



LAS ENGINEERS & CONSULTANTS PVT.LTD

YOUR PARTNER IN PROJECT

Web : www.lasengg.com

Phone : +91 - 22 - 2781 0917 / 0918

Mobile : +91 - 98339 27009

ENGINEERING FOR BETTER TOMORROW & SUSTAINED DEVELOPMENT

Company Profile



INNOVATION



EXPERIENCE



KNOWLEDGE

**PROJECT MANAGEMENT &
DETAILED ENGINEERING CONSULTANT**

CHAIRMAN'S MESSAGE

" *Sustained Development*" has been the driving Mantra for LAS Engineers right from its inception. Sustainability is an integral part of our day-to-day work routines. We are convinced that everlasting success can be achieved through innovations, so that, we increase our contribution to overcome global challenges in the field of engineering, meet our responsibility to the environment, and also ultimately promote the growth of our clients.



Mr. L.J. Tawari (CMD)

Each one of us at LAS is committed to give the most efficient Engineering solutions by value addition and becoming part your project team. Using our Knowledge and database, developed over more than 30 years in service, we provide our clients customised solutions by detailed analysis and design. With a team of dedicated experts, we provide a complete One stop solution for all your project needs.

ABOUT US

Since 1986, "Your Partner in Projects" is the Motto LAS has grown with. Interest of client comes first and our team strives to maximise the benefits to our clients. We help complete Projects on time within budget and with incorporation of latest technology and concepts.



LAS, a multidisciplinary engineering Company, is a one point service center for all your Project needs. LAS has served esteemed clients in India & world wide. Whether you have new project, expansion or modernisation, LAS has the facilities to assist you, right from preparation of Project Plans to Commissioning. With the extensive database maintained and developed from years of experience, LAS begins working for you even before the project actually starts. "Las believes in Total Quality Work and Client Satisfaction."

LAS is a pool of highly qualified engineers and skilled trained professionals. LAS uses latest tools to enhance the productivity and creativity of our people. Trained and motivated engineers backed with strong infrastructure and Corporate values helps us serve our clients at Par with best in the field.

We offer ourselves as an extended arm to our clients for meeting their Project needs. Transparency and open communication enable us to integrate with our client's team. The appreciation and confidence can be gauged from the repeated orders received from our client.

Quality is not just a system, but a culture that covers the length and breadth of our organisation. Each of us not only implement a system, but maintains this culture. We firmly believe that our and Client's objectives will be aligned and fully met only when we deliver Quality services.

Our Quality Audits critically ascertain, identify and evaluate the presence and compliance of norms specified in our Quality Manuals. The Quality Assurance Manager is the Management Representative and is responsible for audits, reviews, reports and training of the QA representatives across the organisation. All QA activities are directly overseen by the Managing Director.

WHY LAS

- ✓ Ideal one point Control center for complete project
- ✓ Highly qualified team at client's disposal
- ✓ Cost optimisation
- ✓ Confidentiality & secrecy of Client's data
- ✓ Years of experience - well developed Vendor list
- ✓ Over 400 contracts involving grassroot projects, capacity expansions, technological upgrades and revamps in India and abroad
- ✓ Lumpsum Turnkey Contracts, EPCM (Cost plus fee), PMC, FEED and Reimbursable Services assignments
- ✓ Innovative engineering solutions with value-added expertise
- ✓ Strategic access to Technology Licensors and Contracting companies
- ✓ Flexible, Client-conscious approach
- ✓ Quality-certified systems and standards
- ✓ Safety and environmental considerations
- ✓ Commitment to cost and time schedules
- ✓ Operating from strategic, fully-automated office in Mumbai, India



SERVICES OFFERED

PROJECT REPORT

Project reports works as a key for an entrepreneur for gathering information on the subject, taking a planned decision on investments or for submission to industrial departments/Financial firms. With inhouse experts we can provide system details, cost estimate, sensitivity analysis, pay back / ROI and overall road map for execution. We offer services to financial institution for evaluation of Proposal and provide a team of Experts for same.

We also offer our services to International clients looking for direct investment in India and help them a jump start by giving information on various statutory requirements and rule of the land. We also help them get introduced to our associates for Legal and HR needs.

Case Study : Las successfully presented a report on 'Small Scale LNG Import & regas Terminal' for Lotus Energy Solutions Pvt. Ltd, Bangalore.



