The Future is Here.

White Paper:

Smart Manufacturing with Rugged Tablet PCs

Vol. 1 - 2020

Introduction

As industries across the world are preparing to reopen after months of lockdown due to the global pandemic, businesses worldwide are pressed for ways to make up for losses during months of inactivity. Smart manufacturing is the next-level solution.

A return to normalcy is highly welcomed in the global manufacturing sector, but there are concerns that businesses now face a crisis on multiple fronts – a financial crisis, a health crisis, and a potential collapse in commodity prices.

'Rugged Solutions' are the comprehensive answer for smart manufacturing processes due to its capacity to simultaneously increase worker productivity and reduce operational costs.

Rugged Smart Technology has transformed the industrial landscape by bringing connectivity to every stage of the production process. With increasing levels of automation on factory floors, rugged smart solutions can come in all shapes and sizes.

Rugged Tablet PCs are built to function in the most extreme industrial conditions, which means they can operate for long durations in extreme temperatures or wet and dusty conditions. Rugged devices with **IoT integration** make it easy to gather real-time information and transfer essential data for any business operation without delay.

This whitepaper will help manufacturers understand how rugged tablet PCs can improve their smart factory processes.

- 4G LTE Cellular Connectivity
- Shock Absorbent Bumpers
- Dust and Waterproof
- Multi-touch Sensors
- Sunlight Readable
- Ergonomic Kickstand & Handle

M133 Series – 13.3" Ultra-Rugged Tablet

Part 1: Boost Employee Productivity

Modern-day companies are incredibly reliant on 'smart' rugged tablet PCs for their day-to-day business, where communication, shipping orders, assembly instructions, and data tracking are routinely conducted with online systems. If the device breaks or goes offline, then productivity goes down, and the business suffers.

Unreliable devices and computers may substantially slow down the entire production process and lead to backlogs.

Winmate's rugged solutions allow menial jobs on the factory floor to be completed in a manner of seconds, especially for tasks that involve scanning a product barcode or wirelessly transferring data on a cloud server via a Windows or Android app.

Integrating rugged handheld devices with IoT networks helps provide real-time visibility of what is happening on the factory floor, **giving industry leaders a bird's eye view of the entire production process**.

The Rugged Smart Ecosystem

Monitor Production Progress Remotely

7" Handheld Device — 660, Octa-core

Executive office: M700DQ8

13.3" Ultra-Rugged Tablet — Core i5-7200U

Enhanced Factory Automation

Production line: M133WK

Precise Inventory Tracking

11.6" Rugged Tablet — Pentium N4200

Warehouse: M116P

10.1" Rugged Tablet — Pentium N4200

Access Real-time Data

On-site Management: M101P

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> Rugged tablet PCs with built-in barcode scanners and integrated Windows or Android apps are essential for smart factory processes.
>
> **Khalid Kidari**
> CEO, Lexicon Technologies

Barcode Scanning

Many manufacturers still use a separate barcode scanner in their production facilities. Traditionally, the scanner must be connected to a desktop PC in order to use inventory management software.

The issue is that the cost of these single-purpose devices is highly inefficient, and since it takes time for the inventory data to sync, employees may not always receive accurate information.

Scanning a barcode or QR code with a smart rugged tablet can make a huge difference.

Real-time Inventory Tracking

Rugged mobile computers can quickly scan products with their integrated barcode scanner and sync data with a Windows or Android inventory management app. Information is updated in real-time, and on-site workers can access swift, reliable data to ensure their production processes run efficiently at all times.

GPS Tracking

Workers can track and locate their warehouse vehicles with GPS-enabled sensors, Beidou, and Glonass position system support. Understanding the movement of goods and vehicles is important for warehouse automation.

Audio-visual Records

From 5MP front cameras and 2MP rear-end cameras, rugged handheld devices allow photos and videos to be instantly shared on the cloud, enabling decision-makers to observe real-time information about production issues – something basic barcode scanners cannot accomplish.

