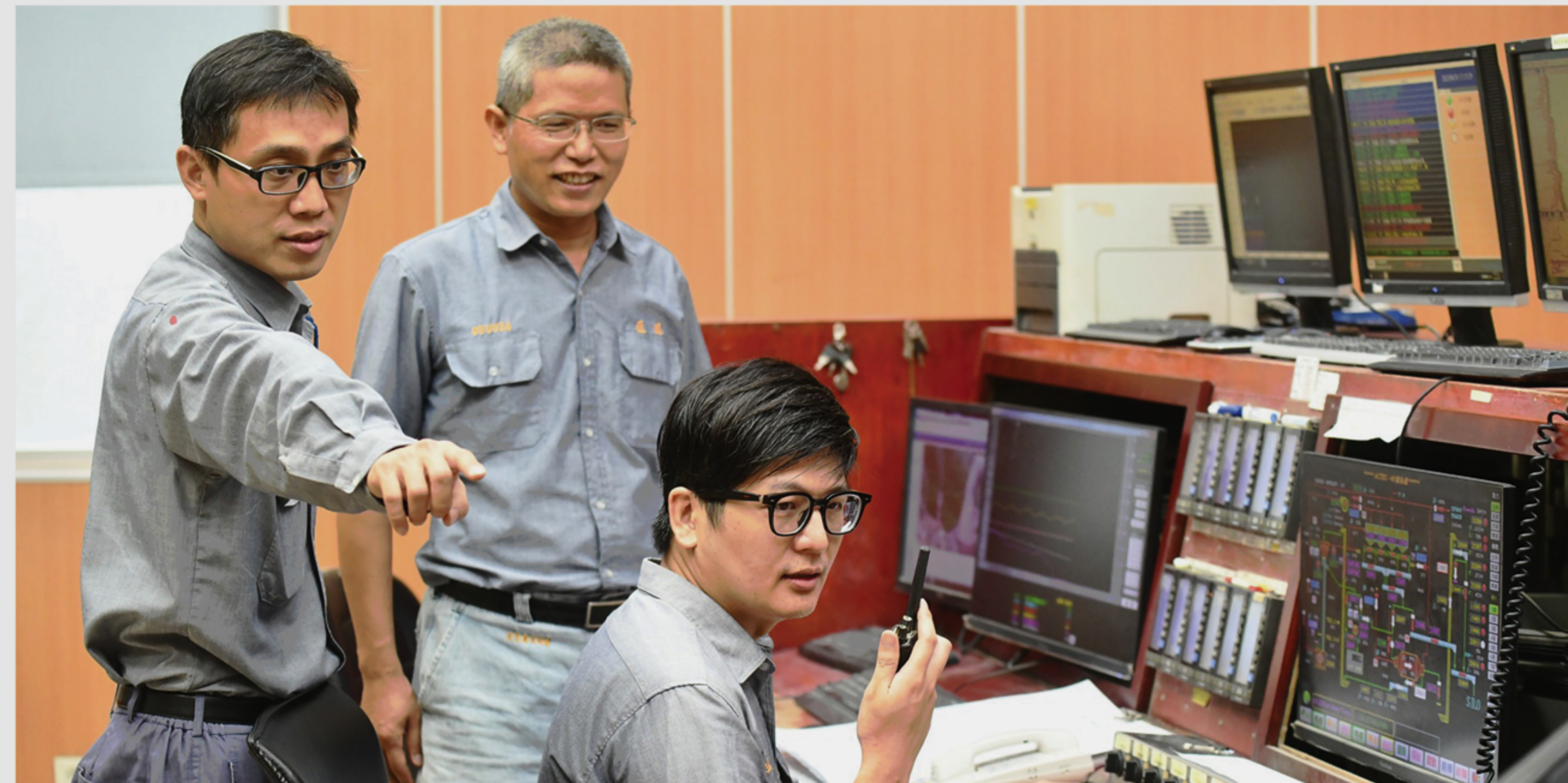


## ACTEC Artificial Intelligence Control System

In the Pytorch deep learning environment, Asia Cement developed AI control system by applying Deep Reinforcement Learning algorithm of machine learning. The Company designed, developed and installed Artificial Intelligence Control System (ACTEC) and built a model of cement grinding system through online and offline learning method and further developed Artificial Intelligence Control System (ACTEC) for cement grinder # 1 to 4 in Hualien Plant.

Asia Cement continues to upgrade and optimize systems. It cooperated with the supplier of PLC product which was made by a Japanese manufacturer, based on its 30 years of control system planning and engineering experiences, to jointly discuss develop new type of PLC software and hardware specifications which could shorten the transition time between old and new system. Asia Cement upgraded equipment under the condition where the operation rate of the production system was not affected. It maintained the high stability and operation rate of ACTEC control system and increased the efficiency of personnel through friendly system functionality and interfaces. The Company also assisted the affiliated companies in the group, domestic cement companies and other companies in conventional industries by applying its successful experiences to modify or optimize control systems for collectively moving toward the goal of green production.



## Precognition of maintenance in production

Precognition of maintenance is similar to the health examination of equipment. On the basis of the planned and scheduled inspection and maintenance, the Company adopted smart on-site inspection system, installed an online pre-learning maintenance database, developed the analysis and diagnosis of vibration measurement, and oil sampling and analysis technique to increase the operation efficiency of equipment.

## Smart product shipping

On the basis of smart shipping system and combining special requirements of the warehousing and shipping stations in various locations, Asia Cement invested approximately NT\$10 million to upgrade the shipping systems which had been used for close to 20 years to reduce the pressure of maintaining systems and to increase the shipping efficiency of warehousing and shipping stations, plus installing a shipping system maintenance network by taking this opportunity. In the past, if the shipping systems of the warehousing and shipping stations were required to perform maintenance, Hualien Plant had to dispatch technical personnel to the respective stations for maintenance. After the installation of maintenance network, Hualien Plant became a technical center, technical personnel could provide remote real-time maintenance services which could largely save time and cost of technical personnel traveling to warehousing and shipping stations at various locations.