BASIC ENGINEERING

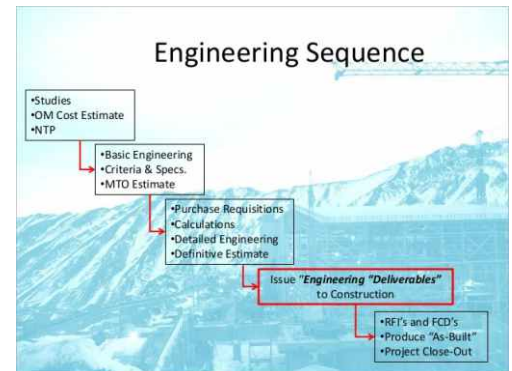
LAS offers complete range of services including static and dynamic simulation, equipment process design, system sizing, optimisation and debottlenecking services, utility calculations, etc. For certain processes like Cryogenic Storages, Paints and adhesives we provide complete basic engineering packages. For other projects, we perform Extended Basic, Engineering and Front End Engineering Design (FEED), using the Basic Engineering Packages from the selected Licensor. In select cases, we have the distinction of developing the complete Basic Engineering, based on skeletal information from the concerned Licensors.



DETAILED ENGINEERING SERVICES

Las provides detailed engineering in all fields required for successful execution of project. Major roles are listed below. Along with design and detailed engineering the scope includes preparation of technical specifications, RFQs (Requests for Quotation), tender document with specification for execution and documents required for statutory approvals.

- P&I DIAGRAM
- PLOT PLAN DEVELOPMENT
- EQUIPMENT LAYOUT
- MECHANICAL DESIGN
- CIVIL & STRUCTURE
- PIPING
- ELECTRICAL
- INSTRUMENTATION
- DOCUMENT REVIEW AND APPROVALS



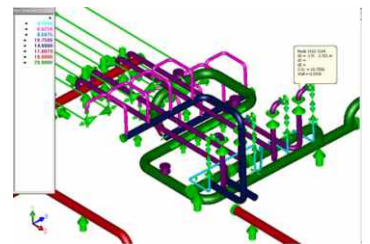
SPECIALITY SERVICES

Las has team of experts and have provided services as follows :

Stress Analysis

A pipe stress analysis (thermal flexibility analysis) will predict stresses in piping and loads on equipment resulting from thermal gradients, thermal transients, weights, pressure, and bolt-up strain. This study is typically required for piping that experiences high temperature fluctuations, or for long pipe runs. Cases where equipment is sensitive to external loads may also require a pipe stress analysis. We regularly carry out stress analysis for all stress critical lines for all our project using Caesar II® software.

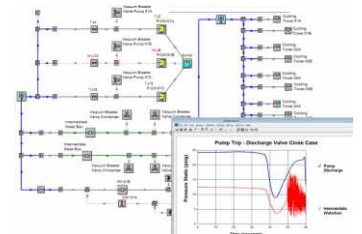
Case study : We have carried out stress analysis of cross country for Propane / Butane from Jetty to Import terminal (250mm Nb x 9Km) for our Clients, Navana LNG Ltd, Bangladesh



Surge Analysis

Surge Analysis is a flow assurance activity and refers to the analysis of pressure changes in pipework. It is usually undertaken on liquid pipelines where fluid compression is negligible and where sudden changes in flow velocity can cause over / under pressurisation of pipework. We carry out surge analysis for cross country lines using AFT Impulse® software

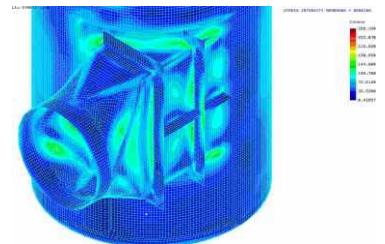
Case Study : We have also carried out surge analysis of cross country for 1100mm dia GRP, ~15Km cross country line from water reservoir to Reliance storage ponds for our client CPP. We have also carried out surge analysis for lines carrying cryogenic LPG & LNG.



FEA (Finite element Analysis) & CFD (computational Fluid Dynamics):

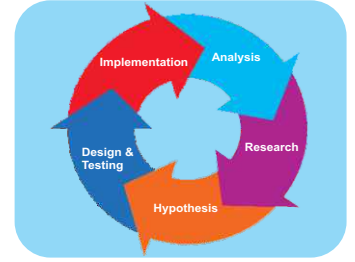
We carry out FEA for critical components and CFD as per project needs. Finite element analysis (FEA) is a computerized method for predicting how a product reacts to real-world forces, vibration, heat, fluid flow, and other physical effects. Finite element analysis shows whether a product will break, wear out, or work the way it was designed. CFD is special case of FEA for fluids.