Winmate Rugged Tablet PCs are all multi-functional and can include barcode scanners, BT, Wi-Fi, and GPS features fitted into a lightweight, yet durable housing. Smart Factories and Warehouses that are aided with IIoT integrated tablets can instantly trigger alerts when thresholds are exceeded or when supplies fall below a certain level.
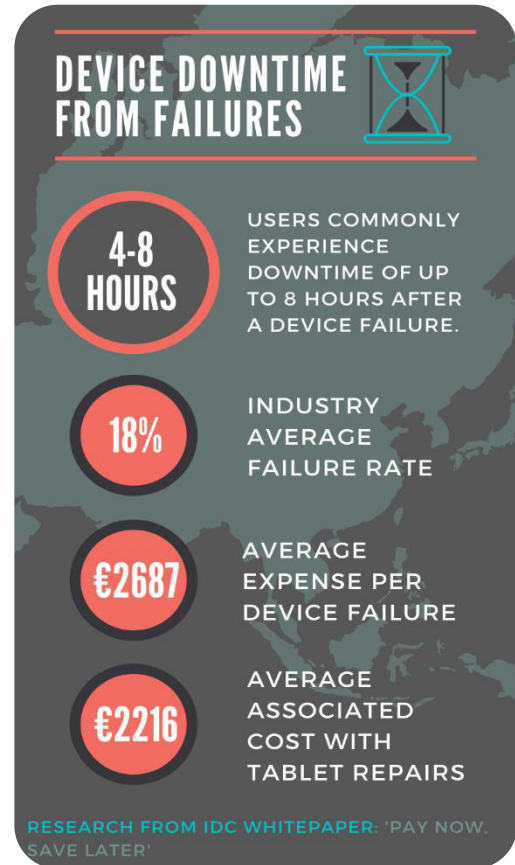
Part 2: Reliability Prevents Downtime

Industry leaders have all experienced the nightmares of IT systems breaking down in the middle of a big order, which reluctantly grinds manufacturing to a halt. In this scenario, every minute that goes by is equivalent to losing money in utilities, material waste, and labor costs. The nightmare continues when there is a potential loss of data that cannot be recovered, and the firm is forced to spend on untimely repairs and replacements.

Consumer devices that are not built with IP65 housing and military, MIL-STD-810G standards, can fail due to a number of reasons, such as excess vibration, humidity, shock, fluctuating temperatures, or even accidental drops.

DEVICE DOWNTIME FROM FAILURES

4-8 HOURS — USERS COMMONLY EXPERIENCE DOWNTIME OF UP TO 8 HOURS AFTER A DEVICE FAILURE.

18% — INDUSTRY AVERAGE FAILURE RATE

€2687 — AVERAGE EXPENSE PER DEVICE FAILURE

€2216 — AVERAGE ASSOCIATED COST WITH TABLET REPAIRS

RESEARCH FROM IDC WHITEPAPER: 'PAY NOW, SAVE LATER'

DID YOU KNOW?

Dust and water are the leading causes of mechanical component failure.

- Dust can block vents and overheat components.
- Small traces of liquid can cause permanent damage to components.

Winmate rugged tablet PCs comply with Ingress Protection standards, which define how well the device is sealed against foreign entities such as dirt, moisture, and solid objects.

IP 6 5

Protected against water jets from any angle.

Dust tight. No ingress of dust.
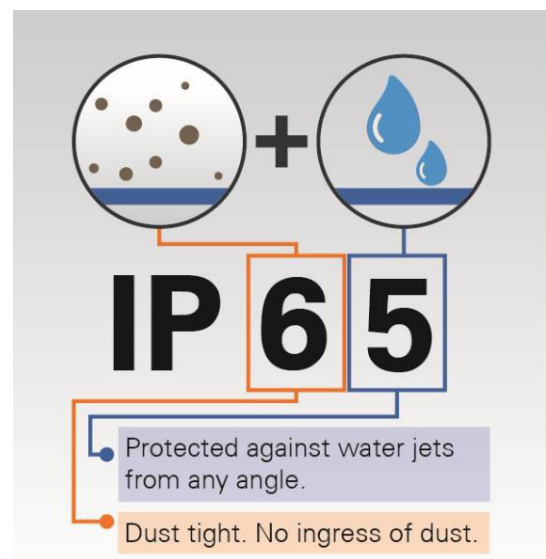
Round-the-Clock Work Output

Factory and field workers often face harsh conditions on the production lines or remote worksites, and finding suitable technology to maximize productivity on-the-go can be challenging.

