

# PETER A HEFFER BSc(Hons) MSc MIET CEng

## PROFILE



Over 40 years in the Oil/Gas/Petrochemicals industry; working as Controls and Instrumentation Engineer. Now providing Functional Safety Consultancy services in compliance with IEC 61508/61511 and Process Hazards Analysis Facilitation.

- Chartered Engineer.
- Certified Functional Safety Expert (CFSE) - No. 090603 002
- TÜV Functional Safety Engineer (TÜV FSEng) - ID No: 4834/12
- Corporate Member of Institution of Engineering and Technology
- Affiliate, Institution of Chemical Engineers
- Member of the ISA

## QUALIFICATIONS

- MSc – Computing for Commerce and Industry
- BSc (Hons) - Electrical and Electronic Engineering

## ADDITIONAL TRAINING/SKILLS

- IChemE HAZOP Leadership and Management
- IChemE LOPA for Safety Instrumented Systems
- Certified user of ACM's SilCore software
- Licensed user of ABB software TRAC
- User of exida's exSILentia software (versions 2.0, 3.0 and 4.0)
- Shell M269 IPF Facilitators course utilising SIFpro
- BP Approved HAZOP & LOPA Chairman

## CAREER HISTORY

### Independent Functional Safety Consultant:

2007 to present

- CFSE SIL Verification Endorsement (exSILentia V4 used), for PetroRisk, Worley, Qatar Energy – Feed for RU, WWTP, WAO Projects.
- Leading multiple HAZOPs (studies for refinery, 2019 to 2021), with ABS, A/S Dansk Shell, Fredericia Refinery. LPG Treater Unit, Heat Recovery Unit, Hydrotreater Unit, Hydrodesulphurisation Unit, ADIP Treater, Platformer, LPG Unit, DEA Unit, Sulphur Recovery Unit, Storage, Blending, Flare, HP/MP/LP Steam, Waste Water, Utilities (Air, Chilled Water, Hot Water), Gas Turbine/Waste Heat Recovery Unit.
- Led HAZOP for ABS, ADM Bulgaria, Ethanol Production. Preparation, Fermentation, Distillation, Drying and Storage units
- Led HAZOP for ABS, HB Fuller, solvents used in the production of adhesives.
- Led HAZOP for Mott McDonald, Oryx Petroleum, Demir Dagh EPF Modification (2016); TLS Offloading Upgrade Project (2018); Banan Process Facilities and Pipeline FEED (2019).
- Led HAZOP and PFMEA for NW Total/Rolls-Royce, Sahara Project, 600 DegC Argon, post weld heat treatment.
- Led HAZOP for ABS, COFCO, Standerton South Africa, Soybean Extraction process using hexane.
- Led HAZOP/LOPA for CLH-PS, Stoke and Nettlestead A1 Jet Fuel Pumping stations. Inverness new Storage Tank.
- Led HAZOP/LOPA for Perenco, on the Woolaston Well re-instatement project. Performed two Fault Tree Analyses. One for 'well failed to isolate' and another for a 'gas blow-by case.
- Led HAZOP/SIL for ABS, Fluor JV, KNPC/KIPIC Al Zour Refinery, Sour Water (SW) Stripper, Acid Gas Flare and Sulphur Pelletiser Units. Plus, vendor packages: SW Offgas compressor, N2 PSA/De-Oxo/TSA, H2 six bed PSA, H2 12 bed PSA, H2 recip. Compressor, Tail Gas Compressor, Acid Gas Flare, Ground Flare, Flare Gas RU, Temp Control Unit, Air Compressors, Sulphur Conveyors/dust suppression, Waste Water Treatment (PT/BT/ST), Methanol Storage
- Led HAZOP/LOPA for Crossflow Energy, Pre-Production Prototype Wind Turbine.
- Ongoing Functional Safety support for Gate Terminal, Maasvlakte in Rotterdam LNG facility, including preparation of a Gap Assessment, Functional Safety Management. Procedure and Functional Safety Operations and Maintenance Guide.
- Led HAZOP/LOPA, Greens Power, Nalco Champion, Furness controls upgrade. Plus Functional Safety project lifecycle assistance – SRS, Functional Safety Plan, Verification and FSAs
- Led LOPA, Petrofac, BP, Sullom Voe Gas Sweetening, Process & Utility DCNs
- Led HAZOP/LOPA, DNVGL/ABS, SCOP Karbala Refinery, 6wks, VGO KHT, fire water, power generation, raw and wastewater, drinking water, spent caustic
- Led HAZOP/SIL for Mott McDonald, South Hook CHP, SCV LNG Heat Pipe FEED.
- Led HAZOP/SIL for Gate Terminal, Fluor S.A., LBBR project, LNG Ship Loading
- Led HAZOP review for CB&I, National Grid, LNG Road Tanker Loading
- Led Topsides Risk Graph and LOPA for Petrofac, Apache Forties A, Aviat Field Development
- Led HAZID and HAZOP, National Grid, LNG ship to ship loading whist plant in cooldown mode
- Led HAZOP, DNV, KBR, Pacific Northwest LNG (Petronas) Feed, Utilities and Fractionation
- Led SIL LOPA, ABS, TAKREER, Carbon Black and Delayed Coker Package Units