Case Study : We have carried out FEM analysis for BARC, for vent gas scrubber handling radioactive waste using Cosmos software and qualified same as per ASME Section III subsection NC for SSE (safe shut down earthquake) and OBE (operation basis earthquake).



Process Development / Optimisation:

We help our client's to review and optimise their process and remove bottlenecks for improving productivity. Same is achieved by detailed study of existing process, static and dynamic simulation and equipment capacity simulation. We can also offer services for development of process through our associates in R&D organistaion.



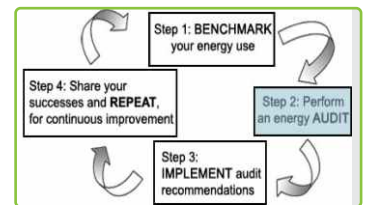
Case Study: LAS successfully completed debottlenecking of Ammonium Nitrate Plant for our client Deepak Fertilisers & Petrochemical Corporation Ltd. The original plant capacity was 300TPD and final achieved capacity was 500TPD. The complete plant simulation and equipment sizing were checked. Only by adding few equipments and changing <10% of lines and fittings the capacity increase was achieved.

We are having team of dedicated experts to take up special assignments for HSE, process optimisation, SOP review and security.

ENERGY & PRODUCTION AUDIT :

An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s)

Energy audit helps in energy cost optimization, pollution control, safety aspects and suggests the methods to improve the operating and maintenance practices of the system. It is instrumental in coping with the situation of variation in energy cost availability, reliability of energy supply, decision on appropriate energy mix, decision on using improved energy conservation equipment, instrumentations and technology.

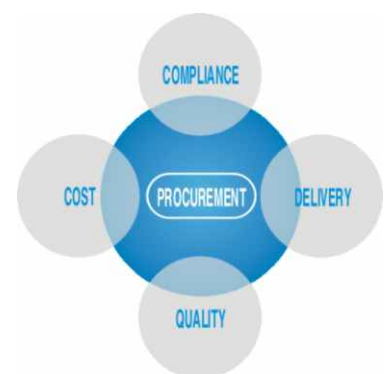


It has been established that energy saving of the order of 15 to 30% is possible by optimising use of energy by better housekeeping, low cost retrofitting measures and use of energy efficient equipment at the time of replacements.

Our team of dedicated experts help you bench mark your energy consumption against industrial standards, review your existing process and give you analysis of possible optimisation in your process and give recommendation for better energy utilisation eg. change in source of energy eg. LPG or LNG or co-generation, etc..

PROCUREMENT ASSISTANCE

For any project success, the sourcing of plant components and services is the most important factor. LAS has developed a list of vendors and service providers which are rated as per past experience. The same helps to finalise the approved vendor list at start of project in consultation with the clients. LAS helps to have smooth procurement activities including generation of RFQ, review with vendors to bring everyone at par, bid analysis, technical recommendation and commercial negotiations (if required). LAS inputs and services continue even after order placement and our team is in continuous touch with vendors for QAP and document approval, compliance with manufacturing schedule & regular review meetings. The same ensures timely delivery and compliance to project requirements. We also assist our clients with E-bidding to make the process more efficient and transparent.



INSPECTION SERVICES

In progress
Inspection

SITE SUPERVISION & COMMISSIONING ASSISTANT

Plan Review

Site Supervision

Progress Report

Commissioning / Operational Trials

Factory Acceptance Test of Equipment

Documentation Management

PROJECT MANAGEMENT

GOVERNMENT APPROVAL & STATUTORY AUDITS

LAS also provides assistance for government approvals and statutory audits through its associates if needed by client.

INDUSTRIES SERVED

REFINERY & PETROCHEMICALS

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Sample Project : LAS successfully completed Carboxylated Styrene Butadiene Rubber plant for EOC Polymers India Pvt. Ltd. at Barhi, Haryana

CHEMICALS

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Sample Project : LAS has assisted Alkyl Amines Chemical Ltd to setup multiple plants at Kurkumbh and Patalganga involving complex processes like hydrogenation, gas to gas reactors, critical distillations, gas compressors, etc.

PHARMACEUTICAL

- SANDOZ INDIA LTD
- INNOVASYNTH CHEMICALS LTD..
- WANBURY LTD.
- CTX LIFESCIENCES
- INDOCO REMEDIES LTD.
- GRANULES INDIA LTD.
- SOHAN HEATHCARE PVT. LTD.



