

BMS College of Engineering
Department of Chemical Engineering

INDUSTRIAL VISIT REPORT

A TRIP TO SATHYA INDUSTRIES, JIGANI



By: 3rd Semester Students, Chemical Engineering

Picture credits: Nidhi Sathish and Bhavana Reddy



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Overview of the Trip

BMS College of Engineering had organized an industrial visit on 14th October, 2017 to Sathya Industries. Located in Jigani Industrial area 27 km from BMSCE for the 3rd Semester students of Chemical Engineering. Prof. Sainath K and Prof. R Shivakumar were the teacher-in-charge for this whole industrial visit.

Company Profile

Name of The Industry: Sathya Industry

Address: No.142 to 145, B R Ambedkar Industrial Estate, 1st Phase, Jigani Industrial Area, Bengaluru - 562106

Inspection Date: 14th October, 2017

Type Of Plant: Manufacturer and supplier of chemicals, solvents and thinners

History of Plant: Incepted in 2006

Company turnover: Rs. 2.5 - 5 crore approx

No. of employees: 20-50

Clientele: TNPL, Micro labs, Jubli Engineering Life Science and others

Raw Materials

The raw materials are the spent solvent sent from pharmaceutical industries.

Unit operations/process

Evaporation, distillation and condensation

Process control

Batch and Continuous process



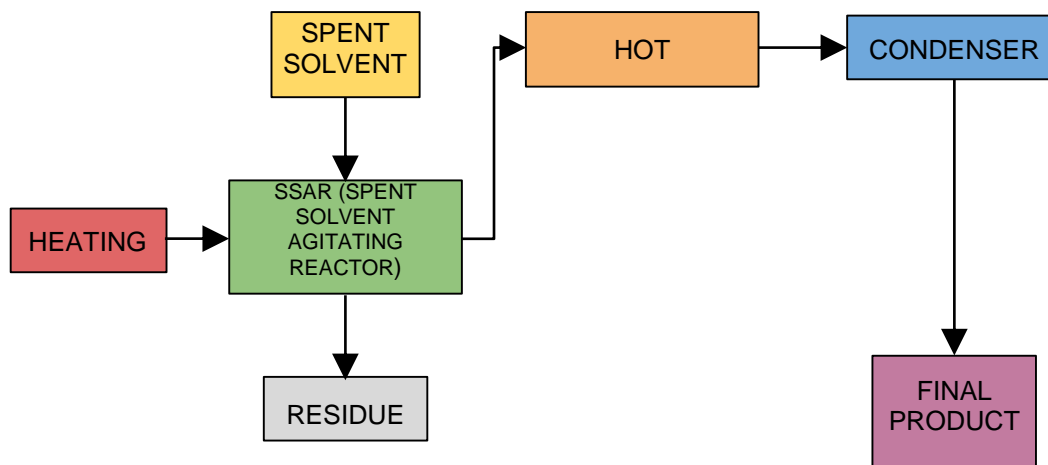
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Flow Sheet



Process

Spent solvent is discharged into the SSAR (Spent solvent agitating reactor), where it is continuously heated and stirred. The Fire tube boiler produces the steam which is passed through the helical coils around the SSAR and the solvent gets heated (Solvent is heated indirectly). The solvent evaporates (hot vapors) and is kept in that form by the surrounding insulation. The vapors are then sent to the condenser where the feed is cooled and the final product is collected according to their boiling points. Reflux helps in obtaining dry solvent. The residue is removed.

Products

Acetone, methanol, toluene, hexamethyldisiloxane and isopropyl alcohol





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Unusual Engineering Features

The solvent is introduced into the SSAR from the bottom instead of the top. This is done to prevent solvent particles that might have attained a charge from coming in contact with the inner metal linings across a height and thereby preventing explosions.



Major Engineering Problems

Waste disposal is a major problem because of the toxic nature of the materials used, as they must be handled carefully.

The exothermic reaction can become violently uncontrolled resulting in explosions. Hence an elaborate system of interlocking controls is used to apply full coolant flow in case of SSAR failure.

Temperature and Pressure must be carefully controlled to prevent explosions.

Environmental Pollution Aspects



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The continuous use of an old fire tube boiler that do not meet current environmental standards, harmful residue is produced. Large amount of coolant is used that might be detrimental for the environment.

Safety Aspects

12 fire extinguishers present in the plant.

Entire process is highly automated, thereby reducing the chances of human error.

Effluent treatment plant water is sent to an authorized dealer. Residue is sent for incineration to prevent any form of contamination either via air or water. Coolants are reused.



Potential of the plant and the industry

1. Sathya industry is the manufacturer of organic and inorganic solvents having commercial use.
2. They manufacture Thinners, Solvents and Fuels. These are highly effective, safe, stable, environment friendly and have longer shelf life.



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3. The industry is expanding with the manufacture of new commercial products such as adhesives, car shampoos, mosquito repellent, house cleaning chemicals, waterproofing chemicals, paints etc.
4. Sathya industry also deals with the waste water treatment chemicals which would help in reducing the environmental hazards caused by industries in the near future.

Conclusion

We thank our HoD, Dr Rameshaiah for permitting us to undergo industrial visit. We are also thankful to our faculties for organizing such an informative event for us. Seeing the processes in person greatly helped us in understanding the nitty-gritty's behind them.

We hope we get more chances further to have such wonderful and informative experiences of visiting different industries.