



Driving Operational Excellence and Efficiency in Smart FMCS Center

Overview

The global leading electronics manufacturing services (EMS) company built an intelligent Factory Monitoring and Control System (FMCS) center to centrally monitor and manage the operational status of its entire facility. To support this initiative, the organization required a reliable solution that could clearly present critical operational information and enable instant access for timely and precise analysis within the monitoring center.

To meet these needs, Zyxel Networks provided a high-performance network backbone, partnering with Cypress Technology to deliver a comprehensive AV over IP solution. The integrated network ensures low-latency, high-quality audiovisual transmission, scalable expansion, and centralized management, enabling efficient, safe, and stable facility operations.

Challenges

The FMCS center consolidated data and alerts from multiple subsystems, including power, air conditioning, water treatment, gas supply, and clean room environments, into a single automated control platform. With real-time monitoring, multi-system integration, data analytics, and anomaly alert capabilities, the goal was to achieve greater operational efficiency, reduced operating costs, and enhanced facility safety and stability.

As the FMCS monitoring center took shape, several technical challenges emerged. High-resolution audio and video transmission placed large demands on network bandwidth and stability, as even minor latency or packet loss could result in visual stuttering or degraded image quality. Besides, real-time applications required ultra-low latency to maintain precise audio and video synchronization for professional meetings and operational briefings. The system also needed to support future expansion without extensive rewiring or infrastructure changes. In addition, true 4K60 AVoIP visualization depended on a video wall that can support multiple layouts to adapt to diverse operational scenarios.

Customer

Leading EMS Company

Industry

Manufacturing

Location

Taiwan

Partner

Cypress Technology

Customer Background

The leading electronics manufacturing services (EMS) company provides advanced electronic product design, manufacturing, and assembly across many industries, including computing, communications, consumer electronics, and electric vehicle components. To stay ahead of increasingly demanding quality and delivery expectations, the company keeps investing in emerging technologies, and strengthening smart manufacturing capabilities and green production across its global operations.



Solutions

To address these challenges, Zyxel Networks worked with Cypress Technology, a leading AV integration provider, to deliver a tailored AV over IP solution for the FMCS center. At the core of the network, Zyxel Networks' XS3800-28 switch aggregates and forwards 4K60 audio-visual data from twelve AVIP-A4601E-B1C encoders to thirty-one AVIP-A4601D-B1C decoders, ensuring stable and low-latency transmission.

Leveraging Zyxel Networks' robust switching capacity and the flexibility of the integrated AVoIP system, the FMCS center supports synchronized output across multiple displays and recording devices while maintaining consistent 4K60 image quality. Integrated with the AVoIP management platform, the XS3800-28 switch enables centralized routing control and real-time system monitoring, significantly enhancing operational efficiency and providing the scalability needed for future expansion.

The XS3800-28 also supports a dedicated network mode optimized for AV traffic. Its intelligent setup wizard and built-in AI capabilities simplify complex configurations, enabling a professional-grade AVoIP environment to be established quickly. In the Networked AV mode, a dedicated dashboard provides real-time visibility into key network parameters, including IGMP and IP information, improving management efficiency and operational ease. The switch's intuitive web interface further allows the IT team to deploy and manage the solution efficiently.

Product List



- XS3800-28 L3 Aggregation Switch

Results

Thanks to Zyxel Networks' high-performance switches, the EMS company ensures high-quality AV transmission for its intelligent FMCS monitoring center while optimizing the network architecture. This provides a solid foundation for stable, continuous system performance in smart manufacturing operations. .

- High-quality 4K60 AV transmission with stable, low-latency performance
- Peace of mind through centralized control and monitoring of multiple subsystems
- Scalable, future-proof network design supporting expansion without rewiring
- Simplified and efficient deployment and management via an intuitive user interface

