

Women For STEM - A Day Out With Girls From Avanti Fellows At Pune

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Cover Page Picture: Me with the Girls from Avanti Fellows
LtoR: Tanvi S., Shweta, Harshali, Aarna(me), Zeba, Tanvi N.

Acknowledgements

I am thankful to Ms Sonia Keswani, Centre Manager of Avanti Fellows, and Pune for agreeing and helping us with taking the girls from Avanti for these visits. I am very grateful to the owners and senior management of each of these businesses for allowing us to visit their factories and spend so much time with us, explaining the manufacturing process, and their company's business and taking us around personally to show the manufacturing processes. I also thank them for their warm hospitality. My gratitude to Mr Sandesh Salian, Ms Rajashri B Teli, Mr Nishant Sagar, Mr Digvijay Shirole, Mr Chaitanya Shirole, Mr Padam Singh and Mr Kulkarni and their colleagues who assisted during our visit to their companies.

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Introduction and Background

As part of my empowerment program Women for STEM, I planned for a day of factory visits with girls from Avanti Fellows in Pune. I chose reasonably large factories where the owners were willing to help the girls understand the manufacturing processes.

About Avanti Fellows

Avanti Fellows is a very unique non-profit organisation that teaches and coaches high school students from underserved families, and prepares them for Joint Entrance Examination (JEE) for engineering schools and the National Eligibility cum Entrance Test (NEET) for medical schools, in India. Both these exams require extensive preparation and coaching and many families cannot afford the cost of coaching their children. They live by their purpose of 'Enabling Equitable Access to Meaningful Careers in STEM' and have so far tutored over 18,000 students. Of these nearly 5000 students have found their way into the top 5% engineering and medicine colleges in India and around 400 into IITs and similar medical schools.

Here's more about Avanti Fellows : <https://www.avantifellows.org/>

I found out about Avanti Fellows through my social connections and reached out to them. After they understood my program, they readily agreed to let the girl students from their Pune centre be taken for these factory visits. The next couple of months went into planning for these visits - reaching out to the business owners, and explaining the purpose and reasons.

We planned six visits in one day, on the 5th of October 2024, and went about visiting each of these companies' factories. The brief report here is in the order of our visits.

1. Dali and Samir Engineering Private Limited
2. HYT Engineering Co. Private Limited
3. Dyna-K-Automotive-Stampings Private Ltd.
4. Fitwel Gasket Company (India) Private Limited
5. Gloria Engineering Industries
6. Litel Infrared Systems Pvt Ltd.

Dali & Samir Engineering Private Limited

Brief Background

Dali & Samir Engineering Pvt Limited (DESPL) was incorporated in 1972. Sandesh M. Salian, Sangeeta Sah and Samir M Salian are directors of the company. The company has four plants situated in Maharashtra (Chakan and Chinchawad), Uttarakhand (Pantnagar) and Tamil Nadu (Hosur) in India. They have strategically positioned their plants in proximity to ports. Each of the plants are fully integrated factories with Heavy Stamping, Welding, Surface Treatment and Assembly. They specialise in welding various grades of Materials-Coated Steels, Stainless steel and Aluminium.

Company Website: <http://www.dalisamir.com/>

Products

DESPL is an OEM and supplier of Fuel Tanks, Hydraulic Tanks, Oil Sumps, Exhaust Systems, Radiator Surge Tanks, Stampings, Tubular Assemblies, Air and Vacuum Tanks and Anti Explosive Defence Fuel Tanks. They have developed capabilities to manufacture a variety of components including Radiator Frames, Pressurised Tanks for Hydraulic Reservoirs and Radiator Surge Tanks in Galvanised Steel and Aluminium. The company has extensive experience in fabricating assemblies in a variety of coated sheets and has partnered with Tata Motors and Bajaj Auto for Research & Development.

