



Experience Summary:

20 years of work experience in the field of engineering design and development of automotive, locomotive, farm equipment product and project management in engineering services.

Hindustan Motors Limited from 01/12/96 as trainee, to 13/02/05 as Jr. Manager R&D.

Eicher Engineering Solution as Associate Engineer from 18/02/05 to 23/03/05.

Mahindra and Mahindra as Assistant Manager R&D from 28/03/05 to 31/05/08 as Dy. Manager R&D.

TCS Ltd. from 11/06/08 as IT analyst and last attended office on 21/09/16 as Assistant Consultant.

Currently working on various product development of house hold, automotive and firm equipment product to build own manufacturing unit or to establish a joint venture.

Educational Qualification:

- Certificate in Entrepreneurship from Indian Institute of Management Rotak.
- 18th Rank in Graduate Mechanical Engineering Branch entrance on 2013, West Bengal Board.
- Diploma in Mechanical Engineering in 1996 from West Bengal Board of Technical Education (H.I.T).
- Higher Secondary Education (Science) in 1993 from West Bengal Board of Secondary Education.
- Secondary Education in 1991 with Physics, from Ramakrishna Vivekananda Mission Vidyabhawan.
- **Studying AMIE Section A** (ST-329234-2) appeared in June 2018, Passed 3 paper out of 4.

Patent Application for Individual: Floor cleaning machine (**Application Number: 201831008731**).

Electromechanical Stethoscope (**Application Number:202021004068**), Applying Patent for Pumpsless Air Cooler, Chainless Bi-cycle, Home Cleaning and Swiping machine, Zero Blind Spot Rear View Mirror, Injury free Gym and 20 more patents in line.

CAD Skills: Pro Engineer, 10 year. UG NX, 5 Year. Catia V-5, 1 year. Auto Cad, 5 year. Ideas, 3 year.

Ergonomic Software: Classic Jack 5 for ergonomics and occupant packaging analysis.

PLM Software: Team Centre Engineering and Windchill.

Certification: Certification in UG NX, Tolerance Stack up and GD&T, DFMEA.

Areas of Expertise:

1. Vehicle integration.
2. Mechanical control system design and validation.
3. Sheetmetal component development.
4. Cabin Prototype building, development and validation.
5. Value Engineering.
6. Ergonomics and occupant packaging.
7. Vehicle type approval and homologation.
8. Engineering project management.

Tools and method used:

- Design calculation, design review, design validation and design of experiment.
- Geometric dimensioning and tolerance analysis.
- Concept designing and styling.
- Motion simulation, gap and collision analysis, occupant packaging and reach analysis.
- DFMEA-Design failure mode & effect analysis.
- DFA-design for assembly, DFS- design for service, DFM- design for manufacturing.
- QFD- quality function deployment.
- QC Story approach of problem solving and Kaizen.
- Innovation and "Out of the Box" Product and Process design.

Major Achievements:

- As project leader delivered two electric locomotive and AC driver cabin.
- Designed concept model of light weight Low floor bus and truck load body.
- Designed and developed complete mechanical control system for AC cabin tractor.
- Integrate and developed AC cabin tractor.
- Designed and developed drive-away-chassis of 10 ton truck and complete truck cabin.
- Reverse engineered and developed moulded roof liner in 50% cost.

Project at Tata Consultancy Services:

Hands on Training for Part and Assembly Creation of Diesel Locomotive: Gave approximate four months hands on training to design and development officers about various aspects of cad modelling.

Part Classification project of a major global engine manufacturer: Worked as business analyst to simplify part classification of a large engine manufacturer having multiple business unit across globe.

Project for Electric Locomotive Manufacturer: Worked as a project leader for delivering two complete locomotives, WAG-9 and WAP-5 with 3D CAD models, 2D drawings with all engineering change documentation and standards and implemented entire data in PLM platform.