- Led SIL LOPA and performed SIL Verification for Humbly Grove Energy, Oil Plant
- Led HAZID/HAZOP/HAZCON/LOPA British Pipelines Association (BPA), Carrington Gas Pipeline.
- Led SIL LOPA, DNV for Sumitomo Chemical/Saudi ARAMCO. Rabigh II, Metathesis, TPO, MTBE, LDPE/EVA processes.
- Led Topsides Risk Graph and LOPA for Petrofac, Apache Forties C, NGL Compressor
- Led LOPA, Petrofac, Centrica, Kittiwake Offshore Platform
- Led Topsides HAZOP, SIL Risk Graph and SIL LOPA Classifications, Petrofac, Petro SA, Ikhwezi Project, F-O tieback to F-A Platform
- Performed SIL Verification, Petrofac, Ithaca FPF1 floating production vessel
- Led Topsides Risk Graph and LOPA for Petrofac, Ithaca FPF1 floating production vessel
- Led HAZOP and LOPA for ex-Mod Storage Depot, Loch Ewe, Storage Tank Facility
- Led HAZOP for Birwelco, Eastham Refinery Bitumen pumping study
- Led HIPPS LOPA for Petrofac, Ithaca FPF1 floating production vessel
- Led HAZOP and LOPA for Birwelco, Eastham Refinery, Gas distribution and retrofit modifications from oil to gas burners on their crude and vacuum furnaces
- Led HAZOP and LOPA for MoD Storage Depot, Thankses, NATO Diesel Storage Tanks
- Led HAZOP, Oil and Pipelines Agency, Thetford PSD, Relief Valve modifications.
- Performed Functional Safety Audit, Lloyds Register, BP Norge SKARV SIL PLC, SSIV and ESD.
- Performed SIL Verification, BPA, Bacton and North Walsham condensate storage/pumping/rail loading facilities
- Led HAZOP, Oikos jet fuel pumping station and pipeline
- Ongoing Functional Safety support for Humbly Grove Energy (Petronas) for their Gas Storage facility; including preparation of SRS, SIL Classification Procedures, Operations and Maintenance Procedures. LOPA and SIL Verification. Functional Safety Assessments.
- Functional Safety support for National Grid Isle of Grain LNG facility, including preparation of Safety Requirements Specification (SRS), SIL Classification - LOPA, SIL Verification, IEC 61511 gap analysis) Functional Safety Site Specification. 2010 to 2015.
- Performed to Fault Tree Analysis, Core Oil and Gas, TAQA, North Cormorant Well Manifold Isolation Analysis (comparing SIL assessment with equipment installed)
- Performed SIL Verification using exSILentia. Lloyds Register for TAKREER. Ruwais Refinery Expansion Project, EPC7 Marine Terminal, Abu Dhabi
- Led LOPA SIL Classification. Lloyds Register for TAKREER. Ruwais Refinery Expansion Project, EPC7 Marine Terminal and Jetty, Abu Dhabi
- Led LOPA SIL Classification, British Pipelines Association (BPA) , OIKOS Pump station
- Performed SIL Verification using exSILentia. Lloyds Register for TAKREER. Ruwais Refinery Expansion Project, EPC4 Tankage, Abu Dhabi
- Led LOPA SIL Classification. Lloyds Register for TAKREER. Ruwais Refinery Expansion Project, EPC4 Tankage, Abu Dhabi
- Performed SIL Verification. DNV for Kuwait Oil Company. BS132, BS131+ GC15, 23, 25 (upgrades), Gas Compression, North Kuwait
- Wrote Safety Requirements Specification (SRS). DNV for Kuwait Oil Company. BS132, BS131+ GC15, 23, 25 (upgrades), Gas Compression, North Kuwait
- Led LOPA and Risk Graph SIL classification. DNV for Kuwait Oil Company. BS132 Gas Compression, North Kuwait
- Led HAZOP and LOPA. EDF Energy. Biomass semi-direct injection, Cottam Power Station.
- Fault tree analysis and independent SIL verification assessment for deepwater well intervention package. Client confidential
- Led SIL Risk Graph Classification, Scottish and Southern Energy. Medway Power Station. Database then migrated to exSILentia 3.0 with verification for all SIF.
- Led LOPA SIL Classification, BP/Centrica OCTIP Pipeline Interface
- Led LOPA SIL Classification, BP Cleeton Injection Pump modifications
- Performed FMEDA and independent SIL assessment, Scottish and Southern Energy, Atwick 2 Wellhead Control Panel
- Led LOPA SIL Classification, BP Chirag, Topsides Facilities
- Led HAZOP and LOPA, BP Magnus Cold Start Modifications
- Led LOPA SIL Classification, BP Chirag, Drilling Facility
- LOPA advisor during BP Chirag Drilling HAZOP
- Independent Verification Body for ICSS (SIS/FGS), Lloyds Register, Agip's Kashagan Project (>100,000 I/O). Duration 3 years.
- Led SIL LOPA Classification, BP OCTIP Offshore
- Led SIL LOPA Classification, BP Southern North Sea (four weeks)
- Led Risk Assessment, Tullow Oil, Drill Stem Test, Ghana
- Led HAZOP, Tullow Oil, Drill Stem Test, Ghana

