



# PipeSystemConsult GmbH Company Presentation



# Company Profile

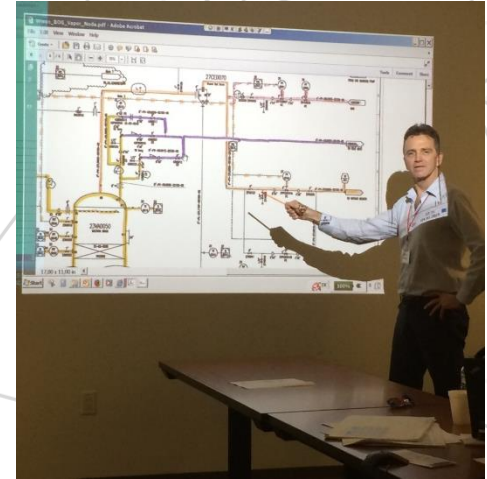
- PipeSystemConsult (PSC) is an independent engineering company that provides flexible and cost-effective consulting services to clients in the pipeline, petrochemical, power generation and industrial energy sectors.
- The company has over 35 years' international experience in engineering management and design.
- Our special focus areas are:
  - specialized Functional Safety Management services to IEC 61511, including HAZOP, HAZID, LOPA, SIL, QRA, Functional Safety Assessment and Audit, through CFSE-certified safety experts
  - PSC has provided independent Chairman and Scribe services for over eighty HAZID, HAZOP (including HAZOP revalidation) and LOPA studies both nationally and internationally. PSC experts are certified according to IChemE and the Exida CFSE program.



# Services

## Functional Safety Management

- Hazard & Risk Analysis (HAZID, HAZOP, FTA, QRA)
- SIL Analysis (Risk Graph VDI/VDE 2180, LOPA)
- Preparation of SRS
- SIL Verification (using ExSILentia, SET, Safeguard Profiler, TRAC)
- SIL Validation (participation at FAT/SAT)
- Functional Safety Assessments and Audits
- Cyber Security Analysis



## General Consulting Services

- Due-Diligence, Peer-Review
- Integrity Audit
- Expert Witness Services
- Technical translations (German / English)



# Projects

## HAZOP UPDATE, SIL VERIFICATION FOR COMPRESSOR STATION LEGACY SYSTEMS

Project Owner: Confidential

Time Frame: 2017 - 2018

Key Project Data: Existing gas transport compressor station, in operation for 10 years, comprising: electric-motor-driven gas compressor and gas-turbine-driven (GT) gas compressor

Scope of Services: Update of HRA (re-HAZOP) and SIL-analysis (Risk Graph method acc. VDI/VDE 2180), Gap analysis of existing FSM-documentation, Preparation of Cause & Effect Chart for safety and process trip logic, Investigations on site to confirm as-built status of safety-related loops, SIL-Verification using ExSILentia and preparation of compliance report (equivalent to FSA-4) according to DIN EN 61511:2012, Preparation of recommendations and priorities for implementation

## HAZOP/SIL/LOPA for an LNG Reloading Station

Project Owner: Klaipėdos Nafta, Lithuania

Time Frame: 2016-2017

Key Project Data: The Reloading Station will be used for storage of LNG in vacuum insulated tanks, filling of LNG to road tankers, filling of LNG to ships as fuel (bunkering) and evaporation of LNG to provide natural gas to local gas consumers. LNG is supplied to the station from an LNG carrier..

Scope of Services: Provision of risk evaluation services, including::

- HAZOP Workshop at Owner's premises
- SIL-Analysis / Workshop using calibrated Risk Graph Method
- LOPA of critical SIF functions
- HAZOP and SIL update after design changes
- Preparation of Safety Requirements Specification (SRS)



# Projects

## TECHNICAL AUDIT SERVICES FOR GAS SUPPLY AND PRESSURE LIMITING STATIONS, OMAN

Project Owner: Oman Gas Company (OGC)

Timeframe: 2009

Key data about project: Oman gas network operated by OGC consists of approx. 1500 km of gas transmission pipelines, three compressor stations and approx. 50 associated gas stations.

Scope: Lead Auditor, scope included inspection and risk-based assessment of plant condition, as well as operation and maintenance practices of 15 gas stations/sites in Oman, preparation of Technical Audit Report and prioritized action list / master plan



## BUYER TECHNICAL DUE DILIGENCE FOR GAS NETWORKS

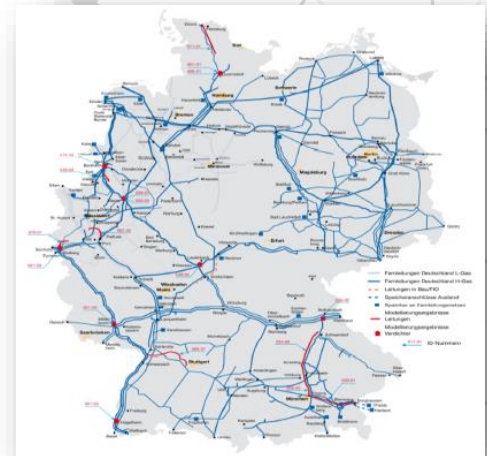
- **TENP / Transitgas**
- **Thyssengas**
- **GOAL**
- **OGE**
- **NET4GAS**
- **Arsan (Ankara, Turkey)**

Project Owner: Various Investment Groups

Timeframe: 2011-ongoing

Key data about project: Various gas networks up to 10,000 km pipeline length with associated compressor, valve stations, etc

Scope: Pipeline and Stations Expertise, responsible for review of Data Room documentation relating to compressor stations and gas pipelines, site visits, estimation of CAPEX, REPEX, OPEX, preparation of Buyer Due Diligence report, including development plan



# Projects

## Latest Projects

- Gallaf Phase 2 – Functional Safety Assessment (FSA-1, 2, 3)
- HAZOP of DLR Prometheus Rocket Test Facility
- HAZOP of a 'Green-H2' production and storage facility
- HAZID, HAZOP for H2-supply to a copper smelting facility
- HAZOP, SIL for gas pipeline deodorisation facility
- Gap Analysis and Set-Up of a Functional Safety Management System (FSMS) for a Turnkey Contractor, Germany
- 10 HAZOPs for SWCC Water Projects, Saudi Arabia
- Abu Dhabi Crude Oil Pipeline (ADCOP) – Follow-up HAZOP for EPC Contractor (China Petroleum Engineering & Construction Corporation)
- Crude Oil Collection Manifolds (PMAN), Petrom, Rumania – HAZOP of 34 manifolds
- HAZOP (incl. HAZID, SIL, LOPA, Risk Analysis) for over 50 projects in the oil and gas sector.



# About us

- PipeSystemConsult Ltd (PSC) was established in Munich, Germany in 2008 with the aim of providing flexible and cost-effective consulting services to clients in the pipeline, power generation and industrial sectors. The company is owned and led by Tim Callan (ME, CFSE).
- PSC specializes in implementation of Functional Safety Management in accordance with IEC 61511. PSC covers the whole Safety Life Cycle, from initial Hazard and Risk Assessment (HRA) through detailed design, implementation, commissioning and operation up to decommissioning.
- In close alignment with its clients, PSC applies its experience and know-how in carrying out studies and analyses, so that all factors can be assessed and project needs met in a timely and cost-effective way.



# Contact

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