Mechanical Item: Bogie, Roof Hatch, Drivers Cab, Body Shell, Underframe Assembly.

Electrical Item: Traction Motor, Wiring harness, Pantograph, Transformer, Machine room item.

Pneumatic Item: Pneumatic piping, Brake system, Compressor, Wiping system.

Responsibility as a Project Leader for project execution:

- BOM creation and estimation of execution and quality verification time.
- Digitize entire drawing part number register, engineering change register and other document related to design and development.
- Reverse engineering component and assembly.
- Task assignment, tracking and monitoring of task.
- Deliver CAD model, 2D drawings and delivery note for engineering change as per milestone.
- Collecting client review and implementing review remarks in CAD models and drawings.
- Ensuring final delivery 98 percent accurate.

Creating complete hardware database: Created more than 600 different set hardware data base with Indian Standard, also kept source standard like DIN, ISO, British Standard or other standard.

Design and Development Air Conditioned Drivers CAB for WAP-5 and WAG-9: We have helped client to design and develop drivers cab, roof structure, AC fitment, ducting and roof panel.

Concept Design and Validation of Light weight Truck Load Body: This project Initiated by **Aluminum Major of America** to use 5051, 6061 and 7000 series of aluminium in load body of truck running in Indian road.

Major Activity:

- Benchmarked factory fitted steel load body in respect of CAD model and finite element analysis report for different category of pay load.
- Created CAD model of load body of different pay load with aluminium alloy 5051, 6051 series and compared with benchmarked stress analysis report.
- Used DOE for manufacturing process and material combination to match cost of steel body.
- We have delivered load body and closed container CAD model and finite element analysis result of different payload truck as per ARAI guideline.

Concept Design and Validation of 16.5 Ton GVW Low Floor BUS: This project Initiated by **Aluminum Major of America** to use 5051,6061 and 7000 series of aluminium in low floor bus running in Indian road. We used Tata 16.5 Ton GVW chassis to design low floor bus.

Resume of Sanchayan Ghosh

- Designed entire inside panel, floor and roof structure, outside skin panel in Aluminium.
- Designed new steering wheel and seating arrangement to accommodate more passenger.
- Designed new door mechanism for automated access for wheel chair.
- Designed new dual tone dash board with dual tone AC air vents, glove box.
- Designed glass panel, mirror fitment, roof liner, wiper mechanism, front and rear and roof lightings, roof mounted speakers and new luggage space arrangement.
- Entire concept generation, styling, CAD modelling and surfacing done single handedly. We had more than 98% customer satisfaction on this particular project.

Project at Mahindra and Mahindra:

Cost re-engineering (CRE) or Value Engineering Project: I worked with some of the major components like three point linkages, drawbar bracket, air filter mounting bracket and achieved significant cost reduction.

Technical Problem Solving and Resolving Field Failure: Single liver PTO having multiple failures.

1: Operating force was 22-25 kg, 2: Adjustment of free play was difficult. 3. There were regular damage reports in PTO indicator switch.

Resolution: 1: New design of linkage system whose operating force is 15-16 kg. 2: changed spring and corrected drawing at transmission end. 3: Created new switch mounting bracket in different position to avoid damage of switch. 4: Created simple operating procedure for assembly line.

There are field failures of draw bar bracket, Lower link, Issue in forward reverse shuttle, Clutch burnout for loader operation, which was also resolved in similar way.

Design and Development of Cabin Tractor: Stake holders are Mahindra FES, Mahindra USA and Mahindra Export, Fritzmeier GmbH and KUP Engineering GmbH Germany.

