

STOLZ

INNOVATIVE ENGINEERING

Specialists in Measurement, Control, and Functional Safety

www.stolzltd.com



Core Services

- **Functional Safety**
 - **HAZOP / HAZID / LOPA Participation**
 - **Safety Requirements Specifications**
 - **SIL Verification**
 - **Initial Validation / Proof Test Procedures**
 - **Functional Safety Assessments**
- **Specialist Technical Services**
 - **C&I Equipment Specification** – Development & technical bid evaluation
 - **Measurement Uncertainty** – New or existing system analysis
 - **Process Control** - Design, review & optimisation
- **Client Representation** – Technical oversight of projects on behalf of clients
- **Testing** – FAT / SAT
- **Project and Maintenance Support** – Project management and Commissioning lead

Support



How We Do It

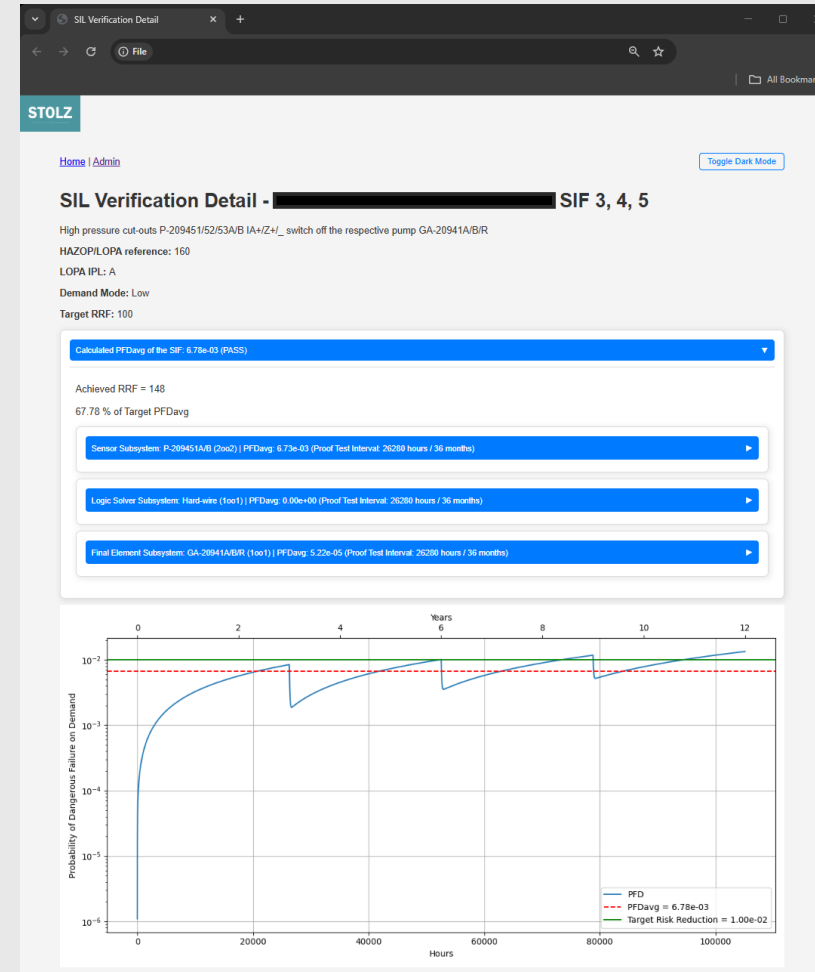
➤ Clear Service Frameworks:

- Each service we offer is backed by well-defined processes, measurable standards, and transparent milestones. Customers always know what to expect, when to expect it, and how we're progressing.



➤ Centralised Oversight:

- Our cloud software tools provide a single source of truth. Nothing gets lost, forgotten, or delayed data is tracked, updated, and visible to both our team and yours.



e.g. A snapshot of a Web-based report. Markov models for SIL verification are derived from controlled SQL data. Proof Test Coverage and mission-life are accurately modelled.

