

# Size matters

AS DEMAND GROWS FOR ENHANCED LEVELS OF OPERATOR SUPPORT, MANY TYPES OF OFF-HIGHWAY EQUIPMENT NEED TO BE FITTED WITH LARGER DISPLAYS WITH INCREASED INTEGRATED FUNCTIONALITY

▶ Displays in the 3.5-4.3in range were for years the standard in a variety of industrial vehicle segments, including construction equipment. A key driver in the adaption of these displays has been the introduction of electronically controlled engines, due to graphical displays offering greater flexibility and space efficiency than analog gauges and instruments. These multifunctional displays also made it possible to provide operators with a graphical user interface for other equipment subsystems.

The megatrends Change in Work, Individuality and Demographic Change drive expectations in terms of operator-machine interaction. Today's users expect an intuitive interaction with the equipment and the ability to use it at its full potential without possessing the depth of knowledge that design engineers have. Electronic manuals, graphical visualization of the machine system/work process, and integrated video streams are examples of the functionality that can improve equipment utilization and productivity.

But then size matters – and providing this level of operator support is not practically feasible with 3.5-4.3in displays, especially with resolution typically being limited to 480x272. Another limitation with these smaller displays is that they do not provide the required software build environments and computing performance. And finally, the move to larger displays has tailwind from the automotive market as it adopts 7in and even larger displays, driving down the cost of display components.

To offer OEMs and system developers a platform to meet these challenges, maximatecc introduced the first product in the Vision display line in 2012 – the 3.5in CCPilot VI, offering better graphical capabilities than other displays in this size range. Next was the introduction of CCPilot VC in 2014 – a 5in widescreen display with 800x480 resolution.

Soon, at Intermat 2015, another milestone in the Vision line roadmap will be reached through the launch of CCPilot VA – a 7in widescreen display with same resolution, same powerful ARM Cortex A8 core and same capable software tools as its sibling VC.

## Easy on the eye

maximatecc's CCPilot VA is a new 7in display making it easy and affordable to achieve a user interface with sharp look-and-feel, intuitive interaction and a higher



CCPilot VA offers flexibility in user interaction through 10 freely programmable soft keys and optional PCAP touch screen for a modern user experience.

level of operator support. Via hardware acceleration for 2D, 3D and vector graphics, it offers a higher ability to create a premium user experience than other 7in displays in the market.

Because it is based on a fully fledged Linux system, OEM designers can choose to develop applications in C/C++ or utilize the LinX Software Suite, an open software application platform where applications are developed in Qt and/or CoDeSys. The software suite features a range of ready-made software components, meaning that sharp user interfaces can be realized with very limited software engineering effort.

An example is the popular e-manual component. This enables the easy importing of manual texts and pictures and provides good support for search and navigation in the manual. Compared with using a PDF viewer, the operator gets support faster with this embedded e-manual component.

QML is another popular and powerful feature of the LinX Software Suite; it is a descriptive coding language that enables the handling of advanced graphical features such as transparency, shading and animations, with only a few lines of code – in C-coding such features are very time consuming.

With its legacy in software system development, maximatecc offers a range of engineering services to support customer projects, be it software tool tutorials, advisory services in application and system design, or development of applications.

## Multifunctional capability

CCPilot VA comes with 2xCAN, 2xUSB, Ethernet and RS232 interfaces, as well as analog video input. It also features eight configurable inputs for digital and analog sensors, as well as two configurable outputs. This interface set-up provides system designers with options to create an efficient system architecture where the CCPilot VA is used as operator interface for several vehicle sub-systems.

With the launch of CCPilot VA, maximatecc now offers 5in, 7in, 10in and 12in displays based on the same core and using the same software platform. This enables software reuse and drastically reduced spend in software development for OEMs who need a range of display sizes for their equipment. So maybe size doesn't matter after all – it's more about technique... iVT

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