lighter support construction. This helps the PVM-A170 achieve a weight of only 9 lbs.

The new engine offers all the features of previous models, but processes video much more quickly. Now any video format is displayed on screen in less than 1/2 a frame. This makes system integration much easier as you no longer need to worry about lip sync with more complicated systems.

"You need the right tool for the right job," Mandle said. "If you feel that you don't need to see the entire picture content on your control room wall, then a consumer TV is fine. I've heard of engineers using TVs on a wall fed by DVI. You do get a picture, but this is only 8 bit and is scaled. You don't see what's being broadcast.

"[Broadcasters] have to realize

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The Sony BVME-250A is an evaluation-grade 30-inch 4K OLED monitor that can display full 4096 x 2160 at the same level of performance as Sony's current 25-inch models.

that they really have no way of truly knowing what's being sent to their customers. You could have all kinds of errors that reside in those last 2 bits that you'd never know about. Editing is completely different. In many cases the finished

product will come from the edit bay. If the display isn't somewhat accurate, then you don't know what you've delivered. That may be Okay for a quick news spot, but an advertiser is not going to be too happy looking at yellow faces on their commercial."

As for the added cost of OLED technology, Mandle said if you want to use a display to frame content within a picture, you don't need a color-accurate monitor.

"If you are working in finishing applications, then an OLED is definitely worth the money. It's the old saying 'pay me now or pay me later.' The cost of rebuilding a production or even one day of shooting could far outweigh the difference of the cost in monitoring. When we look at our customers, all have our Trimaster EL OLEDs just so they have something they can reference to should they have a question on what they're producing."

And yet, there's no getting around the conundrum that broadcasters, especially smaller stations, face in making purchase decisions.

"Broadcast [spending] has seen some decline," Mandle said, adding that overall, when you include other markets such as post-production edit suites, Sony's market share for professional monitors has increased. "As management makes purchase decisions (typically in 100 market and above), they tend not to purchase calibrated displays."

Another company, TVLogic, will also show a series of 4K broadcast monitors, including a 55-inch UHD (3840x2160) display and a 31-inch DCI 4K (4096x2160) display; as well as a 5.5-inch and 9-inch on-camera HD 1920x1080) field monitors. TVLogic products are distributed exclusively in the Americas by PRECO, Inc.



The TVLogic 5.5-inch field monitor offers full HD resolution and a host of video and audio connections

Wes Donahue, Director of Channel Sales & Marketing, for TVLogic USA & Latin America, said they have seen an increase in their monitor business, due to the simple fact that "monitors are being used in more places by more people from on-set to studios to post."

To the professional that is saving money by using off-the-shelf flat screen LCDs as an editing or TV station control room monitor, Donahue said, "You get what you pay for."

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