Major Customers

The major buyers are Tata Motors Limited, Bajaj Auto Limited, Tata Toyo Radiators Limited, Tata International Limited, Same Deutz Fahr and Wipro Infrastructure Engg. Limited, Greaves Cotton Limited, Kirloskar Oil Engines Ltd, Tata Automation Limited and Kubota Corp (Japan).

Photographs Of Dali & Samir Engineering Private Limited



Picture 1.1: Mr Sandesh Salian Director at Dali and Samir with me and the girls from Avanti Fellows outside the main entrance to the plant



Picture 1.2: Mr Salian describes the Robotic Welding Process to us, inside the plant



Picture 1.3: The display gallery of products manufactured by Dali and Samir - Fuel Tanks, Oil Sumps, Air Tanks, etc.



Picture 1.4: Mr Salian explains the process of making fuel tanks inside the plant

HYT Engineering Co. Pvt. Ltd.

Brief Background

HYT Engineering Company Pvt. Limited was incorporated as a proprietary firm in the name and style of HYT Engineering Corporation in 1977 by Mr Bhojraj Hemraj Teli and was converted into Private Limited Co in 1989. Ms Rajashri Bhojraj Teli and Ms Shailaja Bhojraj Teli are other directors of the company. The company has supplied over 1000 machines of International Standards. The company has also set up the following projects for Indian Railways:-

- 1) Maintenance Depot for Vande Bharat Train Sets at Shakurbasti
- 2) Forged Axle Machining Line at Rail Wheel Factory, Bangalore
- 3) POH Facilities for augmentation of periodical overhauling facilities for LHB coaches at Carriage Repair Shop at Tirupati, South Central Railway
- 4) Infrastructure for POH of Wheel set for LHB Coaches at Carriage Repair workshop, Harnaut
- 5) Coach Shell Manufacturing Facility for Indian Railways at Chennai
- 6) Wheel Repair Shop for Smh Rail, Malaysia

Company Website: <https://hytwheelathes.com/>

Products

HYT Engineering Company Private Limited has an ultra-modern facility of 16000 square metres for design, manufacturing and testing of machines. HYT has developed and manufactured the following machines: CNC End Face Drilling and Tapping Machine, CNC Portal Wheel Lathe, CNC Vertical Turning & Boring Machine, Wheel Press, CNC Tandem Underfloor Wheel Lathe, CNC Surface (Above floor) Wheel Lathe, CNC Underfloor(Pit) Wheel Lathe, Rail cum Road Vehicle (Shunter), Wheel Cleaning Station, Dynamic Wheel Balancing Machine, CNC Axle Journal Turning & Burnishing Lathe, CNC Vertical Turning Lathe with Axle Wheelset Measuring Station, Multipurpose Armature Machine and Automatic Train Washing Plant.

Group Companies

- 1) *SAFOP S.R.L, Italy*: This is an Italy-based company that was acquired by HYT in 2019. It has a fully integrated modern facility for development and manufacturing of machines located at Pordenone city, Italy. SAFOP has widely spread in various sectors such as Railway, Energy, Steel, Oil, Paper, Shipyard, Aerospace and Heavy Industries. Its product line offers Wheel lathe, Turning and Grinding Centre for the Sphere of Ball Valves and Rotor Slotter machines which are highly advanced, economical and meet international standards.

2) *HYT Innovative Projects Private Limited*: It is a sister concern of HYT and commenced its operations in 2001. It manufactures precision tubes employing the innovative Flow Forming Technology. It has an Ultra-Modern facility of 4500 sq. metres for manufacturing precision tubes.

Major Customer

The major clientele are listed here-

Domestic: AFCONS, Alstom, Bangalore Metro Rail Corporation, BHEL, Chennai Metro Rail Limited, Indian Railways, Delhi Metro Rail Corporation Limited, L & T, Gujarat Metro, Jaipur Metro, GE Transportation, NALCO, NCRTC, RVNL

International: MRT Bangkok, Indorama, KSP, Naledi Rail Engineering (Pty) Ltd., SMH Rail Sdn. Bhd. Malaysia, SNCF-France, Sri Lanka Railways, Transnet SOC Ltd.