Sample Project : LAS has assisted CTX Lifesciences Pvt. Ltd. setup their USFDA approved facility at Surat for API and formulation. The project was group's first foray into Pharmaceutical sector and the project has received wide accolades.

FINECHEMICAL & SPECIALITY PRODUCT

- BOBAYDYEING & MANUFACTURING CO.
- INDIAN PEST CONTROL CO. LTD.
- D.D.SHAH FRAGRANCE
- INDIAN ORGANIC CHEMICALS LTD
- DORF KETAL SPECIALITY CHEMICALS LTD.
- VINATI ORGANICS LTD.

Sample Project : LAS has assisted Vinati Organics Ltd. setup facility to test new innovative process developed from Inhouse research. Same handles HF and other hazardous chemicals.

FERTILISERS / CEMENT / DETERGENT/ PAINT

- DEEPAK FERTILISERS & PETROCHEMICALS CORPORATION LTD.
- GUJARAT AMBUJA CEMENTS LTD.
- SKANSKA CEMENTATION INDIA LTD.
- SUVIDHA COMMERCIAL CO. PVT. LTD.
- HINDUSTAN LEVER LTD.
- RAJPRAKASH CHEMICALS LTD,
- JSW PAINTS PVT. LTD. *



*Sample Project : LAS has assisted Deepak Fertilisers to setup their Bensulf Fertiliser plant at Panipat, Haryana.
LAS has provided engineering support along with EVLA for 1 Lac KL per year water based paint plant for JSW at Vijaynagar, Karnataka*

INORGANIC CHEMICAL

- VIRAL ALKALIS PVT. LTD.
- IODISED SALT PLANT - GBL, KIRSARA
- STAR CHEMICALS LTD.

*Sample Project : LAS has assisted Viral Alkalies Pvt. Ltd. setup facility to facility for Carbonates recovery
LAS has helped GBL to setup Iodised salt plant.*

BULK LIQUID STORAGE TERMINAL

- JNPT LIQUID CHEMICAL BERTH USERS'S ASSOCIATION
- GANESH BENZOPLAST LTD.
- DEEPAK FERTILISERS & PETROCHEMICALS CORPORATION LTD.
- GUJARAT AMBUJA CEMENTS LTD.
- SARTHAK INDUSTRIES LTD.
- TROPICANA LIQUID STORAGE TERMINAL
- B.R. PETROCHEM PVT. LTD.



Sample Project : LAS has assisted many clients for developing Bulk Liquid storage Import facility along with Jetty, cross country lines and bulk liquid tankfarm at JNPT, MPT Goa, Cochin, Muldwarka, etc.

INTERNATIONAL CLIENTS

- UNILVER (NAROB, KENYA)
- ENEREQUIP (U.S.A.)
- BELLELI (SAUDI ARABIA)
- DODSAL PLC (DUBAI)
- PETRON EMIRATES CO. L.L.C.
- EOC POLYMERS (BELGIUM)
- AGAS INTERNATIONAL (BAHRAIN)
- AZERBAIJAN PETROCHEMICAL INDUSTRIES CO.

Sample Project : LAS has assisted Azerbaijan Petrochemical Industries Co to setup PDEB Plant, Tabriz, Iran.

LAS has assisted Agas International Bahrain to setup sludge recovery plant

SERVICES AS SPECIALIST CONSULTANT

- BHABHA ATOMIC RESEARCH CENTRE
- HEAVY WATER BOARD
- UHDE INDIA LTD.
- KVAERNER POWERGAS
- JACOBS ENGINEERING INDIA PVT. LTD.
- STUP CONSULTANTS
- HEURTEY PETROCHEMICALS, FRANCE
- ZEECO, USA
- CH2MHILL, SINGAPORE & DUBAI



**Specialist
Programs**

LPG / LNG / CRYOGENIC INFRASTRUCTURE PROJECTS

- NAVANA CNG LTD., MONGLA/ASHULIA, BANGLADESH
 - LPG Infrastructure development involving Jetty modification to receive bigger LPG vessels, cross country line, Horton sphere storage (butane rated), bottling plant and one satellite facility with mounded bullets and bottling plant and bulk dispatch.
- DEEPAK FERTILISERS & PETROCHEMICAL CORPORATION LTD.,
 - Cryogenic CO₂ liquefaction and storage plant, Talaja
- EOC POLYMERS INDIA PVT. LTD., HARYANA
 - Pressurised butadiene and LPG storage facility.
- LOTUS ENERGY SOLUTIONS PVT. LTD., India
 - Small scale LNG import and gasification facility (Project Report)
- AEGIS LOGISTICS LTD., Haldia
 - Process design for Propane / Butane Condenser / water cooled Heater for truck loading, finned type air heater for tanker loading, stress analysis of cross country line
- STUP Consultants Pvt. Ltd. (Adani, Dhamra Port)
 - Study cost optimization of cross country line corridor by stress analysis and surge analysis (LPG & LNG)



