

Case Study

Compressed air system in Rayong Plant

TPBI recently collaborated with Kaeser Kompressoren (Thailand) Ltd (KKT) to use AI system to audit and improve the compressed air system at our Rayong plant.

Founded in Germany in 1919, Kaeser Kompressoren is a leading global provider of energy-efficient and reliable compressed air solutions.



In September 2024, Kaeser evaluated our existing station, leading to the installation of a new Kaeser DSD (110 kW) compressor. Following the installation, we performed a comparison between the old and new stations energy efficiency and CO₂ emissions. Originally the calculated ROI from energy savings was estimated to be 4.3 years, however the actual ROI achieved was shortened to 3.9 years. This project has resulted in annual savings of THB 588,000 and a significant reduction in CO₂ emissions of 61.5 tons.

Additionally, TPBI and KKT commissioned the Kaeser Sigma Air Manager (SAM 4.0) system in October 2024. This successful implementation has since delivered excellent performance outcomes and additional savings. In 2025, SAM 4.0 system generated THB 210,028 in annual savings and achieved a substantial 21.9 ton reduction in CO₂ emissions

Compressed air management system - SIGMA AIR MANAGER 4.0



SIGMA AIR MANAGER 4.0 master controller

AI system analysis by SAM 4.0

AI usage and value in using AI for data collection, system analysis and reporting

1. Optimisation Process

The SIGMA AIR MANAGER 4.0 uses a patented simulation-based optimization algorithm and process to determine the most efficient switching operations. By analysing past consumption profiles to project future demand, the system accounts for component technical conditions and learned system behaviour to maximize efficiency.

2. Compressed air station control - for optimum efficiency

The SIGMA AIR MANAGER 4.0 optimizes compressed air stations by choreographing compressors, dryers, and filters through a patented, simulation-based process. By calculating the compressed air network everchanging buffer volume and future demand from past consumption rather than relying on narrow pressure ranges, the system ensures continuous optimal efficiency and simplifies energy savings.

