Capability Statements – Power Generation Industry

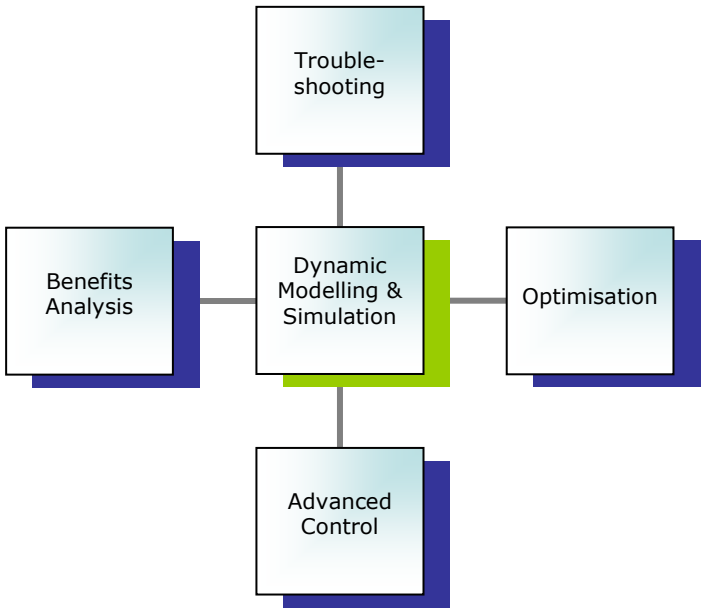
Independent Control Consultancy Services

ISC provides independent, high quality control engineering consultancy services to the power generation industry. With a multidisciplinary team of individuals, we specialise in troubleshooting, advanced control strategy investigation, optimisation and benefit analysis using high-fidelity, well validated dynamic models.

We thrive on:

- Solving difficult practical control problems that other suppliers have looked at but failed to solve;
- Optimising control design and parameters that yield the most profitable or best way of operating a plant or system.

Solutions can range from simple classical feedback/feedforward to advanced control, such as model-based methods like MPC. Nevertheless, simplicity remains a key objective in our solutions, providing performance criteria can be met.



ISC has a long track record in developing high-fidelity models of nuclear power generating plant for use in simulation to investigate design and operating changes.

Dynamic models have also proven invaluable in our troubleshooting of control problems at CCGT and CHP generating plants.

If you are interested in any of the above services, please contact us by phone, e-mail or online.

Our Expertise

- In-depth understanding of control technologies
- Extensive experience in diverse industrial applications
- Detailed experience in modelling system or process behaviour
- Expert analysis of complex problems
- Proven project management and research skills

Our Core Competencies

- Troubleshooting
- Dynamic modelling & simulation
- Control strategy design
- Optimisation
- Algorithm development
- Benefits analysis and technology review
- Research
- Training

Our Philosophy

- Approaching problems with an open mind
- Dedicated to identify practical and innovative solutions without compromising performance
- Imparting understanding and empowering our clients to drive improvements themselves

ISC Limited
36 Renfield Street
Glasgow G2 1LU
Scotland UK

t +44 (0) 141 847 0515
f +44 (0) 141 221 1706
e iscmail@isc-ltd.com
w www.isc-ltd.com

Industrial Systems and Control Ltd. wholly owns and manages Applied Control Technology Consortium
Registered in Scotland 105188

applied control technology consortium

- modelling and simulation
- control design
- system troubleshooting
- technology transfer and training
- energy efficiency investigation
- software tools

industrial systems and control

Our engineers utilise a wide variety of dynamic modelling packages such as LabView and MATLAB/Simulink. Optimisation can be applied to static and dynamic problems, including both hard and soft constraints and conditional logic. Methods used include Quadratic Programming, Gradient Search, Direct Search and Genetic Algorithms. We also help clients understand the developed model which can often be provided in standalone form for client use. Furthermore, we can provide training on using the model where appropriate.

You can rely on us finding the real cause of problems through a special combination of theoretical understanding, extensive practical experience and engagement with all functions in a client company.

We are flexible and open minded. Our consultants are highly qualified and dedicated professional. Last but not least, we are always prepared to think outside the box and go the extra mile needed to deliver practical, innovative or optimised solutions for our clients.

Service Examples

➔ CHP Steam Pressure Control Improvement

To improve steam pressure control of a CHP (Combined Heat and Power) plant, ISC developed a detailed dynamic plant model and used it to in the investigation of modified control strategies. The resulting control strategy showed improved stability and a potential to increase steam turbine power output.

➔ Troubleshooting of Power Station Trips

Troubleshooting power plant trips is one of the areas in which ISC has been actively engaged. This is often assisted by the use of dynamic models where different resolution options can be explored prior to commissioning. Past examples include investigation into a gas supply trip at a gas-fired combined cycle power station and possibility of trips in a steam condensate plant.

➔ Implementation of Adaptive Model Predictive Control

A recent project includes benefits analysis and implementation support of the ADEX (Adaptive MPC) on superheater temperature control. The control algorithm offers better control of attemperation under a wider operational range and thus tighter temperature control. Importantly, such a control solution does not require additional plant sensors/modifications.

➔ Nuclear Power Plant Modelling

ISC has expertise in developing and validating high-fidelity (first principles) dynamic models of nuclear power plants for investigation of what-if application scenarios. Examples include reactor/steam circuit and condensate system dynamic models. Examples of application scenarios are evaluation and verification of control modifications and verification of instrumentation needs.

➔ Development of Offshore Wind Farm Supervisory Control Strategies

ISC is a key partner in the European Commission funded AEOLUS project to research and develop new supervisory control strategies for large offshore wind farms, with the objective of increasing the through life economic performance of the wind farm, carefully balancing power extraction and mechanical fatigue.

Clients Include

- Alstom Power
- Alstom Wind Power Solutions
- British Energy
- RWE nPower
- Scottish Power
- Scottish & Southern Energy

Other Services

- Training:

  Off-the-shelf or bespoke

  Introductory or advanced

  Theory or application

  Generic or industry specific

- ACTC Membership:

  Free entry to technical events

  Free training entitlement

  Site visits by consultants

  Free access to members-only software and technical dissemination reports

  Access to industrial forum for networking and promotion of services and products

If you are interested in any of the above services, please contact us by phone, e-mail or online.

ISC Limited
36 Renfield Street
Glasgow G2 1LU
Scotland UK

t +44 (0) 141 847 0515
f +44 (0) 141 221 1706
e iscmail@isc-ltd.com
w www.isc-ltd.com