



Niharika Computational Engineering
Solutions Pvt Ltd

Energy and Infrastructure Industry Vertical

Overview, Services and Key Projects





Overview:

Our transformative engineering solutions employing niche digital engineering technologies like Computational Fluid Dynamics (CFD) analysis, Structural (FEM) analysis, and Computer-aided design have enabled global EPC contracting companies to make conscious engineering decisions to achieve sustainability, operational excellence, optimal utilization of resources, and to comply with safety standards.

We helped our clients with critical tasks like the upgradation of petrochemical reactors, pollution control in Industrial Chimneys, Upgradation of chemical agitator units, Root cause investigation and remedial measures to address the deterioration in underground gas ducts, and vibration control of petrochemical transport lines.

Our Computational Fluid Dynamics (CFD) analysis solutions have enabled our clients to analyse various flows covering Ventilation, fire propagation, and smoke extraction in basement parking zones, underground tunnels, airports, and other public Infrastructure.

Our Structural analysis (FEA) capabilities have enabled our client to assess the complete structural Integrity of their engineering system.

Our engineering expertise and customer-centric work culture have enabled us to successfully execute projects belonging to global companies, including SABIC, Saudi Aramco, Saudi Royal Commission, Saudi Kayan, and Saudi Binladin group in collaboration with leading EPC contractors.



Experience with prominent and diverse clients



adani

Adani Enterprises Limited



Larsen and Toubro



مجموعة بن لادن السعودية
SAUDI BINLADIN GROUP





Services:

Thermal design and Computational Fluid Dynamics analysis

- Combustion & Multiphase flow CFD analysis
- Mixer and Agitator CFD analysis
- Pollutant dispersion CFD analysis
- Thermal analysis of underground ducts
- Pressure vessels CFD and thermal analysis
- Reactive and non-reactive flow in chemical reactors and boilers
- Fire propagation studies
- Fluid sloshing analysis
- Flow assurance studies
- Smoke propagation studies in basements & underground tunnels
- Oxygen concentration studies

Structural analysis

- Stress analysis in piping
- Static and dynamic analysis
- Non-linear FEM analysis
- Seismic and Vibration analysis
- FEA for Pressure Vessel and Internals



Mechanical design

- Reverse Engineering
- Concept Design
- Sheet Metal Design
- Chamber design
- CAD Migration
- Creo Services
- UG-NX Services
- 2D to 3D Conversion
- 2D to 3D Modeling
- Vector to Raster

Root cause Investigations

- Mechanical, Flow-Induced Vibration
- Mechanical Overload
- Fatigue failures
- System–Component Interaction
- Design Limitations
- Thermal Distortion – Stresses
- Improper Material Selection
- Non-uniform Thermal Loading
- Defects in Manufacturing
- Defects in Heat transfer



List of Key Projects: CFD analysis

SL No	Project title	Customer/ End user
1	CFD analysis for underground transport tunnel: Al Shamiya Expansion Project, Makkah, Saudi Arabia	Saudi Binladin Group
2	CFD studies- Pollutant concentration dilution in an Industrial chimney by steam Injection	SABIC affiliate Company
3	Thermal analysis of underground hot gas duct with refractory lining	SABIC affiliate Company
4	CFD analysis of Non-reactive flow in Polymerization reactor	SABIC affiliate Company
5	CFD analysis of pollutant dispersion in Industrial Chimney	SABIC affiliate Company
6	Accidental Release of LPG from Underground Pipe- CFD analysis to assist Emergency Response System	SABIC affiliate Company
7	Thermal Expansion Comparison Study for Tube bundles of Heat exchangers	Bahrain Petroleum Company
8	CFD analysis of helicoil agitator	SABIC affiliate Company
9	CFD analysis for Fuel Additive Reactor agitator	Farabi Petrochemicals, Saudi Arabia
10	CFD analysis of 15 cubic meter Mechanical agitator	A German Client



List of Key Projects: Structural – FEM analysis

SL No	Project title	Customer/ End user
1	Static and dynamic analysis for blast furnace slag grinding unit shaft assembly	JSW, India
2	Structural Integrity assessment using FEM analysis for waste heat boiler stack	SABIC affiliate Company
3	Structural design and Optimization of disk baffle for polymerization reactor	SABIC affiliate Company
4	Static Structural analysis of jacket closure ring – Sulphur condenser	KNPC, Kuwait
5	Static structural and dynamic analysis of crude oil storage tank	Adani Petrochemicals, India
6	Structural analysis of analysis for Gasoline storage vessel	The Kuwait National Petroleum Company
7	Structural analysis of vacuum brazing furnace	Godrej Industries, India
8	Structural analysis of product transfer lines of a Petrochemical plant	SABIC affiliate Company



List of Key Projects: **Root cause Investigation**

SL No	Project title	Customer/ End user
1	Failure analysis of Flange weld socket Assembly Crack at Steel Flange – pipe weld during N2 flow	SABIC affiliate Company
2	Failure analysis of centrifugal blower blades in high- temperature gas transport duct	Defence Manufacturing unit, India
3	Study of high vibration in product transfer lines of a Petrochemical plant	SABIC affiliate Company
4	Failure analysis of Component cracking during metal forming process	One of the Large Steel Manufacturer, India



Contact us

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