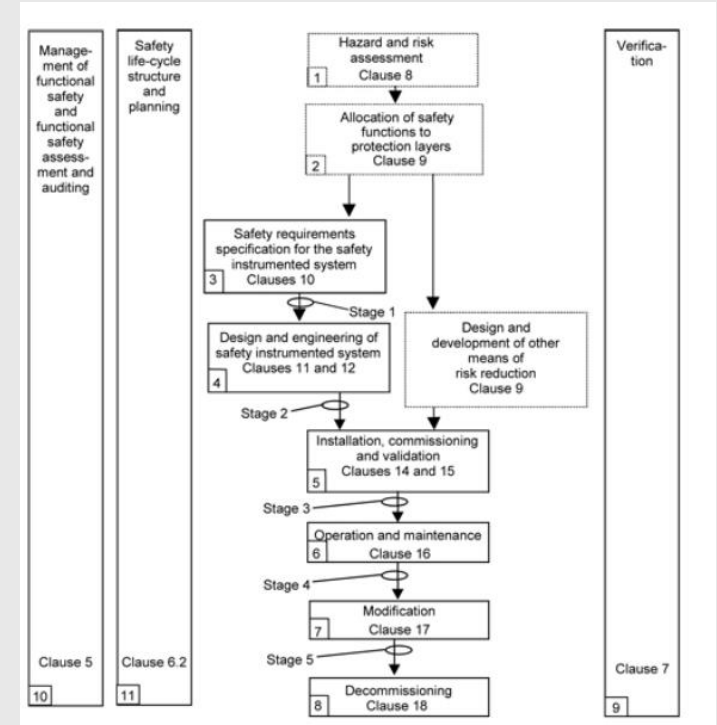
Functional Safety

STOLZ can support clients through all or part of a SIS (Safety Instrumented Systems) lifecycle in compliance with IEC 61508 and associated satellite standards e.g. IEC 61511.

Phase

- 1/2/3
 - **Hazard and Risk Assessment:** Our engineers can help identify hazards, evaluate current protection layers, identify vulnerabilities in your safety strategy, and contribute to LOPA to determine the required Safety Integrity Level (SIL) for each SIF.
 - **Development of Robust SRS Documents:** Translate risk reduction targets into clear, auditable integrity requirements.
 - **SIF Definition & Allocation:** Define each SIF precisely with triggering conditions, responses, test intervals, and performance targets.
- 4
 - **Architecture Design:** Design SIS architectures (e.g., 1oo2, 2oo3, nested MooN) with diagnostics, redundancy, and fail-safe principles.
 - **Component Selection** for SIL Suitability: Choose equipment that meet SIL capability, including proof test coverage and failure rates.
 - **Detailed Failure Mode / Common Cause Analysis / Proven in Use Studies :** Quantify reliability performance
- 5
 - **Pre-Startup Safety Review (PSSR) Support:** Ensure safety-critical equipment are installed, calibrated, and functioning per SRS.
 - **SIF Validation Procedures:** Develop and execute test plans that validate logic solver functionality, action response, and failure handling.
 - **Loop Checks and Cause & Effect Testing:** Provide field-level assurance that each SIF performs reliably under realistic conditions.
 - **Proof Test Optimisation:** Design efficient proof test strategies that maximize coverage and minimize downtime, accounting for imperfect testing.
- 6
 - **SIF Performance Monitoring:** Track SIF demands, failures, and spurious trips to validate PFDavg and update SIL verifications as needed.
 - **Maintenance Strategy for Safety Devices:** Balance reliability, availability, and maintainability through risk-based maintenance plans.
- 7
 - **Impact Assessments for SIS Changes:** Evaluate how hardware, software, or process changes affect SIL compliance and functional performance.
 - **Re-Verification of Modified SIFs:** Recalculate PFDavg and revise documentation to maintain integrity through lifecycle changes.
 - **Updated Risk Analysis and SRS Reviews:** Ensure all modifications are re-aligned with original risk reduction targets.
- 10/11
 - **Developing Functional Safety Management Plans**
 - **Functional Safety Assessments 1-5**

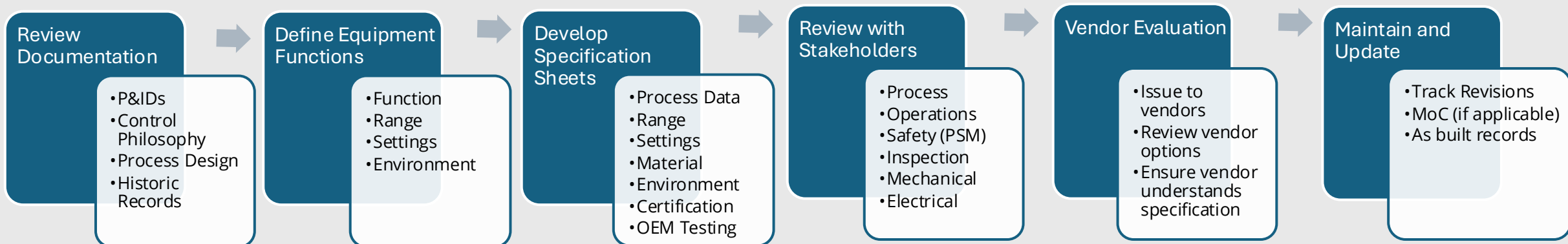
61511 SIS safety life-cycle phases and FSA stages