Average consumer devices are not built for factory conditions, even though jobs are becoming ever-more dependent on automation and technological access.

The importance of integrating many tools into a single device is especially crucial for workers moving around factory floors and production lines. These workers frequently operate under different brightness levels, where they key-in data and track production processes for multiple hours at a time.

Paired with high capacity batteries, Winmate rugged tablet PCs are built to last for up to 8 hours, even with its high-performance, Intel or Qualcomm-based processors. As a result, workers can access unparalleled computing power throughout their entire shift while also using peripherals such as a built-in barcode scanner or front and rear-end cameras for data collection.

> Winmate's rugged tablets are renowned for its extended battery life and hot-swappable design – perfect for employees working and sharing the device across multiple shifts.
>
> **Eric Miller**
> CEO, JLT Mobile Computers

Switch batteries without powering down the device

Product: M101P

Hot-swappable batteries can be taken out and replaced without needing to plug in or power down the rugged tablet PC.

As a result, the device has no downtime and can be used for as long as it's needed, given that there are spare charged batteries on hand. While one battery is in use, another can be charging.

Operable in Extreme Conditions

Challenging environments and harsh industrial conditions are not only common for factory workers, but they are part of the job description for specialists operating in certain manufacturing industries around the world.

From extreme temperature settings to fluctuating humidity levels to highly moist conditions, having a suitable rugged device that operates smoothly under these conditions is crucial for ensuring that the job gets done.

DID YOU KNOW?

Rugged tablet PCs are often used on factory floors and for field work. Hence, Winmate devices comply with US military shock-proof MIL-STD-810G standards to withstand:

- Shock
- Vibration
- Humidity
- Extreme Temperatures
- 4ft Drops

✅ *Winmate rugged tablet PCs also feature capacitive PCAP touch screens with high sensitivity, meaning light pressure is all it takes to trigger a command – making it handy for factory workers in strenuous positions.*

Projected Capacitive Touchscreen Technology (PCAP) devices offer workers the ability to use their rugged smart devices in wet rainy conditions, the factory floor near heavy machinery, and the regular office. PCAP touch screens feature different modes to choose from – such as Rain, Glove, Hand, and Stylus, enabling effortless user control for operators working in different environments.

Having a rugged smart device with PCAP multi-touch capacity means that manufacturers will not have to worry about costly electronic breakages, frequent device replacements, or any downtime risk.

The best part about Winmate's PCAP touchscreen is that industrial workers can use the tablet in the rain, with gloves on, or use a stylus.

Stefan Götz
CEO, TL-Electronics

Product: M133 Series

GLOVE

STYLUS

HAND/RAIN

Part 3: Outdoor Readable Solution

The manufacturing process can take place throughout the entire factory and usually includes cargo being transported in and out of loading bays, which are often located outdoors.

As a result, the key challenge is finding a suitable touchscreen device that is readable under different lighting conditions, including direct sunlight.

Since sunlight is much brighter than the fluorescent lighting found indoors, the readability of normal displays can be compromised by images fading under bright sunlight.

DID YOU KNOW?

Outdoor Readability

Winmate's optical bonding technology improves image visibility by presenting vibrant colors even under bright sunlight.

High Brightness Panel

Rugged tablets feature brightness levels of up to 2000 nits for optimized readability in both indoor and outdoor environments.

