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AI can replace human operators in system operations. However, the following two requirements are needed to realize automatic control systems by AI.

(1) Ensuring interpretability : The reasons behind AI operation (causal relationship between inputs and outputs) must be clear.
(2) Adaptability for new situations : The control performance must be maintained even under conditions where the system state during on-line operation differs significantly from that during off-line learning.

Our new system takes the following measures for each requirement.

(1) The new system adopts a multiple regression model that can maintain necessary precision and has excellent input and output-related interpretation. This enables human operators to understand cause and effect of AI operation easily and to explain the reason to third parties.
(2) The performance of control based on only AI might degradate because of low precision of AI when the system state during on-line operation differs significantly from that during off-line learning. The new system introduces correction processing of AI output based on the system state during on-line operation. This can maintain necessary control performace even under conditions which differ significantly those during off-line learning.

The new system adopts the new voltage and reactive power control (VQC) method with AI. The replacement is progressing for its commercial operation, which is planned to start in 2023.