Smart Healthcare & Life Science HMI Solutions—Post Pandemic

Thanks to the COVID-19 pandemic, the world is a different place, and in many respects, it'll never go back to how it was before. One glaring example is in the healthcare industry, where both in-hospital care and remote care have changed forever.

One example of those changes is the human-machine interface (HMI) that's bundled with the latest healthcare-based platforms. The HMI is the interface or dashboard that forms the "connection" between the user and the system/machine/device. The HMI could be used to visually display data, track production time, trends, and tags, and monitor machine inputs and outputs. While here we are referring to healthcare-based information, that I/O could be anything from factory production or real-time medical diagnostics, or anything in between.

The HMI likely would contain all the functionality that's needed for the application, not just that graphical user interface (GUI). That means the system would embed all the processing, memory, and I/O needed for the given application. Hence, the term "panel PC" is sometimes used interchangeably with the HMI in some cases.

The efficiency of HMI product development is occurring at an astounding pace, in just about all applications. In addition to healthcare, this is particularly true for those with hygienic-control requirements in the food, beverage, bio-tech, and pharmaceutical industries. The result of this expansion is faster deployment of connected and remote healthcare applications, and thus an increased demand for healthcare HMIs and control panels with IP that's fully protected globally. These systems scale from the life science industry to traditional industrial facilities, and even building doorways/entrances.

Wincomm

Key Challenges for Healthcare-Based HMIs

Like most application areas, healthcare comes with its own unique set of design challenges. One key challenge, brought on by the pandemic, is the need for medical professionals to monitor patients remotely and do be able to accurately come up with a diagnosis, while only seeing the patient via live (or stored) video.

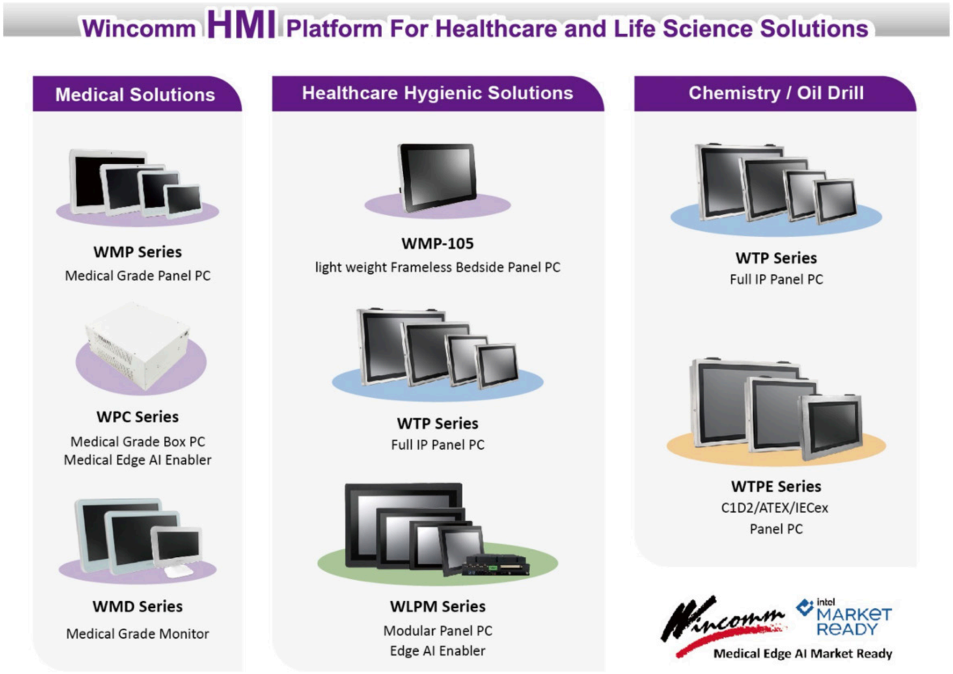
But it's not just the people that need monitoring. Ensuring that the equipment is in proper working order is just as important. That means maintaining proper cleanliness. This trait just as easy lends itself to food, pharmaceutical, life science, and factory-automation applications. Ensuring proper hygiene translates to maintaining clean and sterile work environments, sometimes using a simplified form of machine learning to make that happen.

With or without the machine learning, the HMI must allow for embedding without a long, complicated process. And if the application dictates it, allowances must be made for mobility/portability, meaning that the HMI must be relatively light weight. Finally, the HMI must be designed so that expansion down the road is possible, as multiple functions are likely to be added later as new technologies become available. This is a key aspect of future proofing, or ensuring that the overall system can be in service for a number of years before obsolescence begins to set in.

A key feature of HMIs or panel PCs aimed at medical applications is compliance with the IEC 60601-1 standard, which applies to the basic safety and essential performance of electrically-powered medical equipment and systems designed for use in a professional healthcare setting. The standard applies to those systems intended for use either by a trained medical professional or an untrained operator. A second important criteria for medical-grade equipment is the use of an anti-bacterial housing that's effective against MRSA (staph infection), a bacteria whose impact can't be reduced by continuous alcohol cleaning the housing.

Wincomm's HMI solutions

Wincomm Corporation offers medical grade panel PCs with all the features needed for instant deployment. The HMI solutions include a medical cart PC with a hot-swappable battery, and a medical all-in-one panel PC that's so energy efficient it can operate in a fanless enclosure.



Wincomm HMIs are designed to the latest safety specifications and certifications for increased robustness in medical/healthcare applications.

Rounding out the series is a medical Edge AI panel PC, the WMP-19K/24K series. This latter HMI platform is designed to the latest UL/EN 60601-1 certification and includes an anti-bacterial (MRSA) housing on its touch panel. It also offers a wide range of microprocessor choices, and comes in a host of display sizes, ranging from 10 in. to nearly 24 in., measured diagonally.

By all measures, these HMI offerings exceed what has become the "standard" or the norm in the healthcare, hygiene, and process-control industries. Wincomm prides itself on its ability to meet the necessary standards for healthcare and life sciences manufacturing and processing facilities. Specifically, that includes hot-swappable, battery-powered medical-cart PCs, as found in the company's WMP-G/H/J series, and a lightweight, frameless 10.1-in. medical PC, the WMP-105, which is suited for bedside info. Note that this model can also include an HMI machine controller.

For the food, pharmaceutical, and life sciences industries, Wincomm offers a series of smart hygienic-control solutions. This includes a full IP69K stainless steel touch panel PC (the WTP/WTPE series) and the modular IP66 panel-mount touch panel PC (the WLPM series) for Edge AI machine-control applications.

Because all engineering work is performed in-house at Wincomm, creating custom or specialized designs does not present a problem. The company's engineers can handle all aspects of the hardware and firmware, which eliminates the need to recruit multiple third parties to complete the system, regardless of the end application. In many cases, equipment in these environments is expected to be fully functional for many years, and in some cases, for more than a decade.