Optical Bonded   Normal Panel
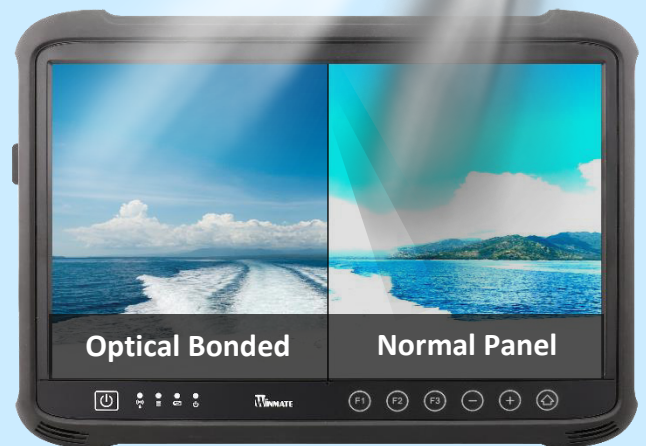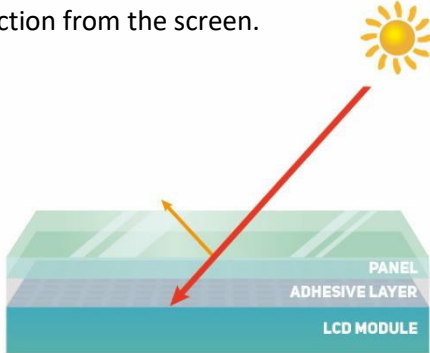
Optical Bonding Process

Binding the LCD module and touchscreen panel with a layer of optically clear adhesive helps remove any air gaps, which reduces the number of internal reflecting surfaces and increases contrast, color quality, and viewing angles.

PANEL

ADD ADHESIVE LAYER

BONDING REMOVES GAP

LCD MODULE
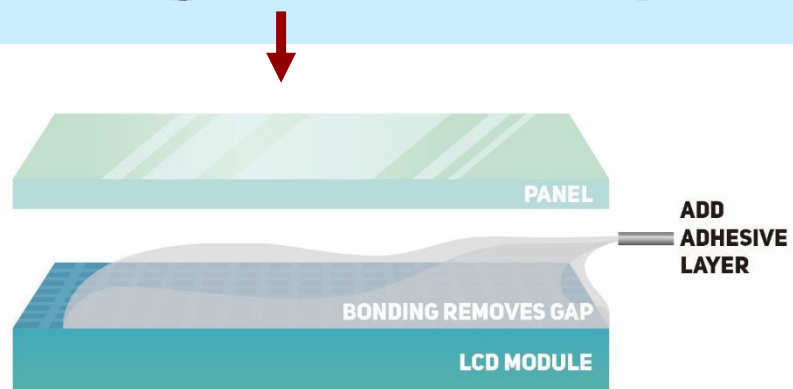
1. Decreased Sunlight Reflection

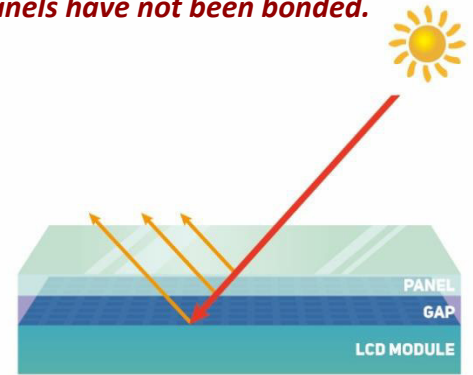Optical bonding grants better visibility under sunlight as the adhesive layer reduces sunlight reflection from the screen.

Sunlight reflection leads to less visibility, which occurs when the panels have not been bonded.
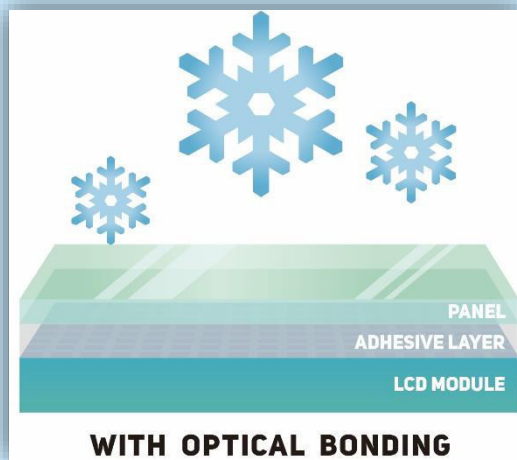

