In recent years, we have been actively promoting the use of various intelligent management systems in the smart predictive maintenance of key equipment, AI industrial safety image recognition system, contractor personnel access facial recognition system, energy management system, VR-tanker leakage emergency response training, cooling water energy conservation system, and quality prediction.

Predictive maintenance of high pressure reactors reactors to enhance industrial safety.

We continuously promote the reactor predictive maintenance project to predict the operating life of ultrahigh pressure reactors, optimize shutdown timing, and reduce process of control possibility through AI analysis of the vibration data to lower the risk of occurrence of industrial safety incidents and so to enhance operating safety.

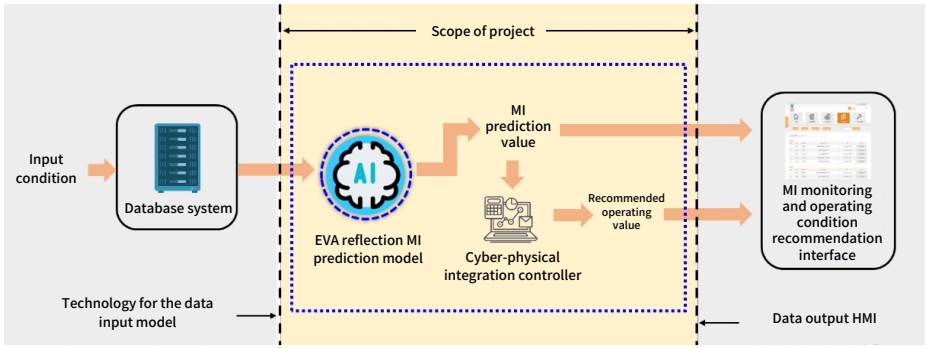
In 2022, we collaborated with investee DataWise to enhance the prediction accuracy of AI models with DataWise's AI model specialization.

Figure Illustration of the AI predictive maintenance project

Reduce defective outputs with AI quality prediction

Through collaboration with the National Taiwan University and National Taiwan University of Science and Technology, we implemented the cyber-physical integration technology development industry-academia collaboration project to predict quality with AI.

Prediction is run with the process quality prediction model developed with Python, DCS dynamic data, QC data, and product type operation conditions and through GRU sequence neural network model. We also developed the cyber-physical integrated control architecture to make recommendations for factory process operation.



Building 3D model for pipeline and equipment reverse scan and producing pipeline 3D drawings for risk-based inspection (RBI) analysis to lower the risk in pipeline and equipment use.

A 3D model is produced after scanning the actual condition of key equipment and pipelines with reverse scanning technology to restore the original look of equipment and pipelines.

Based on the parameters of the 3D models of key equipment and pipelines, we asses and analyze the risks of equipment and pipelines in accordance with the API 580 standard. The analysis results and 3D model and pipeline 3D drawings produced by reverse scan engineering are nondestructive testing (NDT). Completing the tests and correcting anomalies with NDT can reduce high-risk equipment and pipelines to medium- or low-risk.