

Electrical system protection

Leading expertise for safer, secure and reliable power systems



Mott MacDonald is a global management, engineering and development consultancy with a strong engineering base. With annual revenue of £1 billion, we combine the skills of over 14,000 staff with a strong presence in 140 countries. Electrical system protection is one of the most important aspects of system design and operation. The move from aging electromechanical and electronic relays to modern, fully integrated protection and control devices takes a great deal of understanding to optimise and to maximise the benefits for the operator.

Mott MacDonald's services in this area cover:

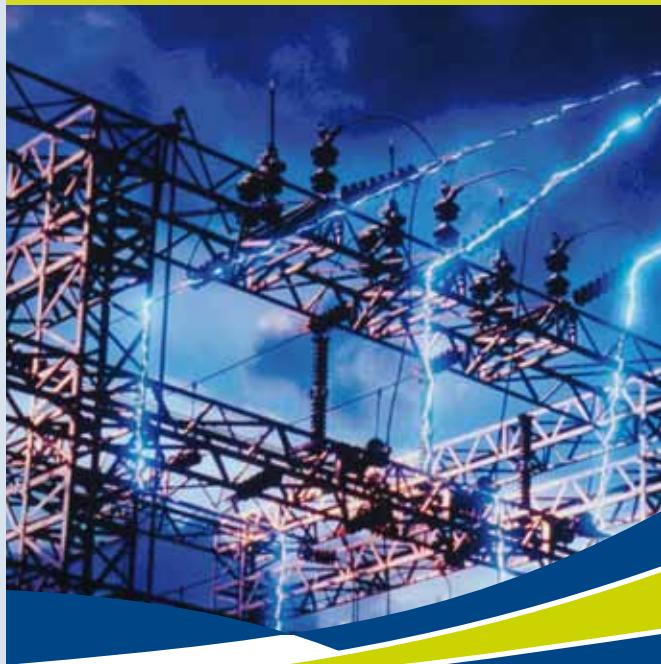
- Generation protection – thermal, hydro, wind and novel prime movers
- Industrial system protection
- Integrated control and protection for transmission and distribution systems
- Relay co-ordination studies, detail scheme design, philosophy statements, commissioning, reviews and retrofits
- Specialist protection schemes

Providing protection

We carry out protection engineering for transmission networks, generation plants connected to grids, large and small industrial users and distribution companies. Protection systems can vary from simple to extremely complex. Modern electronic relays can be part of an overall protection and control system, acting as remote terminal units and control points as well as protection in both large substations and the wider network.

Mott MacDonald has extensive experience in all aspects of protection for:

- Cables
- Industrial generation
- Industrial networks
- Main generation plant
- Offshore networks
- Specialist applications
- Substations up to 500kV
- Transmission lines
- Utility distribution systems
- Wind farms



www.power.mottmac.com


Mott MacDonald



Contact us

Europe/Asia Pacific

Dr Keith McLeay

T +44 (0)141 222 4617

E keith.mcleay@mottmac.com

Africa

Howard Bate

T +27 (0)11 275 0086

E howard.bate@mottmac.com

India subcontinent

Sadiq Shafiq

T +91 (0)12 0308 2322

E sadiq.shafiq@mottmac-india.com

Middle East

Paul Looker

T +971 (0)2412 0297

E paul.looker@mottmac.com

UK

Joy Louis Aloor

T +44 (0)1273 365260

E joy.aloor@mottmac.com

USA

Paul Pring

T +1 781 915 0084

E paul.pring@mottmacinc.com

Proven capability and experience

Our proven capability in all aspects of protection design, application and commissioning management has been developed over many decades. Whether the project is to extend existing transmission, distribution or generating stations or for greenfield development, our world class resources enable us to specify, design and provide settings for the installation.

We have experience in all distribution and transmission voltages up to 500kV, employing either traditional discrete relays or intelligent multifunction devices. Our protection specialists both support our substation and network projects and run their own projects where protection or protection and control is the only issue.

Our protection engineers are skilled in:

- Application engineering/relay setting calculations and the auditing of third party submissions
- Arc flash analysis
- Associated control functions, including auto switching schemes, transformer automatic AVC schemes and interlocking systems
- Fault analysis
- Multifunction relay configuration
- Protection philosophy definition and policy creation
- Protection upgrading/refurbishment in existing substations
- Relay co-ordination
- Relay scheme design/equipment technical specification
- Reliability assessment
- Specification of commissioning requirements of new and existing installations
- Substations up to 500kV
- System fault studies
- System protection design, both functional specification and detailed design

Delivering the best solutions

Mott MacDonald possesses the full understanding of substation and system operation required to maximise the benefits and deliver correct definition and settings. We use suitable setting software where appropriate, but always carry out checks by other means to deliver suitable and safe solutions. We have a full power system modelling service for the load and fault level computations needed to enable protection systems to be defined and relays set.



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