



Proposal for

Corporate Profile: Zeus Numerix

To Whomsoever Concerns ZN

1 Introduction

Zeus Numerix Private Limited (henceforth ZN) is an Indian Company incorporated under the 1956 companies act having its registered office at M03 SINE, CSRE Building, IIT Bombay Campus Powai Mumbai 400076. ZN has certified R&D office at (*also address for correspondence*)

1. **3rd Floor, Pushpak Business Hub, Bhumkar Chowk, Wakad, Pune – 411057. India**

The company is the first and only company in India to have developed end-to-end simulation products in the field of Computational Fluid Dynamics (CFD), Computational Electromagnetics (CEM), Dynamics and Control (D&C), and various other simulation tools for design.

2 Credentials

ZN is a CEMILAC (Govt of India) approved Design company that can either design or certify designs in the areas of Aerodynamics, Structural Systems & Sub-systems, Dynamics & Controls and Electromagnetics.

ZN has been awarded the DST-FICCI-Lockheed Martin India Innovation Growth Medal for being one of the most innovative companies in India and is a recognized as an R&D company by the Department of Scientific and Industrial Research (DSIR).

The company is in fore-front of innovation and hence has been agent of Champions of Change, Prime Minister's conference organized by NITI Aayog, Innovation meeting with Raksha Mantri, TDF MSME Project.

Diverse Needs, Converged Solution.



Figure 1: Zeus CEO (circled) attending PM's "Champions of Change"



Figure 2: First MSME Technology Development Fund project: DRDO HQ

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Figure 3: Zeus team in RM's MSME Innovation meeting

3 Products

1. **CFDExpert®** for research and development in Computational Fluid Dynamics (CFD) for high end applications of Defense, Nuclear and Aerospace
2. **CFDExpert-Lite™** for solving CFD related industrial problems quickly and at a very economical cost
3. **DynamicZ™** for simulation of coupled CFD and Dynamics problems occurring in store separation, stage separation or relative motion of multiple bodies
4. **CEMExpert™** for training, research and development in Computational Electromagnetics and Radar Cross Section
5. **CorrosionExpert™** for training, research and development in Extremely Low Frequency Electromagnetics leading to prediction and prevention of corrosion
6. **CSMExpert™** for training, research and development in Computational Structural Mechanics (FEA) for estimation of stress, failure etc leading to design of products and their components

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7. **DynamicsExpert™** used for estimating the dynamics and stability of aerospace vehicles such as aircrafts, missiles, rockets, spacecrafts etc. The software is useful in calculation of trajectory, applications in Trajectory Correction Systems (TCS), design of multi-body dynamics system etc.
8. **NumerixExpert™** helps in design of a product ab-initio by providing reasonably accurate solutions in orders of magnitude lesser time
9. **ZNTutor-CFD™** for training students in CFD

4 Services

ZN has till date executed more than 300 projects in various fields. A brief list of the broad areas and completed projects is given below. The projects ranged from simple analysis to complete design with manufacturing support:

1. **Aerospace** – Aerodynamic and Structural design of pilotless and piloted aircraft, Antenna and Radars, spacecraft aerothermal heating and noise due to jets, propeller design, ramjet and scramjet intakes, landing gear for UAVs, control algorithms for flying vehicles etc.
2. **Defence** – Aerodynamics, Structural design of rockets and missiles, Trajectory prediction of missiles and guidance, store separation from fighter aircraft, gun noise and recoil reduction, stealth and materials, characterization of explosives
3. **Power and Nuclear** – Thermal hydraulics of reactor core cooling and characterization of failure, electron guns, magneto-hydrodynamics, cellular convection, cooling tower fans, energy input reduction, electrostatic precipitators, bag filters
4. **Construction** – Wind loading on buildings, effect of fire, natural and mechanical ventilation in normal and emergency conditions, basement parking and tunnel ventilation, mechanical systems e.g. fan (capacities and layouts)
5. **Industrial and fluid machinery** – Design and analysis of piping and ducting systems, valves, fans, cranes and heavy equipment design by codes, structural design of heavy machinery, mechanisms
6. **Education** – Workshops for industry in simulation and design fields both in-house and common platform. Software for academia that is complimentary to the fluid mechanics syllabus.

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5 Key Functionaries

Below is the list of functionaries who along with the responsibilities:

1. Prof Gopal R Shevare – B Tech, M Tech, PhD and Professor IIT Bombay. As Director (Technology) he is responsible for product development and consultancy
2. Prof S. Banerjee – PhD & Professor IIT Bombay, Director SAIL R&D and NML (CSIR). He received 9 international and national awards and 17 patents.
3. Basant K Gupta (CEO) – B Tech+M Tech IIT Bombay, expert in simulations and analysis. Has several research papers to his credit and is CEMILAC (GoI) certified designer
4. Irshad Khan (COO) – BE Mechanical, expert in grid generation, aerodynamics and detailing. Has several research papers and is CEMILAC certified designer
5. Abhishek Jain (VP Strategic Partnerships) – M Tech IIT Bombay, experience in Aerodynamics. Responsible for understanding customers' requirements & product sales.
6. Sanjay Kumar (PM) – B Tech IIT Bombay, responsible for delivery of projects in CFD, coupled CFD and Dynamics and Stress Analysis. Certified designer

Most of the employees of ZN are IITians and are engaged in technical work.

6 Consultants (Past and Present)

1. Prof S C Lakkad (Former Dpt Director IITB) – Product design projects
2. Prof RPRC Aiyar (IITB) – Electromagnetics (stealth) and Corrosion
3. Prof K Sinhamahapatra (IIT KGP) – Aeroacoustics
4. Prof A K Ghosh (IITK) – Dynamics and controls or rockets
5. Prof D N Buragohain (Founder Director IITG) – Stress analysis code
6. Prof Kannan Iyer (Faculty IITB)– Technical review, incompressible flows



7 Partnerships

1. MOU with CSIR-4PI (GoI) for joint projects and utilization of HPC resources
2. Vendor registrations with many DRDO labs, DPSUs etc.
3. MOU and Agreement with BARC and IGCAR
4. MOU with SERC (CSIR)
5. Research Agreement with EADS Airbus

We hope you will find our profile interesting for collaboration. Please feel free to write to us on the details below.

With Best Regards,



Abhishek Jain

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