Photographs Of HYT Engineering Co. Pvt. Ltd.



Picture 2.1: Ms Rajashri B. Teli, Director at HYT Engineering briefs us about the company before the plant visit



Picture 2.2: Ms Rajashri B Teli with us in front of their flagship CNC Portal Wheel Lathe



Picture 2.3: Us inside the HYT plant in the backdrop of several machines



Picture 2.4: Ms Rajashri explains the process of measuring the railway wheel before it is cleaned in the CNC Portal Lathe

Dyna-K-Automotive-Stampings Private Ltd.

Brief Background

Dyna K Automotive Stampings Pvt Ltd (DASPL) was incorporated in 1992. Its main promoters are Mr C F Dias and Mr B N Kalyani. The company caters to the requirements of the auto ancillary industry and specialises in the manufacture of stamping for automotive brake applications, critical stampings for seats, suspensions, axles, turbochargers etc. DASPL also manufactures stamped products for non-automotive applications.

Company Website: <https://www.dynakstamp.com/>

Products

Their product list comprises metallic as well as non-metallic stampings in ferrous, non-ferrous and non-metallic materials. They are a recognised manufacturer of sheet metal-pressed components and brake sub-assemblies forming a part of the brake systems in passenger cars and other commercial vehicles. It is a TS-16949-certified company and an ancillary unit of Bosch Chassis Systems India Ltd. The major raw material is Sheet metal-pressed components.

Major Customers

Their top clients include Automotive Axle Ltd., Divgi Warner India Ltd., Gabriel India Ltd., Rane Madras Ltd., Brakes India Ltd., Cummins Emission Solutions, Cummins Emission Solutions, USA, etc. The company has been nominated by Cummins Turbo Technologies Ltd. as a single supply source for its various components.

Photographs Of Dyna-K-Automotive-Stampings Private Ltd.



Picture 3.1: Mr Nishant Sagar, Director at Dyna K Automotive Stamping explains the process of metal sheet stamping



Picture 3.2: The Avanti Fellows girls and I listen to Mr Nishant Sagar with rapt attention as he explains more nuances of manufacturing



Picture 3.3: Mr Sagar shows us the finished products at the product showcase gallery



Picture 3.4: The Avanti Fellows girls and me with Mr Nishant Sagar

Fitwel Gasket Company (India) Private Limited

Brief Background

Fitwel Gasket was established as a proprietary firm by Mr Chaitanya Shirole in 1985 and was converted into a Private Limited entity in 2011. Company was a pioneer in introducing non-asbestos gasket material to Original Equipment Manufacturers in India. All family members are actively involved in the business and are directors of the company.

Company Website: <https://www.fitwelgasket.com/>

Products

They manufacture two types of product categories and under each of them, there are several variations.

i) *Sealing*

Engine: Oil Pan, Water Pump, Intake Manifold, Turbocharger, Cylinder Head Cover, Engine Cover, Oil Filter, Throttle Body, EGR Cooler, Thermostat Housing

Exhaust: Exhaust Manifold, Exhaust Flange, Exhaust Clamp, Catalytic Converter, Expansion Chamber

Vehicle Body: Transmission, Fuel Injection Pump

Non-Automotive Applications: Tractor & CV, Compressor, Genset, Switchgear, Marine

ii) *Thermal Shielding*

Engine: Turbocharger, Engine Cover, Intake Manifold, Crankcase Ventilation, Throttle Body, Firewall, Inner Dash Liner, Under Hood/Bonnet, Perforated Shields

Exhaust: Exhaust Manifold, Catalytic Converter, Resonator, DOC/DPF/SCR, Front Pipe/Tail Pipe, Muffler, Hot-end/Cold-end

Vehicle Body: Tunnel, Floor Panel, Fuel Tank, Steering Gear

Non-Automotive Applications: Genset, Tractor & CV, Off-highway

Major Customers

Mahindra & Mahindra, Fiat, Piaggio, L&T, Emersons, heavy engineering companies, automotive companies, domestic and electrical appliances manufacturers in India, the US and Europe.

