



Fire Engineering Solutions (Pty) Ltd

Fire and mechanical consulting engineers

COMPANY PROFILE



Fire engineering expertise across South Africa

FIRE ENGINEERING / MECHANICAL DESIGN / TECHNICAL ADVISORY

www.fesol.co.za

COMPANY PROFILE / REV 04

Independent consulting engineers

Fire engineering and mechanical consulting for buildings, industry and energy infrastructure

Established in 2013 and based in Port Elizabeth / Gqeberha, FESOL serves projects throughout South Africa. We prepare rational fire designs, SANS 10400-T fire plans, engineering calculations, drawings and specifications for new developments and existing facilities.

Clients work directly with Markus Swart, the principal responsible for their appointment. His experience since 1993 spans emergency services, construction delivery and consulting engineering. Fire protection and mechanical services are coordinated around the project's hazards, operating needs and agreed scope.



EXPERIENCE SINCE 1993 / ESTABLISHED 2013 / NATIONAL COVERAGE



FIRE ENGINEERING

Fire strategy and life safety

Rational design for the building, its occupants and its intended use

Rational fire design

We develop the fire strategy and document the engineering basis for new buildings, alterations and changes of use. Occupancy, escape, fire service access, external exposure and protection systems are assessed together, with performance objectives and approval requirements established at the outset.

Evacuation and passive protection

Escape routes, assisted evacuation, signage and emergency lighting interfaces are considered alongside compartmentation, fire doors, cavity barriers and service penetrations. Structural fire resistance and facade interfaces are coordinated with the relevant designers.

Assessment and analysis

Existing-building reviews establish the available approvals, observed conditions and priorities for improvement. Performance-based work defines the fire scenarios, acceptance criteria, calculations and responsibilities for smoke, evacuation or structural fire analysis.

Fire plans and design documentation

We prepare rational design reports, SANS 10400-T fire plans, calculations and specifications for approval, coordination and implementation. Applicable SANS requirements and any specified NFPA design criteria are established in the agreed project basis.

Protection systems



Firewater and sprinklers

Sprinklers, hydrants, hose reels, extinguishers and water supplies follow the occupancy and hazard. Hydraulic calculations establish flow and pressure, storage and pump duties. Suction conditions, drivers, controllers, distribution losses and test facilities are considered within the design.

Detection and alarm

Point, beam and aspirating detection, manual call points, audible and visual alarms and voice evacuation are coordinated with the building strategy. Cause-and-effect documentation defines the required response of connected systems.

Suppression and special hazards

Gaseous suppression, deluge, water spray, foam, water mist and local application or kitchen systems require a hazard-specific basis. Agent selection, enclosure integrity, pressure relief, release controls, exposure cooling and containment interfaces are coordinated with the specialist supplier.

Smoke control and interfaces

Smoke extraction, pressurisation and ventilation controls are coordinated with escape routes, fire detection and mechanical services. Pump controllers, emergency power and shutdown interfaces are included in the relevant design scope.

BESS fire engineering

Fire safety assessment for battery energy storage systems



Site and equipment assessment

Battery chemistry, capacity, configuration and manufacturer test evidence inform the assessment. We review thermal runaway and propagation hazards, potential gas release, nearby exposures and the proposed installation layout.

Protection strategy

Detection, ventilation, shutdown, cooling or suppression and firewater requirements are coordinated with the battery supplier, electrical designer and appointed specialists.

Emergency arrangements

Fire service access, isolation, emergency response and the management of damaged equipment form part of the site-specific strategy. Commissioning records and operating arrangements must reflect the assessed installation.

Suppression alone is not assumed to stop thermal runaway or remove re-ignition risk. Protection measures are selected against the equipment evidence and the particular site conditions.



MECHANICAL ENGINEERING

Pumping piping and ventilation

Mechanical design developed around plant duty, access and operation

System design

FESOL defines mechanical duties and prepares engineering requirements for pumping, piping, ventilation and associated plant. Calculations and equipment assessments establish the basis for system selection and technical specifications.

Pipe materials, pressure ratings, joints, plant capacity and service conditions are assessed alongside resilience, energy use and maintainability.

Coordination and technical review

Plant space, service routes and maintenance access are coordinated with the architectural, structural and electrical designs. For alterations, existing equipment, shutdown periods and tie-in conditions influence the work.

Technical submissions are reviewed against the specified duties and project requirements, with deviations recorded for resolution.

Industrial fire engineering

Assessment of process hazards, protection requirements and operating constraints



Hazards and exposure

We assess industrial and manufacturing processes, generator and fuel installations, flammable liquids and gases, storage tanks and marine firewater systems. Firewater, foam and cooling requirements are developed around credible incident scenarios, exposure protection, emergency access and operating constraints.

