5G O-RAN: Enhancing the ESG Competitiveness of Traditional Industries
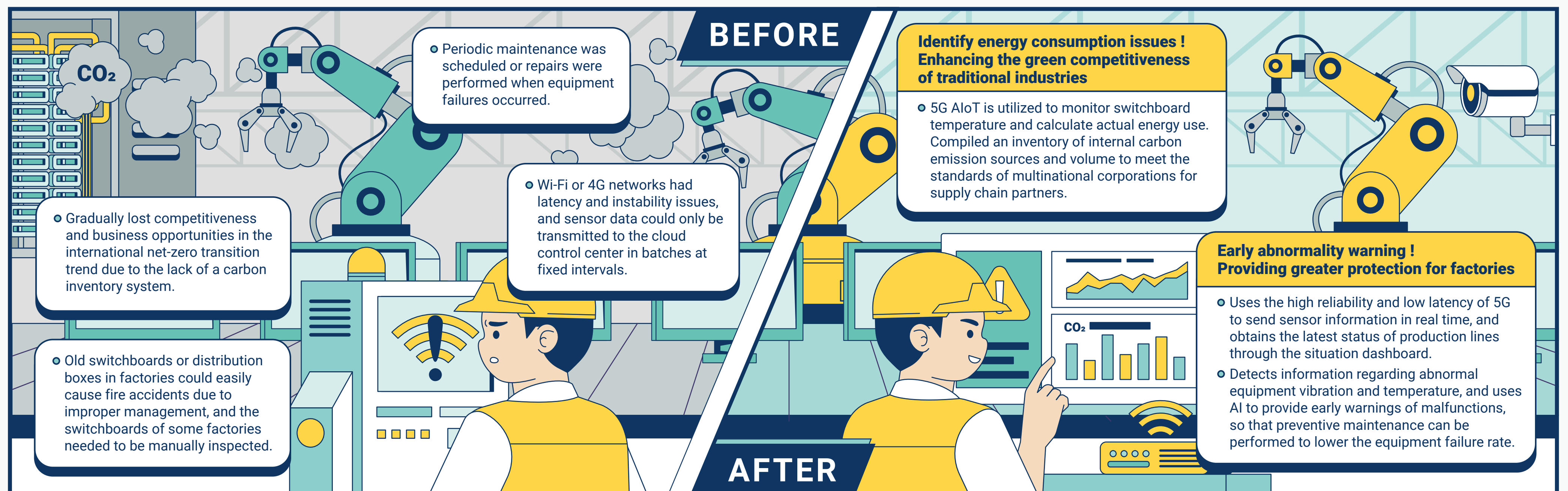
Green Competitiveness ESG Digital Transformation - 5G Smart Manufacturing AI Efficiency Enhancement and Energy Saving Technology Platform

The manufacturing sector plays a crucial role in driving Taiwan's economic progress. Apart from production capacity and efficiency, ESG and digital transformation are key issues for future development. Solutions that integrate 5G networks with AI help the electronics, metal, and machinery manufacturing industries compile their carbon inventory, perform preventive maintenance, and implement electricity safety management to undergo ESG transformation.

Project Results

#Average Energy Conservation of 10% | Established just-in-time, energy-efficient, safe, and sustainable smart manufacturing systems, and utilized innovative technologies to implement energy conservation and carbon reduction.

#Improved Industrial Safety | Collected and transmitted operating parameters of machinery and equipment in real time, and used AI image analysis for real-time monitoring and warning of switchboard temperature, as well as preventive maintenance.

BEFORE

- Periodic maintenance was scheduled or repairs were performed when equipment failures occurred.
- Wi-Fi or 4G networks had latency and instability issues, and sensor data could only be transmitted to the cloud control center in batches at fixed intervals.
- Gradually lost competitiveness and business opportunities in the international net-zero transition trend due to the lack of a carbon inventory system.
- Old switchboards or distribution boxes in factories could easily cause fire accidents due to improper management, and the switchboards of some factories needed to be manually inspected.

AFTER

Identify energy consumption issues ! Enhancing the green competitiveness of traditional industries

- 5G AIoT is utilized to monitor switchboard temperature and calculate actual energy use. Compiled an inventory of internal carbon emission sources and volume to meet the standards of multinational corporations for supply chain partners.

Early abnormality warning ! Providing greater protection for factories

- Uses the high reliability and low latency of 5G to send sensor information in real time, and obtains the latest status of production lines through the situation dashboard.
- Detects information regarding abnormal equipment vibration and temperature, and uses AI to provide early warnings of malfunctions, so that preventive maintenance can be performed to lower the equipment failure rate.

Key Technology #5G O-RAN #Equipment Warning System #Carbon Inventory System **Technology Unit** LEO SYSTEMS, INC. **Domestic Trial Site** Taoyuan city