



# MES Management System with Advantech's Streamlined Industrial Panel PC

## Project Introduction

With the manufacturing industry gradually shifting toward the smart factory aspect of Industry 4.0, a multitude of digital applications have been introduced to shop floors. The proliferation of these applications has also led to new usage patterns. Computers installed on production lines are no longer regarded as a luxury but a necessity, because they better allow workstation operators and line supervisors to coordinate and control manufacturing processes in real time.

There are many computer options on the market, but not all of them are suitable for production line environments. For example, typical desktop PCs with a monitor tend to be bulky and heavy, and they require more space for installation. The cooling fans that are typically installed on such computers also pose a problem with dust ingress, which have a high probability of causing a crash or damage to a computer because of fan motor failure due to dust ingress.

Another option is commercial panel PCs, but these have inferior stability and low durability compared to industrial-grade models. Frequent updates to software and the rapid phasing out of key components are also conventional practices for commercial computers, and these pose a problem for manufacturers who generally seek to use equipment for as long as possible.

Overcoming these problems is Advantech's PPC-3120S streamlined industrial panel PC, with its ultra slim, fanless, and high-durability design. This unit's ruggedness, reliability, and long lifespan make it an ideal all-in-one hardware platform for the manufacturing industry, helping manufacturers to digitize and thereby optimize their production processes.

## System Requirements

Holley Technology Ltd. is China's largest meter manufacturer, exporting its products to more than 40 countries worldwide. The company engages in the R&D, manufacturing, and sales of energy meters and power automation system, and has several factories locally and abroad. In 2017, Holley Technology Ltd. decided to build a large smart manufacturing factory in Hangzhou, China, to realize Industry 4.0 practices. With strong support from China's Ministry of Industry and Information Technology, the new factory will be built as a national demonstration base.

The project is aimed at improving production efficiency and yield as well as realizing efficient and intelligent factory management. Therefore, Holley Technology Ltd. has planned to implement an electronic standard operating procedure (eSOP) and material management system on its production lines so as to replace the traditional paperwork process. This digital management method requires a computer to be installed at each workstation to provide digital signage as well as a hardware platform.

To select an appropriate computer for the new smart manufacturing factory, the company made the following requests:

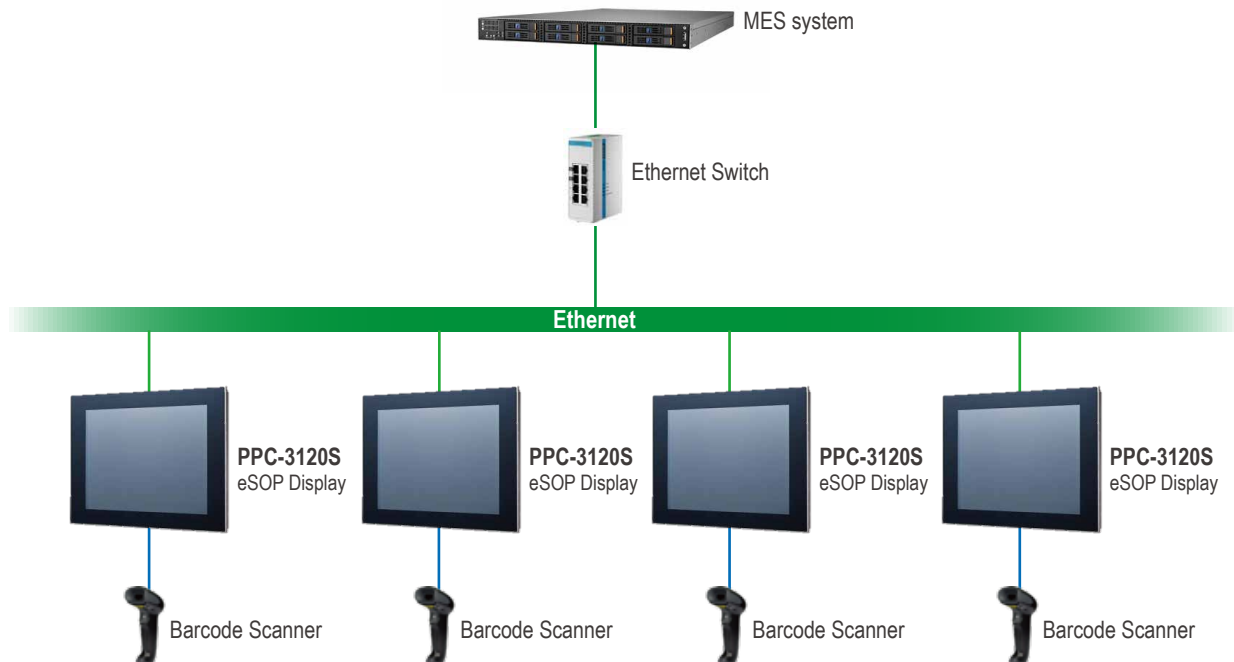
- Industrial-grade fanless design, panel with 50k lifetime backlight, anti-shock, and anti-vibration resistance to ensure stable system operation and maximize the product lifespan
- IP65-certified and true flat panel for easy operation
- Ultra-slim all-metal body to safely fit a cantilever mount
- Essential I/O interfaces to connect a server and peripheral devices

## Project Implementation

For this project, Advantech recommended the PPC-3120S, which is a high-value, ultra-slim panel PC with a 12.1" XGA LCD, true-flat touch screen, and low-power/high-performance processor. The all-in-one PPC-3120S can connect to the company's MES server via Ethernet and to peripherals (e.g., scanners) via USB. With a PPC-3120S installed on each workstation, operators can promptly receive instructions from management and data can be digitally recorded. The unit's touch screen also provides a friendly user interface for operators to request or return materials. Also assisting operators, the SOP of individual work orders can be displayed at each workstation.

The PPC-3120S consolidates all of the elements of a computer into a single compact body, without requiring installation of a monitor, keyboard, or mouse, and without sacrificing performance. It also has a rugged design to extend its lifespan, including an aluminum IP65-rated front bezel, a solid aluminum alloy enclosure, highly durable touch panel, and high anti-shock/anti-vibration resistance. Additionally, the PPC-3120S's 5-year life cycle demonstrates its long-term durability. All these make the PPC-3120S a great choice for the digital transformation of production lines.

The PPC-3120S's fanless design eliminates the risk of dust ingress and also reduces the probability of a computer crash. It has multiple I/O interfaces (e.g., LAN and USB ports) to meet existing system requirements while also facilitating future system expansion. The ultra-slim, all-metal body facilitates mounting an arm cantilever and enables the PPC-3120S to be hung on a frame support so that it does not take up any workbench space.



## Conclusion

Computers have become critical for obtaining a real-time overview of on-site operations and for improving management efficiency on manufacturing floors. Advantech's industrial panel PCs, with their positive brand image, ultra-slim design, and high stability/durability, can fully satisfy the needs of this national demonstration base. The PPC-3120S has been adopted on two production lines to date and are currently working well. Holley Technology Ltd. plans to continue to implement this product on other production lines.