Manufacturing Process Summary Flow

Incoming raw material >> Shearing >> Stamping (various types of press operations) >> Thermal insulation cutting & assembly >> **Inspection** >> Packing >> Dispatch

Photographs Of Fitwel Gasket Company (India) Private Limited



Picture 4.1: Mr Digvijay Shirole, Director at Fitwell explains thermal shielding on an exhaust pipe to us



Picture 4.2: Mr Digvijay Shirole with the girls from Avanti Fellows



Picture 4.3: Me with the girls from Avanti fellows at the briefing session before the plant visit



Picture 4.4: Mr Chaitanya Shirole, Founder and Director at Fitwell explains the finished products at the product showcase gallery

Gloria Engineering Industries

Brief Background

The company started commercial operations in Oct 2021 and is engaged in the manufacturing of automobile ancillary parts. The main promoters are Mr Amrit Mohanlal Agarwal and Mrs Rama Amrit Agarwal

Company Website: <http://www.gloriagroup.co.in/>

Products

- All types of Front Bumpers of cars
- Long Member Reinforcement
- Cross Member
- Rear/Front/Side Underrun Protection Device Beams
- Fuel Tank Support
- Complete Sub-Structure Front

Major Customers

It is supplying to reputed players like Tata Motors, Mahindra & Mahindra, York Transport India Ltd., KLT Automotive etc.

Photographs Of Gloria Engineering Industries



Picture 5.1: Mr Padam Singh explains to the girls



Picture 5.2: Mr Padam Singh showing the in-process components as a technician works on drilling holes in the component



Picture 5.3: Understanding the operation of industrial crane



Picture 5.4: A robotic arm goes about doing its work in the background as the girls listen to the explanation

Litel Infrared Systems Pvt. Ltd.

Brief Background

Litel Infrared Systems Pvt. Ltd. was founded by highly qualified technocrats with international experience, aiming to provide innovative heating solutions. In 1987, Litel transformed the Indian heating landscape by introducing indigenous infrared heating technology. Litel is a DSIR-certified R&D laboratory, recognized by the Government of India's Department of Scientific and Industrial Research.

Company Website: <https://litelir.com/>

Product Categories

1. Infrared Heating Systems
2. Infrared Heating Module
3. Infrared Heating Lamps

Major Customers

Tata Motors, Volvo

Photographs Of Litel Infrared Systems Pvt. Ltd.



Picture 6.1: Mr Kulkarni, General Manager of the Litel plant briefs us before the plant visit



Picture 6.2: An infrared leaning rod manufactured by Litel



Picture 6.3: Mr Kulkarni, General Manager at Litel, with us after explaining the machine made for Tata Motors



Picture 6.4: Us outside the Litel plant before parting ways

Conclusion And Reflections

It was a day well spent, making new friends and discussing what we are all most passionate about - STEM. We were all tired at the end of it, but very happy and content with what we saw. I was personally very satisfied listening to how these girls were reflecting on their experiences through the day. Harshali said she was more determined than ever, Tanvi S said that she will do everything to prepare for the JEE exams and do well, Zeba said she found CAD fascinating and wants to be in the automobile industry designing cars, Tanvi N felt she could describe to anyone how small components can be safety critical for us and others around us and finally Shweta just held my hand, looked into my eyes and said: "Thank you".

I said goodbye to the girls, as they got into their car, with a heart filled with gratitude and a smile on my face. The future of Women In STEM is indeed bright.

This is what Avanti Fellows had to say about the program and the visit.

https://x.com/avantifellows/status/1844718832494997522?s=48&t=vV5Ms_D_9XgbqQtW3FijJQ

https://www.instagram.com/p/DBBmYJitqsC/?img_index=9

https://www.linkedin.com/posts/avanti-fellows_pune-industrial-visit-5th-october-2024-activity-7250852722235596800-mKCj?utm_source=share&utm_medium=member_ios