Hazardous-area, explosion and process-safety matters are coordinated with appropriately appointed specialists.

Review and investigation

Existing-asset reviews and scoped fire investigations examine available records, site evidence and protection-system information. Findings distinguish supported conclusions from matters requiring further investigation.

Operational fire safety

Emergency planning, impairment procedures, maintenance records and change management help keep the operating facility aligned with its fire strategy.

From design to handover

Engineering documentation and technical support through the agreed project stages

01 Project assessment

Review the brief, building use, drawings and site conditions. Consider authority comments and insurer recommendations. Agree the scope, programme, responsibilities and information needed from the client and project team.

02 Design development

Establish the design basis and prepare calculations, reports, specifications and drawings. Coordinate technical interfaces and, where appointed, engage with the client's insurer or risk engineer on property protection and business continuity.

03 Implementation support

Provide tender input, review specialist submissions and respond to technical queries. Site observations and changes are addressed within the agreed appointment.

04 Commissioning and close-out

Review commissioning plans and records, witness agreed tests and assess integrated cause-and-effect responses. Record outstanding matters and check handover information against the design intent and operating requirements, within the appointed scope.



A defined professional appointment

The scope confirms deliverables, programme, site involvement and the responsibilities of each party. Manufacturer design, specialist testing and contractor obligations remain identified throughout the project.

Clients can appoint FESOL for a complete fire or mechanical discipline, a defined system design, project technical support or an independent review. The brief establishes the required level of design, coordination and site involvement.

Engineering capabilities

Fire protection, mechanical design and technical advisory

Fire strategy and life safety

Rational fire design and SANS 10400-T fire plans
Evacuation and life safety
Passive fire protection
Performance-based analysis
Fire risk, compliance and insurer coordination

Fire protection systems

Sprinklers and firewater systems
Fire pumps and hydraulic calculations
Detection alarms and voice evacuation
Smoke control and ventilation
Deluge water spray and foam
Gaseous suppression and water mist

Specialist risk and assurance

Industrial, manufacturing and special hazards
Fuel storage, marine and energy infrastructure
Battery energy storage systems
Fire investigation and technical review
Operational fire safety
Commissioning and handover
Project technical support

Mechanical engineering

Pumping and piping systems
Ventilation and associated plant
SANS and specified NFPA design criteria
Equipment and submission reviews



Buildings / Student accommodation / Hotels and guest houses / Warehousing and logistics
Industry and manufacturing / Marine and energy / Existing and complex assets

Professional registrations

Markus Swart

BSc Mechanical Engineering / N.Dip Fire Technology

Direct access to the principal responsible for your appointment, with experience across emergency services, construction delivery and consulting engineering since 1993.

Engineering Council of South Africa

**Professional Engineering Technologist
(Pr Tech Eng)**

Registration 2025302161

Institution of Fire Engineers

Member (MIFireE)

Membership 52539

Engineering Council of South Africa

**Fire Protection Systems Rational
Design (FPSRD)**

Registration 20231700003

SAQCC Fire

Commissioner

Registration DGS20/0035

Engineering Council UK

Incorporated Engineer (IEng)

Registration 673400

International Association of Arson Investigators

Fire Investigation Technician

IAAI-FIT

INTEGRITY / EXCELLENCE / COLLABORATION

Clear engineering responsibilities, documented decisions and practical coordination with the client, project team and insurer within the agreed appointment.

Fire Engineering Solutions (Pty) Ltd

Discuss your next project

Fire engineering and mechanical consulting
Across South Africa from Port Elizabeth / Gqeberha

PROJECT ENQUIRIES

info@fesol.co.za

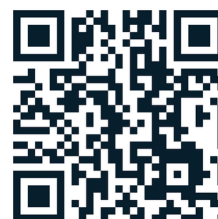
+27 76 585 1962

www.fesol.co.za/contact

For a quotation, send the site location, building use, drawings and programme. Include authority comments and insurer requirements where available.

[Facebook](#) / [Instagram](#)

VISIT OUR WEBSITE



Scan for our services and contact details

OUR OFFICES

Walmer

186 Main Road
Walmer
Port Elizabeth / Gqeberha
Eastern Cape, South Africa

Seaview

19 Van Renen Road
Seaview
Port Elizabeth / Gqeberha
Eastern Cape, South Africa

Serving all nine provinces. Site attendance, travel and remote coordination are agreed for each appointment.

Conceptual facility images and a colour-edited FESOL project photograph.

COMPANY PROFILE / REV 04 / UPDATED 12 OCTOBER 2026