Equipment Specification

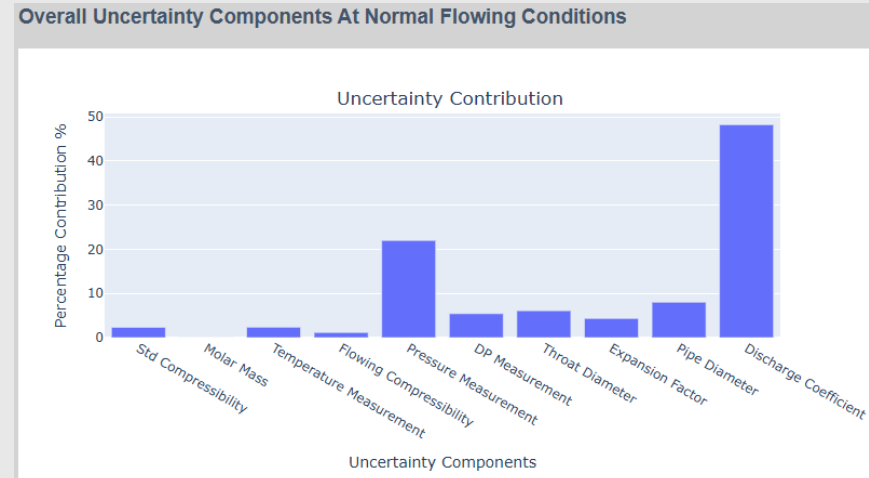
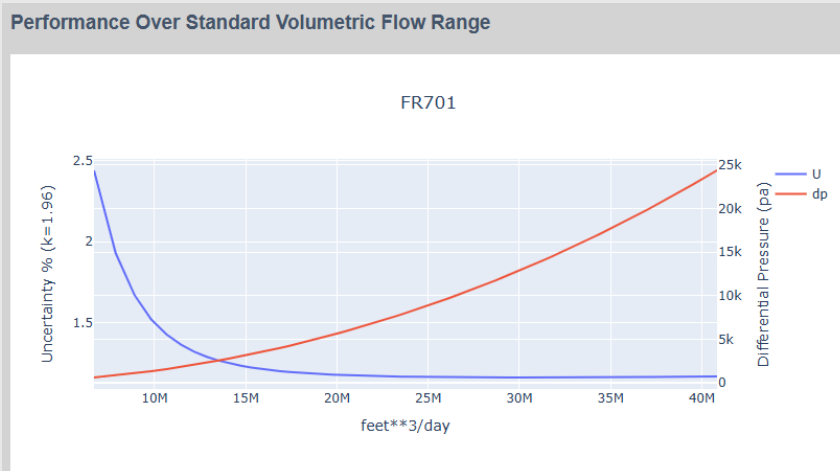
STOLZ can produce detailed specifications for a range of Control and Instrumentation equipment to meet applicable regulations and client standards.

- **Measurement** - Temperature, Level, Flow, Pressure, Weight, Speed and more
- **Control valves** including performance reviews and upgrades
- **ESD** (Emergency Shut Down) valve/systems including performance reviews and upgrades
- **Condition monitoring system** design and commissioning
- **ATEX** Instrumentation and equipment specifications



Measurement Uncertainty

- Quantification of total system uncertainty in accordance with ISO GUM, API MPMS, and OIML.
- Our Specialist Software
 - Modelling of the entire metering systems
 - GUM-compliant propagation engine
 - Generates Uncertainty budgets and component breakdown of uncertainty contributors
 - Justifications for regulatory declarations and commercial audits



Process Control



➤ Design

- Control strategy development for new and existing
- Model-based tuning of PID, cascade, and feedforward

➤ Review

- Audits of existing control strategies and loop performance
- Identification of hunting loops, dead time, and poor tuning
- Gap analysis against process objectives and best practice

➤ Optimisation

- Advanced control tuning to reduce variability and increase throughput
- Loop interaction minimisation and multivariable control design
- Energy and yield optimisation through tighter control
- Real-time performance monitoring and KPI tracking

STOLZ has bespoke process control software tools and bespoke IP

The screenshot shows the Espacenet patent search interface. The search results for GB2541504 (A) are displayed, including bibliographic data, flow control system and method, and an abstract. The abstract describes a system for controlling gas flow allocation to gas-lifted wells, comprising a gas lift manifold and a controller apparatus. A schematic diagram (FIGURE 9) is shown, illustrating the system components and their interconnections.

