



Case Study

Electrical, Control & Instrumentation

Introduction

Over the past 20 years Inspec System's team of skilled engineers have delivered various electrical, control, and instrumentation projects across a range of industries.

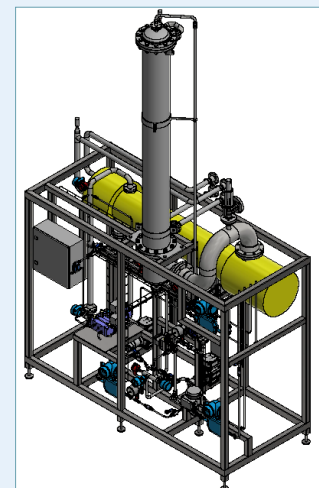
Projects follow a typical process, as demonstrated recently as we carried out the design, installation and commissioning of a new pharmaceuticals plant for a large blue chip company.



Detailed Design and Specification

Working within a tight delivery window against a maturing process specification, Inspec Systems carried out the detailed design for the full EC&I aspects of the project including:

- URS, DDS, SDS, FAT and SAT documentation
- DCS Specification including IO schedule
- Block cable diagram & cable schedule
- Electrical single line diagrams and cable calculations
- Co-ordination and discrimination study
- Fault level study
- 11 kV Network Study and Arc Flash Safety Assessment
- Instrument data sheets & schedule
- Hook up and control loop drawings
- Panel designs - layouts, schematics, heat rise calculations, and BOMs
- Earthing and lightning protection



Being able to perform the detailed design and specification in house ensured we maintained control and can deliver internally consistent designs, minimising the interfaces with additional parties which can lead to errors which we avoided.



We Design

Machinery Safety

Our Certified Qualified Machinery Safety engineers ensured the appropriate Performance Levels were met by following BS EN ISO 13849, our scope included:

- ISO 12100 and BS EN ISO 13849 Part 1 Risk assessments
- Design and verification of all safety related parts to BS EN ISO 13849 Parts 1 and 2
- Testing and validation to demonstrate the required protections were in place



We Specialise

Process Safety

Our TUV Functional Safety Professionals ensured the appropriate requirements were achieved following the lifecycle approach set out by BS EN 61511, our scope included:

- Functional safety management
- HAZOP and LOPA support
- Authoring the Safety Requirements Specification
- Design and engineering of Safety Instrumented Systems and Functions
- Verification and Validation including completion of SIL calculations
- Co-ordination of Functional Safety Assessments
- Proof Testing, and Commissioning, of the various safety systems and functions
- Issuance of all associated technical manuals, proof test procedures, and associated documentation to support the ongoing maintenance and testing of the Safety Instrument System to ensure it continues to provide the requisite levels of reliability



We Integrate



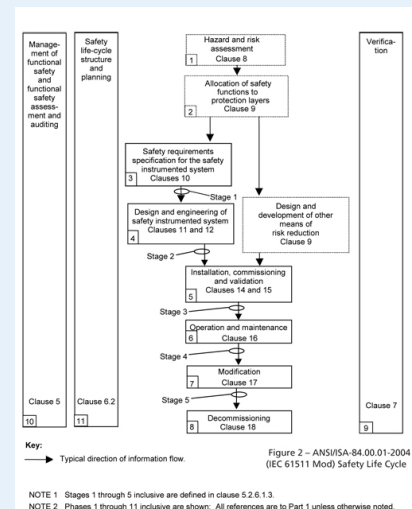
We Install



We Bot



We Manage





We Design



We Specialise



We Integrate



We Install



We Bot



We Manage

Electrical

The project required a range of complex electrical systems to be installed including:

- Electrical distribution from 11kV to 415V including full system design with protection co-ordination in accordance with BS7671
- A full site power systems study was carried out to ensure power flow, fault levels, harmonic contribution were all within the design criteria demonstrating the overall strength and capability of the system
- Performing full system designs is a precursor requirement for the development of arc flash assessments
- Specification, selection and detailed design for the new installation including Profibus controlled Variable Speed Drives



Control and Automation

The automation system was delivered on a Siemens platform. We at Inspec used our wide experience with the Siemens S7 portfolio to realise the system providing a holistic control approach integrating the facility across the site.

