



Arc Flash Incident Investigation – Case Study Oil & Gas Processing Plant, UK

GSE Systems has carried out numerous incident investigations for clients across the United Kingdom. The GSE capability is built around a core team of highly experienced engineers with specialist experience in areas including electrical, automation & control and functional safety.

GSE Systems' consultants can travel to your site, facility or location at short notice and conduct an independent investigation.

Alternatively, GSE can operate as client-appointed third party independent investigators working with regulatory bodies such as the UK Health & Safety Executive (HSE). GSE has recently conducted incident investigations encompassing:

- Electrical arc flash, Essex
- Lightning strike, Shetlands
- Cable isolation and removal, Hemel Hempstead
- Fatal electrical arc flash incident, Teesside
- Electrical systems fault incident, Sheffield

GSE consultants can be provided immediately to carry out an incident investigation for you at your location or to lead an investigation working with your staff.



GSE's range of electrical incident support services includes a site audit, development of an improvement plan, worker competence assessment, implementation support, safety awareness training and more.



ELECTRICAL INCIDENT SOLUTIONS

Range of support services offered to clients includes:

- Provision of a temporary electrical duty holder
- An audit of the site electrical safety management system against UK statutory requirements and best practice
- Development of an electrical safety improvement plan and implementation of the approved plan
- Competence assessment processes for electrical workers and contractors
- Proposed plans and cost estimates for improvements to site equipment
- Implementation support
- Delivery of electrical safety awareness courses to employees and contractors

ARC FLASH INCIDENT

Incident: 3.3 kV Electric Arc Flash in Motor Control Switchgear

Location: Teesside Oil Terminal

Date: July 2006

Critical Issues

A control cable fault in conjunction with a control circuit wiring fault rendered ineffective the motor control circuit safety interlocking. Neither fault could have individually produced the incident.

The interlocks were rendered ineffective by the combination of faults allowing the direct manual operation isolator to be closed on load. The isolator is not designed for on-load switching.

Incident

Motor was stopping intermittently. Investigative work was carried out on the 110 V control circuit. When a motor isolator was moved to the closed position, an arc flash occurred, destroying the MTE 3.3 kV starter cubicle which injured two people – one fatally.

Solution

- Review test methodology for faulted control cables and consider inclusion of core-to-core checks.
- Review arrangements for routine replacement of obsolete components and consider implementing enhanced checks.
- Review switchgear interlock design for vulnerability to combined control circuit faults.
- Conduct a thorough risk assessment of the operation of direct manual operation (DMO) isolators not rated for on-load switching.



About GSE Systems

We are a next-generation simulation, training, and engineering services provider applying a world of experience to help you achieve the performance you imagine. GSE is a world leader in real-time high-fidelity simulation, providing a wide range of simulation, training and engineering solutions to the energy and process industries. Our comprehensive and modular solutions help customers achieve performance excellence in design, training and operations. GSE's products and services are tailored to meet specific client requirements such as scope, budget and timeline.

Contact Us

Worldwide Headquarters

GSE Systems, Inc.
1332 Londontown Boulevard, Suite 200
Sykesville, Maryland 21784 USA
T: +1 410.970.7800
T: 800.638.7912 (U.S. only)
F: +1 410.970.7997
E: info@gses.com
www.gses.com

USA – Georgia

2300 St. Marys Road, Suite D
St. Marys, Georgia 31558
T: +1 912.576.6730
F: +1 912.576.6734

USA – North Carolina

1135 Kildaire Farm Road, Suite 200
Cary, North Carolina 27511
T: +1 919.228.4044
F: +1 919.481.9255

Sweden – Nyköping

Repslagaregatan 43 A
Nyköping SE-611 32
T: +46 (0) 155.78.700
F: +46 (0) 155.28.97.77

UK – Stockton-on-Tees

Birch House
Princeton Drive
Stockton-on-Tees
TS17 6AJ
T: +44 (0) 1642.613.622
F: +44 (0) 1642.616.480

UK – Glasgow

Royal College Building
204 George Street
Room 4.01
Glasgow G1 1XW
T: +44 (0) 141.4411.494

China – Beijing

F3 Oriental Place
9 East Dongfang Rd.
North Dongsanhuan Rd.
Chaoyang District
100027 Beijing
T: +86 10.84518296
F: +86 10.84513269

India – Chennai

4 South Boag Road, T. Nagar
Chennai 600017
T: +91 (0)44.2433.3469



www.GSES.com

Connect with us on:

