



Pharmaceutical Manufacturing: Custom Computing Solutions for Space-Constrained Facilities

SOLUTIONS FOR LIFE SCIENCE | BIOTECH | PHARMA | GMP



Custom Solutions

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If there are unique requirements due to space constraints, we meet with the pharmaceutical manufacturer to understand the requirements and design a solution.

To make the best use of limited space, pharmaceutical and biotech manufacturers turn to space-saving, and even customized, computing solutions

In the past year, many pharmaceutical and biotech manufacturers have updated or expanded manufacturing capacity by opening new, greenfield sites or refitting existing spaces. Fueling this surge in expansion are pandemic-related therapeutics and vaccines, and emerging technologies such as cell and gene therapies.

Although the demand for manufacturing capacity was growing prior to COVID-19, the pandemic is stimulating a flurry of activity in the design and commissioning of new facilities – a trend that is expected to continue in the coming years.

The problem is that facilities are being more closely tailored to the needs of the process, leaving not much room. In addition, smaller equipment used for continuous processing and single-use technologies results in smaller production areas. With limited space, little room is left for the critical computing platforms and key performance indicator (KPI) visualization displays. This equipment can include thin clients, panel PCs, remote touch displays, KVM (keyboard, video, mouse) solutions, and fixed & mobile operator workstations.



Thin Client



Panel PC



Remote Touch Display



KVM



Operator Workstation



ARISTA customized a waterproof panel PC with a pendant arm which can be mounted the top of a floor machine.

In cleanrooms, when space is at a premium, the computing solutions must meet the unique and novel requirements of the manufacturing processes and, increasingly, the constraints of the physical space. When standard catalogue options are not sufficient, custom solutions are often required to fit into tight spaces or hallways. To do this, the equipment must often be customized as to the size, inputs, communication connections, mounting, types of battery, and other factors.

Although the leading solution and process automation equipment providers offer computing solutions, the options are limited. In addition, they are not typically flexible enough to provide custom solutions as the computing system components they provide are not their core competency. Fortunately, there are suppliers that can provide space saving, and even customized, solutions to meet the most restrictive design and space limitations.



Solution providers offer basic monitors and workstations, but if there are specific space constraints or other design changes, they are not able to create new solutions or make minor changes to existing products.

— Paul Shu of ARISTA Corporation



ARISTA, a leading provider of computing platforms and visualization display products for pharmaceutical manufacturing environments, has been servicing the pharmaceutical industry for more than 10 years and during that time has developed a broad range of products. The company has a strong track record and capability to customize products to meet the process specifications.

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If there are unique requirements due to space constraints, we meet with the pharmaceutical manufacturer to understand the requirements and design a solution. In 6-8 months, we can deliver the first articles for approval, then start to produce the equipment.

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For fixed workstations, Shu says customization can extend to installation mounting options including benchtop, wall, wall-recessed, ceiling, VESA, and pedestal mounts. In tight hallways, for example, wall-recessed workstations with 360° folding and retracting double-joint (single-screen) and triple-joint (dual-screen) designs allow operators to adjust the angle of the screen or keyboard to complement the needs of operators' various heights. Such offerings provide superior ergonomics so operators can work for extended periods of time.

Truly Mobile Workstations

Mobile workstations are increasingly popular in pharmaceutical manufacturing environments because they enable rapid and easy reorganization of the work environment and process flow. One mobile workstation can replace multiple fixed workstations, and there are no installation costs. Wireless connections allow for direct communication with manufacturing execution systems, electronic batch records (EBR), SOP, ERP, and other back-end systems.

Mobile solutions also eliminate the need for operators to walk back and forth from fixed workstations to scan or print barcode labels. Some estimates suggest mobile workstations can reduce wasted time and interruptions in workflow by 25% or more.



SAVE TIME

Option

Barcode Scanner



Option

Label Printer



Option

1024 Ah Lithium Battery



- 3 x 18.5-inch Projected Capacitive Touchscreen
- Native Resolution at 1920 x 1080
- 2.6/3.4 GHz i7-6600U/2.4/3.0 GHz i5-6300U, 1.6 GHz Celeron-3855U
- Up to 32GB DDR4 Memory
- Wi-Fi Module Included
- NEMA 4X / IP66 Stainless Steel Fully Closed Enclosure
- ThinManager Ready Version Available