Major Activity:

- Analysed entire 55 hp, 65 hp, 75 hp and 83 hp export series tractor in respect of control system, fitment, manufacturing and fitment for cabin tractor.
- Analysed all mechanical control system and captured travel and force data.
- Found out major changes required for base tractor and designed parts for cabin fitment. Major new components are 1. Firewall. 2. Clutch housing. 3. Bonnet. 4. side panel and fender.
- Jointly designed mounting brackets for front control system like brake, clutch pedal etc.
- Designed new tilt steering system with 15 degree tilt option which was earlier 10 degree.
- Designed Cable type Brake, Clutch, Handbrake, PC DC mechanism, 3 lever Aux Valve operation, hand and foot accelerator mechanism.
- Designed split type gear shifter, range shifter, differential lock pedal.
- Designed new F-R lever mechanism, Single liver PTO mechanism and 4WD lever.
- Proto type building in India and in Germany.
- Lab testing and field testing of component and system.
- Creating CAD data and drawings for service manual, parts catalogue, and operating manual at vehicle engineering level and standard operating procedure for assembly line.

NVH Project: At Mahindra I have worked closely with CAE team for noise reduction and testing of NVH for Tractor. To reduce noise level under 90 db we came out with solution as ribs introduction in engine block, interior modification of exhaust pipe, using "closed cell nitrile foam" under the bonnet and side panel. We were able to achieve noise level without load below 86db.

Work Profile at Eicher Engineering Solution : Worked in Catia for developing a Plant Layout.

Work at Hindustan Motors limited : Have undergone training one month each on SQA, Machine Shop, Forge and Foundry, Body Shop, Trim Shop, Press Shop, Engine Shop and Paint Shop, Electro Plating and Die making shop.

Resume of Sanchayan Ghosh

Significant Achievement:

- In suppliers quality assurance where made 30 inspection gauge for automotive parts.
- In foundry shop, designed a tool to reduce blow hole in aluminium gear box extension. Gear Box extension was manufactured using CO₂ cured sand core and gravity die casting.
- Reverse engineered moulded roof liner and manufactured it in 50% cost.

Value for Money Trekker Project: This project is a new design and development of existing Trekker (multi utility passenger vehicle). Area of new developments are chassis, entire sheet metal, styling, gear box and Body Trims. I have worked as a design engineer for generating CAD model and 2D drawing, building prototype parts in prototype shop. Working area was sheet metal components.

10 Ton GWV Truck Project:

Design and Development Truck CAB and Drive Away Chassis: Worked in a three members team to design and develop entire truck CAB using some of the skin panel of Isuzu Truck.

- Creating layout for complete vehicle, creating 3D model of components, subsystems and Cab.
- Creating detail drawing of BIW components and Trim parts.
- Surfacing of critical body parts and new styled components.
- Co-ordination with prototype shop and prototype development in shop floor.
- Lab and field testing of component and system, and re-designing them to overcome test failure.
- Making vehicle ready for ARAI type approval.
- Did entire occupant packaging analysis, reach analysis of controls system.
- Designed and developed complete drive away platform taking reference from another existing truck model. Built entire CAD model and 2D drawing, created bill of material, built prototype of component and complete platform. Built working proto for field testing.
- Design and developed SUPD (side under-run protection device), RUPD (rear under-run protection device) as per ARAI norms.
- Built complete spec and drawing sheet for ARAI Type approval of Drive Away Chassis and Truck.

Award: Received multiple Idea and Merit award from Hindustan Motors for contribution in innovative solution and value generation. Received multiple award for Innovation in product development from R&D Vice President and Mr. Anand Mahindra (Chairman and MD of Mahindra Group).

Language known: English, Hindi, Bengali and Marathi (Understand only). Learning: German Language A1.

Personal Detail: Sanchayan Ghosh. Date of Birth 16-11-1974, Nationality: Indian

Communication Address:

1: C/O Soumen Sarkar, F1 D4, Sector 9, Nerul, Navi Mumbai 400706, Maharashtra-India.

2: C/O Samiran Ghosh, Village and Post Nabasan, Birbhum 731125, West Bengal-India.

Cell Phone: +919903575499 , 7076626163 Email: sanchayan.ghosh@icloud.com

Date 31-01-2020

Place: Bangalore