Bibliographic data: GB2541504 (A) — 2017-02-22

Flow control system and method

Page bookmark: GB2541504 (A) - Flow control system and method

Inventor(s): JONATHAN CAMPION [GB] ±

Applicant(s): STARSTREAM LTD [GB] ±

Classification: - international: **E21B43/12**
- cooperative: **E21B43/122** (EP, GB, US); **E21B43/40** (EP, GB, US); **G05D7/0652** (US)

Application number: GB20160010581 20160617

Priority number(s): GB20160010581 20160617

Also published as: [GB2541504 \(B\)](#); [AU2017286510 \(A1\)](#); [AU2017286510 \(B2\)](#); [EP3472424 \(A1\)](#); [US2019277119 \(A1\)](#) → more

Abstract of GB2541504 (A)

Translate this text into [patenttranslate](#) powered by EPO and Google

A system 20 for controlling gas flow allocation to gas-lifted wells, the system comprising: a gas lift manifold 3 for receiving pressurised gas at an in-flow rate xT , the gas lift manifold being in fluid communication with n continuous gas lift wells via respective flow control valves 5 to distribute the gas to each well at individual out flow rates $x1, x2, \dots, xn$, through each flow control valve wherein in a state of equilibrium the in-flow rate xT equals the sum of the individual out flow rates; $xT = x1 + x2 + \dots + xn$, and wherein the system comprises a controller apparatus 7 in operative communication with the flow control valves, the controller apparatus being configured to determine and set an individual out flow rate $x1, x2, \dots, xn$, at each respective flow control valve for a given total amount of the available in-flow rate xT .

FIGURE 9

Site map Accessibility Legal notice Terms of use Last updated: 26.08.2019 Worldwide Database 6.3.12.00.5, 35p

Client Assistance Maintenance and Capital Project Support

Maintenance Support

STOLZ can provide services to improve and support maintenance departments.

- Engineer and commission maintenance projects
- Design and improvement of maintenance systems
- Implement calibration and testing routines for instrumentation devices
- Investigate problematic measurement and control loops
- Upgrade obsolete and aged equipment
- Incident investigations and reporting



Capital Project Support

- Project management Lead
- Site surveys and 'as building' of documentation
- Specification of new equipment
- Reviewing maintenance reliability data to justify business decisions
- Developing engineering design documents and work packs
- FEL and FEED studies

Client Assistance

MoC, FAT and SAT Support

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Management of Change (MoC)

Management of change systems can be assessed, improved or developed from new; to help a businesses carry out the necessary steps when approving plant changes.

MoC systems can help teams work together sharing their own knowledge and experience to determine the impact of a plant change.

Through these systems the control of documentation and spares updates can be managed, ensuring records are maintained as built.



Factory and Site Acceptance Tests (FAT or SAT)

STOLZ can offer robust independent assessments, developed by ourselves or using client formats and proformas.

Supply of Specialised Materials

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Why STOLZ? *We have Whole of Market Reach!*

STOLZ offers procurement services that cut through OEM and group contract limitations. We source what's best for your project being; faster, smarter, and with greater value.

With access to the entire market, we're not tied to fixed supplier lists. We select vendors based on performance, price, and reliability, driving competition and better outcomes.

From equipment specification to delivery, STOLZ manages the full procurement process. Whether it's engineered packages or single specialised items, we ensure speed, control, and total transparency.



What Sets Us Apart

- Calculated, not estimated – All options explored
- Seasoned Perspective – Able to take a view
- What you want, not ‘what’s easiest for us’
- An interface that’s user-friendly to you
- Experience on both sides of the fence – Operator & Provider
- Embedded safety culture



Our History

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- 2022 – Formed by two directors – Jon Campion and Neal Bee
- Bringing together >50 years of experience to form a reliable and effective business

- 2022 – Olefins Unit DCS Cutover SIF Commissioning
- Planned and led the commissioning of ~500 SIFs

- 2022 – 2025 - Functional Safety support on 4 new steam boilers >200 SIFs
- Extensive FSA action closure within timeframes
 - Supported and improved initial validation and proof testing
 - Produced SRS and SIL verification for extended proof test intervals




- 2024 – ETS Measurement System Upgrade
- Ultra-sonic flow measurement replacement
 - Overall system uncertainty – Type B evaluation approved by EA auditor

- 2024 – Process Control - Beryl A & B DeltaV Control System Cut-over
- Calculation of control and filter settings for 100+ control loops
 - Significant time-saving during commissioning and start-up



- 2025 – 2026 - Jetty LNG Marine Loading Arm Project
- Developed complete jetty (4 x MLAs) C&I Upgrade Specification for Client Tender purposes
 - Consultation and Lead on Entire Project Functional Safety Scope
 - Produced Functional Safety Project Lifecycle Documentation

Contact Details

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Mission: Support industry to achieve enduring and cost-effective solutions

Values: Innovation, Precision, Flexibility and Pragmatism

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Business Quality Management System - ISO9001 Certified



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