Mobile



NEMA 4X



IP66



Wi-Fi



Touch panel
resistive touch



Printer



Battery



Barcode scanner



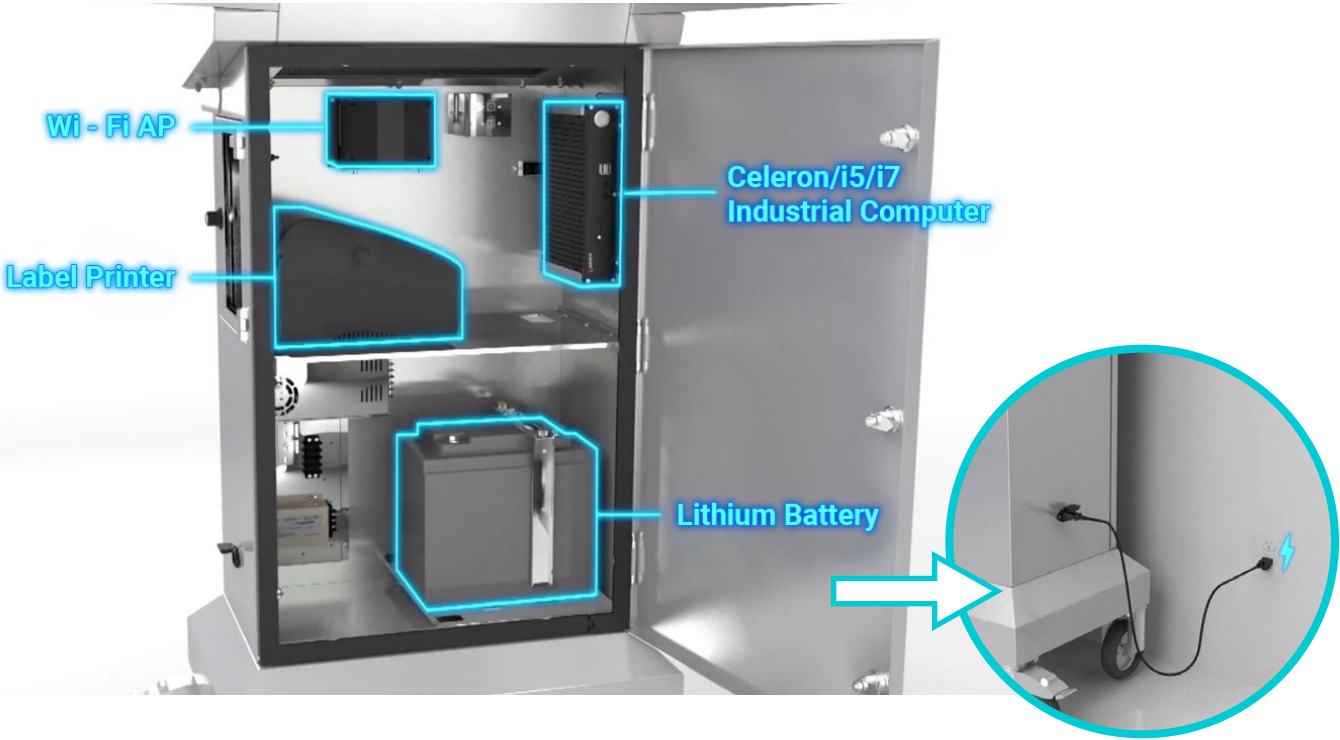
ThinManager
Ready

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Unfortunately, many ‘mobile’ workstations are not fully mobile. While they can be moved from one location to another, most cannot be used while in motion. They must be plugged into power at each location and wired for communication. Each time the mobile workstation is moved, everything must be disconnected while it is rolled to the new location and reconnected.

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To be truly mobile, ARISTA resolved the problem by designing a wireless, portable system that operates on a heavy-duty lithium battery that allows the workstation to function seamlessly and uninterrupted while in motion. The lithium battery can last for several shifts before requiring a recharge, enabling full non-stop mobile operation over a 24-hour period.



With no cables to be disconnected, managed, and reconnected, and with no break in any live or critical connections to re-establish, pharmaceutical manufacturers can save time and significantly increase productivity.

Like other computing platform elements in pharmaceutical manufacturing environments, mobile workstations are designed and tested to withstand the high humidity and moisture generated during manufacturing, as well as the caustic chemicals used for cleaning. To accomplish this, the equipment is built using stainless steel NEMA 4X/IP66 enclosures.

Since individual pharmaceutical facilities often have unique requirements, the mobile workstation can be further customized if needed. Depending upon the level of change needed, the process can range anywhere from six to eight weeks for minor customization to several months for more extensive projects.



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With pandemic-related vaccines and therapies, as well as other emerging technologies, there is a wave of new facility openings and remodeling of existing spaces to increase manufacturing capacity. Combine that with the trend toward scaled down pharmaceutical production and smaller cleanrooms, and space is at a premium. That will only increase the need for space saving, and even customized, computing and display solutions.

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ARISTA provides off-the-shelf, full turnkey integration services, and custom ODM/OEM design for worldwide clients. The capabilities help clients meet exacting specifications and requirements at an affordable price and quick time to market

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