WITH OPTICAL BONDING

WITHOUT OPTICAL BONDING

2. Protection from Dust and Moisture
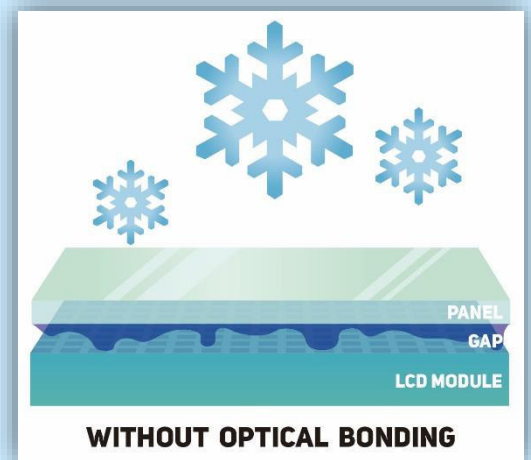
Optical bonding prevents a foggy display panel and denies the accumulation of moisture.

Moisture condensation and dust build-up occur on the panel.

WITH OPTICAL BONDING
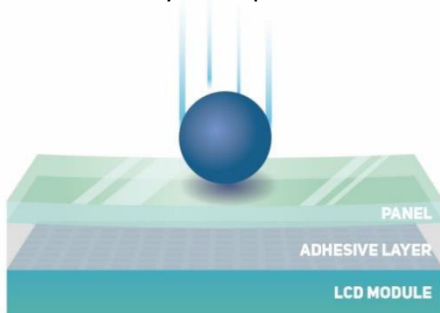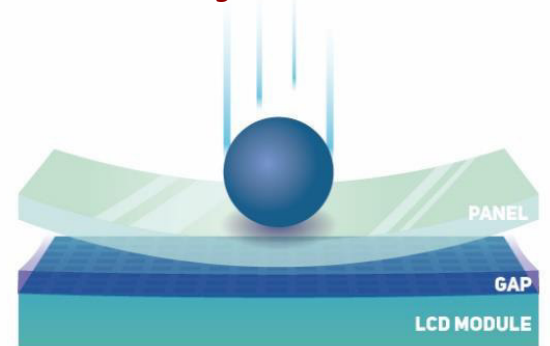
WITHOUT OPTICAL BONDING

3. Enhanced Ruggedness

Bonding helps to ruggedize the display and improves durability to help minimize breakage.

Panels without bonding have less resistance against wear and tear.

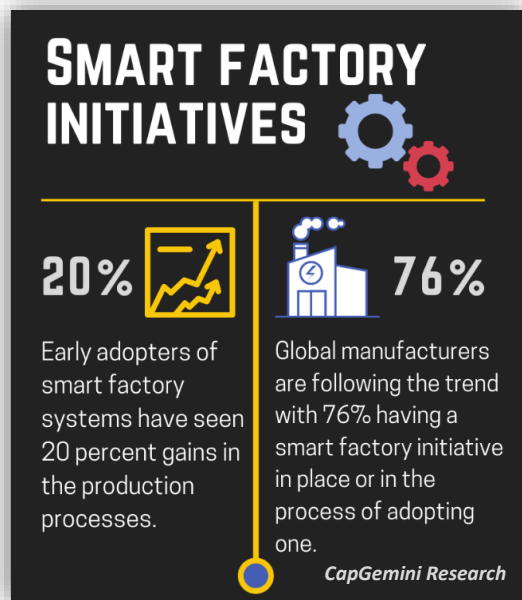WITH OPTICAL BONDING

WITHOUT OPTICAL BONDING

Part 4: Mobility Makes Factories Smarter

With the emergence of Industry 4.0, smart manufacturing has become a revolutionary force with the power to restructure traditional factory workflows with the industrial internet of everything (IIoT) integration.

