

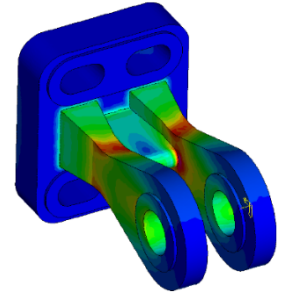
FOUNDED ON SOLID GROUND

NSE is a BEE company, owned and run by Messrs. Derek Lee, Thaabit Rylands and Greg Hayter. Rizzo & Associates Inc. (PCR) of the US is another shareholder and is a well-established international engineering company that also specializes in siting and engineering support services for nuclear facilities.

We pride ourselves on our ability to tackle complex and challenging problems and provide high quality service to our valued Clients. Our vision is to remain one of the leading organisations in the field of Civil, Structural, Geotechnical, Forensic and Construction Engineering aspects of Nuclear and Industrial facilities

CORE BUSINESS

- Civil & structural inspection of buildings
- Specialist testing and surveillances program for nuclear power plant infrastructure
- Linear and non-linear, static and dynamic finite element analysis
- Vibration analysis including seismic analysis / design with soil structure interaction
- Structural design of reinforced and prestressed concrete, as well as steel structures
- Quality control on industrial and nuclear plants
- Seismic walkdowns, assessments and fragility analyses
- Fire risk and safety assessments



THE RIGHT TOOLS FOR THE JOB

We make use of cutting edge software and hardware to ensure that we do the job right. ISO 9001 process controls are integrated in all that we do.

- RFEM, Strand7 and Abaqus Finite Element software for advanced analysis and design
- High spec 64-bit PCs to ensure that we can use the power of our software
- HILTI PS250 ferrosan detection system for the detection and mapping of rebar

SPECIALIST SERVICES

Forensic structural engineering & inspections of existing facilities have been provided to Koeberg NPS since 2006. This includes internal and external inspection of containment buildings and other nuclear safety related structures

Structural engineering for new and existing facilities – a range of services for the analysis & design of reinforced concrete and steel structures, with the ability to analyse and design for normal operating and extreme events such as seismic, dynamic and impact loads. We have the capability to design to international codes and standards; particularly ACI, BS, SANS, AISC and Eurocode.

Qualification of plant equipment and piping - with our overseas partner, we have the capability to qualify plant equipment, piping, and supports by inter alia plant walk downs, experience-based qualification and qualification by analysis.

Seismic Structural Engineering - NSE offers a full line of services for vibration and seismic analysis, design, and re-qualification of general, industrial and particularly nuclear power station structures.

Excavation & foundation design of general and nuclear safety classified structures including soil remediation and dewatering.

Siting of new facilities based on site topology, geotechnical/ geologic conditions and an understanding of the layouts for fossil, hydro and nuclear Power Stations.

Seismic Hazard Evaluation includes seismic hazard assessments and the development of design basis ground motion for the design of structures. **External Hazards** include natural events such as tornado, flooding and extreme wind

Nuclear Licensing Support for new-build Nuclear Power Stations as well as the re-qualification of existing Nuclear facilities & **Nuclear Licensing Applications** (Design Certification, SAR, ESP and COL) to national regulators, in the context of SAR Chapter 2 and Sections 3.6, 3.7 and 3.9.

SELECTED PROJECT EXPERIENCE

Quality Control and structural inspection/supervision on repair works at **Koeberg NPS** including NDT and assessments on containment buildings, civil in-service inspection program, structural evaluation and repairs of 120 m meteorological mast, structural evaluation of turbine hall floors for additional loads, design of shielding barriers, aircraft crash assessment, Turbine Missile assessment, design of slab at bulk stores for cask storage, assessment of dynamic impact due to equipment failures such as cask drop loads and suspended tank failures.

Analysis and code compliance check of 28 steel platforms for **Lesedi Nuclear Services**, as well design of turbine and diesel storage tank foundations at Ankerlig Power Station

Seismic Evaluation of P2500 building and Safari Reactor for **Necsa**, including checks using FEM models of the building structure, fuel racks, foundation and fuel element vault

Investigation to establish initial structural design parameters for the prestressed concrete reactor vessel (PCRv) for use with the Advanced High Temperature Reactor (**AHTR**) on behalf of **Eskom**.

Analysis and design check of 400 t crane gantries and deflection analysis and prediction of Polar Crane for **Group 5**,

Blast analysis of the Waltloo Fuel Depot buildings to assess the structural capacity and establish a vulnerability assessment and mitigation measures based on the hazards on site

Provision of seismic analysis advice for Medupi Power Station and structural assessment of the ACCCT support structure.

NSE was subcontracted by **LLOYD'S REGISTER EMEA** to provide Civil and Structural Engineering Nuclear Inspection Services to **Barakah NPP** whilst subcontracted to the nuclear regulator, FANR.

Seismic Walkdown of the **Saudi Aramco refinery** in the Yanbu, Kingdom of Saudi Arabia.

The provision of civil engineering services to Eskom for the sites on which **future nuclear power plants** would be constructed. This work comprised inter alia, power station layouts, infrastructure design, cooling water works, seismic hazard assessments and licensing of the nuclear facilities and development of site safety reports and safety analysis reports.

Dewatering of the headrace, pressure shaft, pressure tunnel and penstock of the **Drakensberg Pumped Storage Scheme** - involved a controlled dewatering to prevent buckling of the penstock under excessive ground water pressure. Inspections of the concrete lined tunnels were conducted followed by localised repairs to areas subject to soft water attack

Vibration analyses of the mezzanine floor in Central Sludge No. 2 pumphouse at Zuikerbosch pumping station of Rand Water. A number rehabilitation measures were recommended to reduce the magnitude of the vibrations

OUR CLIENTS



POWERING POSSIBILITY



South African
Nuclear Energy Corporation Ltd



RAND WATER