FREQUENTLY ASKED QUESTIONS (FAQS)

1. What is the main business of LAS ?

We are an EPCM (Engineering Consultancy Services i.e. Engineering, Procurement & Inspection Services, Construction Supervision Services & Project Management) company engaged in designing and building plants for the chemical, pharmaceuticals and allied industries. We have a 'Concept to Commissioning' approach, offering the entire range of services associated with our activities.

2. What are the core business areas of LAS?

We undertake projects for the Pharmaceuticals, Fertilizer, Paint, Adhesive, Petrochemical, Polymers, Refinery, Organic & Inorganic Chemicals and Metallurgical industries. We also assist to build facilities for specialty chemicals, industrial products, bulk liquid storage terminals, cross country lines, LPG storage and handling, LNG storage and handling, cryogenic terminal..

3. What are the main geographical areas LAS operates in?

While India remains the focus of our operations, we offer services throughout the globe. Our state of art infrastructure with best IT installation enables us to support our client's all around the world. We have already undertaken major projects in Bangladesh, Dubai, Iran, Singapore and Bahrain.

4. Can LAS provide us with prices of chemicals / supply them?

We are engaged in plant design and construction, and not in chemical trading activity. As such we cannot provide information on chemicals / commodity chemicals prices, nor supply them.

5. What is the procedure involved in LAS giving a quotation for a plant / project?

A quotation can be made once we completely assimilate your requirements. However, this process may take its due time, as every enquiry passes through a systematic sequence of steps in our organization, such as internal review, decision to bid, compilation of costs / fees and preparation of a proposal. To achieve all this, meetings between our Business Development and Sales teams and your organization are needed.

6. What are the pre-project areas of assistance offered by LAS?

We can offer assistance in site selection, selection of technology, obtaining statutory clearances and financing assistance. Additionally, we undertake Pre-Feasibility and Detailed Feasibility Reports.

7. Can LAS arrange Technology for our project?

Yes. Our Business Development and Sales Teams will guide you with regard to the selection of the right technology, either out of our group portfolio or from other -renowned process Licensors. It is not out of place to mention that, in the last 30 years, we have executed many projects involving technology from many world-class Licensors.



FREQUENTLY ASKED QUESTIONS (FAQS)

8. Does LAS perform Basic Engineering activity?

Yes, for certain processes like Cryogenic Storages, Paints, adhesives. For other projects, we perform Extended Basic, Detailed Engineering and Front End Engineering Design (FEED), using the Basic Engineering Packages from the selected Licensor. In select cases, we have the distinction of developing the complete Basic Engineering, based on skeletal information from the concerned Licensors.

9. Does LAS have any tie-ups or collaborations?

We do not have official tie ups with any technology providers but we are in touch with many process licensors and can liaison with them. We can also independently handle projects for our Clients, based on their technology / technology selected by them, as long as there is no conflict of interest with technology offered by Licensor with whom we have been associated in past. We enter in Non-Disclosure agreement with most of our clients / technology providers and evaluate on case to case basis for any conflict of interest.

10. Can LAS arrange for us plant visits to earlier completed sites?

Yes. Generally our Clients agree to our requests for plant visits. However, the necessary permissions will have to be obtained well in advance, for such visits. However, in deference to our client, no photography is likely to be permitted during the visit. Also our earlier client may request for reciprocal visit after completion of the project.

11. Can LAS provide assistance for statutory approvals ?

LAS is responsible for all technical inputs and documentation required for statutory approvals. However, LAS does not provide liasioning services and same is expected to be taken up by client. LAS can provides assistance for government approvals and statutory audits through its associates if specifically requested by client.

12. Does LAS provide only complete services for all discipline?

LAS has the capability and can provide services right from concept to commissioning. However we are flexible and take into consideration clients request for reduced scope in case client has in house facility. The scope of services is discussed with client and finalised at start of project.

13. What size of projects does LAS take up?

In our endeavour to serve the Chemical and allied industries, and clients' requirements, we take up grassroots (greenfield) projects in addition to relocation (brownfield) projects across all our core competencies. We also take up revamps, repairs and re-starts in EPCM mode. The typical size of projects for which we have been offering engineering services, can vary from US \$ 2 million investment to US \$ 100 million.