According to research conducted by CapGemini, smart factories will lead to improvements in on-time delivery, productivity, and labor rates by 2022.

Many forward-thinking manufacturers use rugged devices with IIoT integration, meaning factory floor workers can send and retrieve information from the cloud to create an agile, data-driven, and truly collaborative environment.

Rugged tablets assist with every stage of the manufacturing process by automating factory operations with digitized systems, so every step of production is driven by data and IIoT integration.

SMART FACTORY INITIATIVES

20%

Early adopters of smart factory systems have seen 20 percent gains in the production processes.

76%

Global manufacturers are following the trend with 76% having a smart factory initiative in place or in the process of adopting one.

CapGemini Research

We estimate that smart factories can nearly double operating profit and margin for an average OEM manufacturer.

Nitin M Machhar
GM, Dynalog India Ltd.

Smart Manufacturing: Rugged Solutions

As global businesses look to reopen after a lengthy lockdown, the pressure for manufacturing firms to increase their profitability to make up for losses is widespread.

Today's rugged tablet PCs are powerful, robust machines that are capable of acting as an all-in-one computer to serve the needs of smart factories and smart warehouses and enhance automation systems. In summary, these rugged devices are necessary to help drive smart manufacturing, and Winmate rugged tablet PCs are designed to make that happen by:

- **Boosting Employee Productivity**
- **Preventing Production Downtime**
- **Making Factories Smarter**

13.3" Ultra-Rugged Tablet
M133WK

[Intel Core-i5 7200U]

Demanding Applications ✅

This mega-wide, high-performance Windows tablet features a Core i5 processor and a kickstand/handle, so the device can be easily hand- carried or placed on a surface.

11.6" Rugged Tablet
M116P

[Intel Pentium N4200]

Smart Warehouse ✅

Featuring a full HD display, this Windows rugged tablet has multiple wireless connectivity, data capture modules, and vehicle docking options.

10.1" Rugged Tablet
M101P

[Intel Pentium N4200]

Factory Automation ✅

With accredited certifications from Verizon Wireless and PTCRB, the fan-less M101P includes IP65 housing and MIL-STD-810G standards for full IIoT integration.

7" Handheld Device
M700DQ8

[Qualcomm® SD660]

Enterprise Mobility ✅

At only 550g, this Android-based tablet comes with a Qualcomm® Snapdragon™ 660 processor and SOTI MobiControl® to secure all your data.

FOOTNOTES

1. https://www.capgemini.com/resources/smart-factories-how-can-manufacturers-realize-the-potential-of-digital-industrial/
2. https://www.marketsandmarkets.com/PressReleases/iot-manufacturing.asp
3. https://news.thomasnet.com/companystory/downtime-costs-auto-industry-22k-minute-survey-481017
4. https://arimo.com/machine-learning/2016/manufacturing-downtime-cost-reduction-predictive-maintenance/
5. https://www.enclosurecompany.com/ip-ratings-explained.php
6. https://www.marketresearch.com/MarketsandMarkets-v3719/IIoT-Device-Technology-Sensor-RFID-11740861/?progid=90979
7. https://sme.asia/the-rise-of-smart-manufacturing-and-digital-transformation/
8. https://www.itshowcase.co.uk/manufacturing-pain-points-and-how-erp-can-solve-them-advice-from-medatech/
9. https://www.ruggedmobilityforbusiness.com/2017/02/new-idc-study-the-business-case-for-rugged/
10. https://www.lexicontech.com/
11. https://www.tl-electronic.com/tl-product-world/
12. https://jltmobile.com/

ABOUT WINMATE

Founded in 1996, Winmate Inc. is a pioneer in rugged computing technology. For over two decades, Winmate has provided business leaders worldwide with reliable, rugged solutions made for the most challenging industrial conditions. From R&D to manufacturing to in-house testing, Winmate Inc. manages the entire product development process with ready-made products available for quick deployment. Today Winmate's innovative approach has helped countless enterprises at every level with equipment automation and seamless Industrial Internet of Things (IIoT) integration.

Visit www.winmate.com