➤ **Presented training courses:**

- **CFSE, and IEC61508 for exida**
- **HAZOP and Instrumentation for IDC Technologies**
- **What If and HAZOP module for Delta Process Academy, essencia, as part of the ‘Hazard Analysis of Reactors, Chemicals and Processes’ course - Ghent University (annual presentation).**
- **HAZOP/HAZID course - NIS Serbia**

2002 to  
2007

**PETRONAS CARIGALI (Malaysia)**

**In-house Consultant – Functional Safety, Instrumentation and Controls**

Responsible for staff development, technical assistance to all brown and green field projects, assessing new technologies, HAZOP and SIL assessment.

Some of the HAZOPs attended as Client Representative:

- Ruby B – Oil and Gas platform
- Bergarding – Oil and Gas facility with satellites and processing
- MLTTB - Oil and Gas facility with satellites and processing
- Baram South – three platforms with tie-ins to existing hub
- Miri Crude Oil Terminal – pipeline tie-ins. Also Baronia B – production platform
- Turkmenistan - Gas production platforms. Also onshore gas processing facility
- Putri – oil production platform and J4 – gas production platform
- Baram new compressor upgrades. Also Kinarut gas production platform
- ANCSI C & D oil production platforms and hub tie-ins
- Gas receiving terminal new flare

Some of the SIL classifications attended as Client Rep (using Shell IPF method):

- Ethylene and Polyethylene complex – 1056 I/O
- Ruby B
- Bergarding
- MLTTB
- Baram South
- Turkmenistan
- ANCSI C & D
- J4
- Gas receiving terminal new flare

1992 to  
2002

**AIR PRODUCTS**

**Lead Instrument Engineer**

Responsible in-house design engineering instrumentation and systems, including HAZOP, P&ID development. Plus construction and start-up assistance.

Pernis Holland – H<sub>2</sub>/CO production facility; Petronas Malaysia – Ammonia Syngas facility; Rozenburg III Holland – Air Separation Plant; Fajr Iran - Air Separation Plant; Litvinov Czech Republic – Plant Refurbishment; FAB 14 Ireland - Air Separation Plant + FAB 18 Israel - Air Separation Plant

1991 –  
1992

**WIMPEY CONSTRUCTION**

**Principal Instrument Engineer** Centralised Control Room Project – Shell Haven Refinery

1989 –

**MW KELLOGG**

1991

**Project Instrument Engineer** Shell Polypropylene PPLS – Carrington

1982 to

**DAVY MCKEE**

1989

**Senior Instrument Engineer**

Esso Fawley Refinery - Residfiner Project, Norske Hydro Fertiliser Plant – Immingham and Tate and Lyle Silvertown Sugar Refinery

1976 to  
1982

**Instrument Designer for DAVY MCKEE, MATTHEW HALL, BECHTEL, JOHN BROWN, SORCO Norway, GLOBAL Eng Brunei, BRITISH GAS, AMOT CONTROLS**