Technical Description

We have provided numerous critical protection systems for combined cycle gas turbine power stations across UK operated by the most important players in the industry.

CCGT power stations utilise direct gas turbine driven generators with recovery of exhaust heat used to raise steam for additional steam turbine energy recovery. As such CCGT power plants typically present high fuel energy conversion efficiencies in comparison to other thermal plant designs.

We supplied protection system (x 24) on these sites including for boiler/HRSG protection and prevention of liquid phase steam condensate reaching the steam turbine, protection of generators and transformer equipment and status monitoring and tripping concerning steam and gas turbines. In addition high reliability fail safe systems were supplied for cooling water and fuel oil plant and gas supply protection.

We continue to work closely with all of these stations providing commissioning and ongoing 24/7 call out support services to facilitate effective maintenance and emergency repair on what are largely very complex systems and where the client preference and logistics, given that these stations typically requiring few staff to operate and maintain, require vendor supplied maintenance.

We are well placed to engineer such projects owing to our in-house knowledge of mechanical, chemical and electrical engineering of thermal plant design untypical of safety systems integrators.

Industry/Application Description

High availability Boiler/HRSG, Steam Turbine and Generator protection systems supplied by us for several customers with CCGT stations.

These projects comprised:

- Pulse testable (for highest availability and lowest maintenance) hardwired safety system design
- SIL 2/3 capability (in low demand mode)
- Fail-safe protection on coolant, fuel oil & gas plant
- Extensive use of esoteric equipment for current transformer, phase imbalance/differential, reverse power, field excitation current etc.
- Complex sliding vacuum trip logic and boiler compensation analogue processing and analogue validation (comparison) to alarm on transducer failure
- HMI (Supervision) plant status graphics software

Key Business Benefits Derived

- Ensures protection of very high value assets and power generation
- Ensures safety of personnel
- Enhanced system availability to avoid interruption of power generation (use of pulse testable platform) and to facilitate maintenance logistics
- Real time availability of process information
- Supports optimisation of production and electricity generation infrastructure of the UK