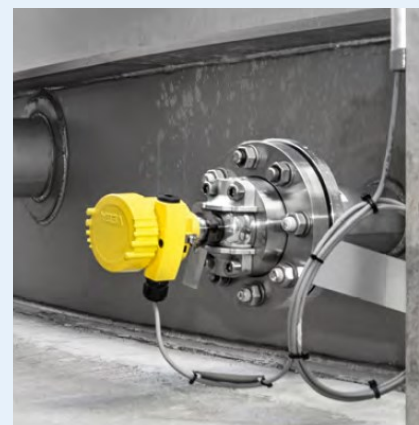


Instrumentation

The process involved over 700 instruments, largely located within hazardous areas.

- Level, Flow, Temperature, Pressure
- Bursting disc sensors
- Gas detectors
- Valves and feedback

The large amount of IO involved in the process drove the requirement for a bespoke Siemens control system comprising a central DCS panel and several ATEX compliant remote IO panels.





We Design



We Specialise



We Integrate



We Install



We Bot

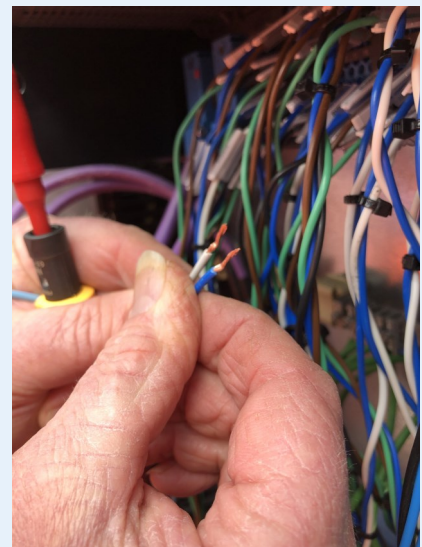


We Manage

Installation

Working within a compact facility required unparalleled levels of co-ordination and Health and Safety. Delivered against challenging timescales, without incident or injury, we successfully performed the following installation works:

- Containment including ladder racking, cable tray, conduits, and box trunking
- Cable laying, glanding, and termination of instrument and power and data cabling
- Point to point and BS7671 testing including insulation resistance and earth fault loop impedance
- Initial ATEX inspections to BS EN 60079 part 14
- Earth bonding including lightning protection earthing and anti-static earthing



Commissioning

Following the installation of the system in, Inspec's experienced team of engineers carried out the commissioning of the system.

By following prepared and approved FAT, SAT, and IQ/OQ documentation we ensured all results were recorded for GMP validation allowing the necessary licenses could be obtained to permit the plant to go into full production.





We Design

Sub Contract Management

Inspec managed numerous sub-contractors providing a turnkey service, and a single point of contact, to the Client, sub-contracts included

- Precision dosing and weighing systems
- Siemens PCS7 DCS Control Systems
- Fire and gas detection and response systems
- Lightning protection



We Specialise

Conclusion

Inspec Systems delivered the project in budget, on time and to the client's requirements. Successfully fast tracking and completing a project that would usually take 1 to 2 years in approximately 9 months with zero lost time and zero injuries.



We Integrate

What Next?

With over 20 years of experience, Inspec Systems have the knowledge, experience, and competency to deliver projects to your requirements.

Why not give us a call and speak to our team to see how we can help you meet your unique and specific needs.



We Install



We Bot



We Manage



Contact Us

From concept to completion or at any stage we have the skills, capability, judgement and drive to support your projects.

Call us now to find out what we've been up to and how you can take benefit from our lessons learned over the past 20 years.



Contact Us

Tel: 01482 898 080

Email: info@inspecsystems.co.uk

Web: www.inspecsystems.co.uk

Inspec Systems Limited
1st Floor Sidings House
Sidings Business Park
Freightliner Road
Hull