

# In living colour

A GAME-CHANGING GAUGE DISPLAY OFFERS COLOURFUL, PROGRAMMABLE DISPLAY AND OTHER ADVANCED-CAPABILITY FEATURES TO ENHANCE THE SAFETY AND PRODUCTIVITY OF INDUSTRIAL EVs



Two video inputs interface directly with optional cameras in either PAL or NTSC format to support the operator with backup and fork alignment visibility

Consumers everywhere have become more visually sophisticated. Smartphones and other personal electronic devices have placed brilliant, easy-to-read displays into the hands of the global community. Now the industrial electric vehicle sector, with its focus on practical applications, can attain the pop and dazzle of advanced visual displays – not only for eye appeal, but also for enhancements to safety and productivity.

Curtis Instruments' entry into colour LCD gauge displays for the industrial electric vehicle market came earlier this year with the arrival of the enGage VII. As the newest generation in the company's series of microprocessor-based programmable and CAN-compatible gauges, the Curtis enGage VII is a game-changer. It brings an eye-

catching boost of colour, as well as a number of other new features that add up to a powerful advance in gauge technology for industrial and utility vehicle OEMs. The enGage VII is available in modular form, which allows vehicle manufacturers to take full advantage of the benefits of the colour LCD while creating their own distinctive panel.

The addition of a colour display brings aesthetic appeal to the world of industrial EVs. But should OEMs actually care? The answer is a resounding 'yes'. It's not just about creating a display panel that looks state-of-the-art – there can be serious positive repercussions in the workplace, be it in a warehouse or open-air environment.

Let's start with the biggest news: colour LCD, larger screen, video input and more I/O.

### Visual impact

**LCD colour:** The colour factor is about much more than good looks. The arrival of colour in the enGage VII supports swift, intuitive communication – for example, highly visual warning flags in yellow or red, rather than a monochrome image or text message, which may not signal danger zones as quickly.

In a demo, the difference is immediately apparent. Rich, vivid colours create sharp images with strong contrast and vibrancy. Operators won't miss a beat in interpreting the intended message.

**LCD size:** At 5.7in, the high-resolution screen is designed for optimum viewing – another read-at-a-glance advantage promoting safety and productivity. Its generous size accommodates a wide variety of essential display information for

virtually any on- or off-highway electric vehicle application. **Video input:** Two colour video inputs enable cameras to be strategically placed for safety purposes, such as backing up or precisely positioning forks. The video essentially puts the operator's eyes wherever they need to be, reducing the potential for danger or damage. In another ease-of-manufacturing touch, video inputs will accommodate both NTSC and PAL formats.

**Wide-ranging I/O:** enGage VII offers extensive digital (active high or low), analogue (resistive or voltage) and frequency inputs as well as multiple MOSFET outputs rated for 2A. The extensive I/O allows distributed processing, thereby greatly reducing harnessing complexity and cost.

### Design excitement

Although these details are enticing, the big picture is even more exciting for industrial vehicle design teams. Fully programmable and endlessly customisable, enGage VII combines state-of-the-art design flexibility with progressive appearance.

Design engineers will appreciate the attractive and effective array of graphic capabilities. And if vehicle manufacturers don't have their own instrumentation design staff, or have limited personnel to address design, the Curtis design engineers will team up with them to explore the possibilities. It's like having a high-end industrial design group on call.

A key strength of the enGage VII is that one integrated gauge or panel does it all. Instead of buying and storing multiple types of units, OEMs and aftermarket buyers can take a single housing and customise it to perform the desired functions. These can be selected in virtually any combination to meet any vehicle application requirements, in any chosen configuration. The gauge panel can even be customised with corporate logos, special icons and other visuals that enhance the OEM's marketing image – all in the desired brand or corporate colours.

"The new enGage VII opens up so many design possibilities, unlimited variations of shapes and colours," says Mike Miller, global product manager at Curtis. "It's truly



unprecedented – an empty palette that's totally programmable and customisable for the customer's practical needs and design vision." Because these gauges can be bulk ordered as blanks and then later

customised, OEMs can achieve important bulk volume savings, while simplifying purchasing and inventory. The units can then be easily transformed to provide the appropriate multifunctions, such as

ABOVE: The gauge is a clean palette which can be used to create any type of instrument for the OEM vehicle. Here are just a few on-highway, off-highway, and materials handling examples



speedometer, tachometer, fuel gauge, time-of-day clock, temperature indicator, field-programmable maintenance monitoring and other essential instrumentation.

enGage VII packs powerful new technology, with fully customised programmability, into a single, multipurpose unit.

**CAN we talk...**

enGageVII offers universal CAN compatibility and isolated CANbus. It seamlessly integrates with Curtis AC vehicle speed controllers and input devices – no additional code writing is necessary. Via CANopen, it will interact with any CAN node on a vehicle’s network.

The unit can be configured via VCL, the proprietary Curtis Vehicle Control Language, in the controller for easy custom touches. For example, a controller program can be written to provide data logging and event time stamping when specified conditions (such as impacts) occur. A battery watering system can be activated with automatic alerts to open the valve and fill the reservoir. These, as well as dozens of other vehicle functions can be easily controlled via VCL.

For engineers familiar with the enGage series, the new colour unit builds on the strengths of the enGage IV, with additional improvements: two extra buttons provide expanded access to function menus; the new real-time clock function with battery backup reliably keeps time and date;

ABOVE: Easy-to-install, snap-fit cased unit

BELOW: The enGage VII is available in modular form, which enables vehicle manufacturers to take full advantage of the benefits of the colour LCD while creating their own distinctive panel



the GUI design is more intuitive and user friendly; the housing is more environmentally protective; the hard-coated lens is anti-scratch and anti-glare – the transfective LCD provides excellent visibility in low-lit and direct-sunlight situations; the wheel position indicator clearly shows in which direction the vehicle will go; a wider voltage range accommodates more high-volt apps; and the new audible alarm enhances safety.

Curtis enGage VII is available in cased and module versions, with excellent mounting flexibility. Multiple functions can be displayed simultaneously, cleverly integrating comprehensive panel functionality into a single display.

**Feedback from early adopters**

“Our customers already have enGage VII in production,” says Miller. “Two projects I can mention are a light on-highway EV and a reach truck. These were previously enGage IV customers who gave us their technology wishlist for colour, more buttons, more I/O. As happens at Curtis, our initiative came from the marketplace, responding to what our customers say would be valuable in the product’s next generation.”

It is part of the Curtis business model to work in close partnership with its customers. So it is hardly surprising that even just out the door, the new enGage VII is already getting very positive feedback. The display seen in on-highway EVs is winning particular acclaim because it is so colourful and easy to read.

“The dealer network is raving about it,” says Miller.

Curtis offers one of the most extensive instrumentation product lines in the electrical EV market. With a reputation for innovation that works, the company has been steadily introducing breakthroughs since its earliest years, when its products were specified by NASA for all the lunar modules. With the introduction of the colourful enGage VII, Curtis has once again moved the needle forward in EV safety, productivity and ease of use.

Curtis Instruments, founded in 1960, is a New York-based world leader in advanced electric vehicle technology control systems, instrumentation and related technology. The privately held company, headquartered in Mount Kisco, operates 15 subsidiaries around the world. Since its founding, Curtis has been fully committed to zero-emission, green transportation technology. The company serves major international EV manufacturers in all types of industries: materials handling, recreational, on-highway, industrial, medical mobility, airport ground support and more. Its 10 wholly owned subsidiaries include four major R&D centres and three manufacturing plants. **ALT**

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