English Summary

Biozyme Co. has proactively implemented an in-house IoT system and established a factory operations “war room,” integrating data from existing equipment to achieve real-time production monitoring. The company also connected on-site production data to its ERP system to enhance cross-departmental management efficiency. Additionally, weight monitoring technology in the packaging area effectively prevents errors in bagging counts, ensuring accurate package quantities. These smart measures have streamlined workflows and reduced the manpower required for manual handovers, thereby minimizing human error and preserving valuable expertise. Overall, Biozyme Co.’s innovative pursuit of factory automation and smart manufacturing has yielded remarkable results, boosting operational efficiency and product quality. This not only showcases the company’s commitment to leveraging innovative technologies to ensure quality and efficiency, but also sets a benchmark for digital transformation in the traditional food manufacturing industry.

Factory Automation and Smart Manufacturing Practices at Biozyme Biotechnology Co.

(APEC Presentation Summary – English)

Biozyme Biotechnology Co. has pursued a pragmatic and incremental approach to factory automation and smart manufacturing, grounded in the realities of small and medium-sized food manufacturing enterprises. The production site operates with a mix of legacy and newer equipment, most of which were originally designed with only basic on/off and safety functions. This structural limitation made direct adoption of commercial smart manufacturing integration systems impractical.

Initial market assessments showed that most system integration solutions exceeded NT$5 million in implementation costs, a level often higher than even core enterprise systems such as ERP. Such investment thresholds are difficult for SMEs to justify. As a result, Dahan Enzyme chose to internally develop its own IoT framework, applying low-intrusion sensors to existing machinery and gradually digitizing operational data. These data are integrated into an internal control room to support real-time production monitoring and management decision-making.

Process analysis further revealed that labor resources were heavily concentrated in the packaging stage. Therefore, improvement efforts prioritized enhancing labor efficiency in packaging operations. Weight-based monitoring systems were introduced to prevent errors in bagging quantities, significantly reducing manual inspection, handover workloads, and rework caused by human error. This allowed limited manpower to be reallocated to higher-value tasks such as quality control and process optimization.

From an SME perspective, artificial intelligence and digital technologies are expected to enable more affordable and accessible smart manufacturing solutions. However, many AI applications remain in experimental or pilot stages. Continued policy support for collaboration between enterprises and research institutions, particularly through real-world testing environments, is essential. Such support can facilitate the development of cost-effective, right-sized smart manufacturing tools that are practical and scalable for small and medium-sized enterprises.