KNOW YOUR TEAM



Mr. L.J. Tawari is the founding Director and CMD.

Mr. L.J. Tawari graduated with first class honours in Mechanical Engineering from BITS, Pillani.

Mr. L.J. Tawari started his career with BARC and has worked with Uhde India Ltd. and Ciba Geigy Ltd. in project's department before starting LAS engineers in 1986. He is the guiding light for the LAS team and responsible for company policies, QA and business development

Mr. Santosh Tawari is Director at LAS and member of board.

Mr. Santosh Tawari graduated from IIT, Powai in Chemical Engineering and further Pursued his Masters from Cornell University, NY, USA in Fluid Mechanics. At Cornell he was recipient of Fellowship.

He started his career with Hindustan Lever Ltd. (Unilever) and joined LAS in 2001. He is responsible for process engineering and coordinates all project activities



Mr. Ranjan Mathur is senior V.P. at LAS.

Mr. Ranjan Mathur graduated with first class honours from Motilal Nehru National Institute of Technology, Allahabad in Electrical Engineering. He started his career with BARC and joined Aker Powergas Pvt. Ltd. (Aker Solution) where he was associated Director and HOD electrical and instrumentation.

He is responsible for electrical and instrumentation activities

Mr. R.N. Ghosh is V.P. projects

Mr. R.N. Ghosh graduated with first class honours from IIT, Kharagpur in Mechanical Engineering. He has rich experience in project execution and EPC contracts. He is responsible for procurement and project management.



Ar. Priti Tawari is senior member of the team and registered Architect. She has rich experience in Industrial projects. She is responsible for architectural services and civil works

Dr. Amita Birla is MBBS, DCh and MBA. She has rich experience in Pharmaceutical companies.

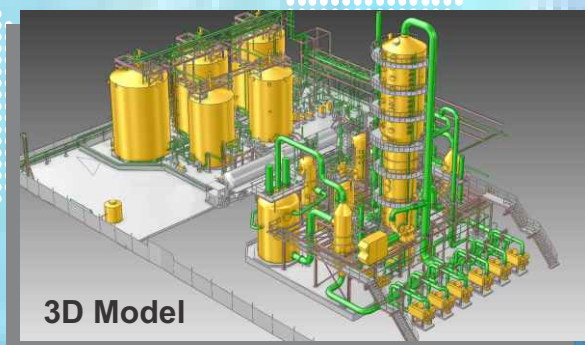
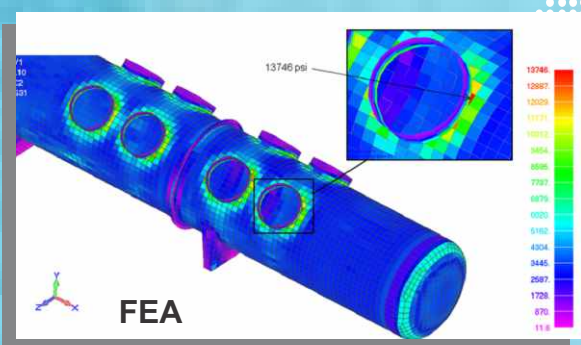
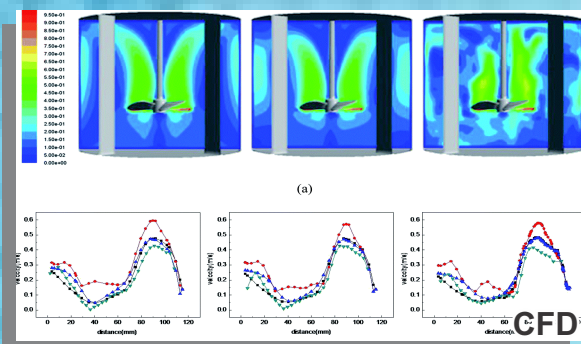
She is the CFO of the company. Along with finance, she is responsible for SOP and implementations





YOUR PARTNER IN PROJECT SINCE 1986

Project Management and Detailed Engineering Consultant



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901, Cyber One, Plot No.4&6, Sector-30A, Vashi
Navi Mumbai - 400 705, (M.S.), India.

Off. : +91-22-2781 0917 / 0918 / +91-98339 27009

Fax : +91-22-2789 0878

E-mail : slt@lasengg.com / mail@lasengg.com

Website : <http://www.lasengg.com>