Report

On

Pilot Project

Faculty Industrial Induction Program

26-29 May, 2021

@

HARSHA ENGINEERS

Organized By

ESTD - 2007

Gujarat Technological University

Chandkheda, Ahmedabad

Coordinators

Prof. S. D. Panchal, Director, GTU-GSET

Prof. G. D. Makwana, Asso. Professor, GTU-GSET

The induction program is inaugurated by Shri. Rajubhai Shah, Chairman, Harsha Engineers, Ahmedabad in presence of Dr. K. N. Kher, Registrar, Gujarat Technological University (GTU), Ahmedabad, Prof. (Dr.) S. D. Panchal, Director, GTU-Graduate School of Engineering and Technology (GTU-GSET), Ahmedabad, Prof. Sanjay Chauhan, Graduate School of Pharmacy, Ahmedabad, Mr. Raajkumar Tarwani, HR Manager, Harsha Engineers, & Mr. Vipulbhai Kher, Associate HR , Harsha Engineers. During the function, Shri. Rajubhai explored the objectives behind the induction program and discussed expectation from the team of faculty members. Shri. Shah told the journey of the Harsha Engineers and success mantra. Dr. Kher has explored reasons behind a gap between industrial and academic and such kind of interactions to implemented for affiliated college.

Eight faculty members from constitute institutes of the University have been identify to attend the program. Following faculty members attended the program.

1) Prof. Gautam D. Makwana, Associate Professor, EC, GTU-GSET, Ahmedabad
2) Dr. S.K. Hadia, Associate Professor, EC, GTU-GSET, Ahmedabad
3) Prof. Rutika Ghariya, Assistant Professor, CE, GTU-GSET, Ahmedabad
4) Prof. Soniya Jain, Assistant Professor, CE, GPERI, Mehasana
5) Dr. Utsav Gadhia, Assistant Professor, ME, GPERI, Mehasana
6) Prof. Sumit Kumar , Assistant Professor, ME, GPERI, Mehasana
7) Dr. Hema Mehta, Assistant Professor, EE, GPERI, Mehasana
8) Prof. Piyush Miyani, Assistant Professor, EE, GPERI, Mehasana

Addressed by Shri. Rajubhai Shah


Addressed by Dr. K. N. Kher


Addressed by Prof. S. D. Panchal


Addressed by Prof. Sanjay Chauhan

Day-01: 26-05-2021

Schedule, Topics, Learning

Sr. No.	Schedule	Topic	Speaker	Learning
01	09:45 AM to 10:30 AM	A Success of Story – Harsha Engineers	Mr. Anand Bhardwarj, Mr. Ravi Swarnka	✓ Profile of the Company, & Products, ✓ Type of Cages, ✓ Various Divisions,
02	10:30 AM to 11:15 AM	Automation Maintenance of Machine Utilities & Other Services	Mr. Shalabh Kaushik	✓ PLC used which is 12 digital inputs(DI) and 8 digital outputs(DO) ✓ To improve parameter checking system. ✓ Automatically measure temperature. ✓ Fault searching. ✓ Energy saving with incorporation of variable frequency drives (VFD). ✓ After investment of approximately Rs. 78000, huge saving of around Rs. 8,00,000
	11:30 AM to 12: 15 PM	Manufacturing Layout, Process & Product Design & Designing Production Process Engineer and Finite Element Analysis	Mr. Darshan Shah & Mr. BK Shivaraman	✓ Manufacturing process is in one line. ✓ Key Points of Designing Production Process Engineer and Finite Element Analysis ✓ Requirement is submitted by customer itself. ✓ In house tool design with CAD/CAM and tool making with CNC Machines. ✓ Finite Element Analysis for the stress analysis.
04	12:30 PM to 01 PM	Quality Management System	Mr. Rakesh Bhatt	✓ Harsha Engineers LTD. follows Total Productive Maintenance(TPM) standards ✓ Main pillars of the TPM standards are as follows: • Focused Improvement • Autonomous Maintenance • Planned Maintenance • Education and Training • Early Equipment Management • Quality Maintenance

				• Safety and Environment • TPM in office ✓ In Harsha Engineers LTD, there is frequent review of the work to assure the TPM standard. ✓ 5s is also one of the important and interesting method
05	01: PM to 01:30 PM	Problem Solving Techniques	Mr. Deepak Kataki	✓ Concept of Problem Solving ✓ Explore various techniques for problem solving ✓ Significance of 5 Why in an identification of root of any problem. ✓ Don't Jump on the problem but be with the problems. ✓ The way you look at the problem, the way you solve the problem. ✓ Various Problem solving methods • 8D • QC Story • 10 step methodology • CAPA & FTA ✓ Harsh Engineers Ltd. Following 8D and 10 step methodology. ✓ In D8, D4 is the most important method of problem solving: Root cause is the most important to find the solution of the problem ✓ Ask why-why-why-why, until the question not becomes stupid.
06	2:30 PM to 3:30 PM	TPM Gallery	Team of TPM	✓ Understanding of TPM model ✓ Discussed 9 Pillars of the model ✓ Benefits at the Company due to the TPM model ✓ Reason to add Automation and IoT in the TPM Model
07	3:30 PM to 4:30 PM	5S Gallery	Team of 5S Centre	✓ Understanding of 5S Model adopted by the Company ✓ 5S – Sort, Set in Order, Shine, Standardize, and Sustain ✓ Discussed benefits by 5S model ✓ An efficient work place management system.

Day – 02: 27-05-2021

Schedule, Topics, Learning

Sr. No.	Schedule	Visit	Speaker	Learning
01	9:30 AM to 11: 30 AM	New Taper Auto Division,	Mr. Sameer Bhavsar	✓ The new taper auto division is advanced having total of 19 production line capacity of more than 42 lacks piece per month. In this division steel material is used to produce bearing cages. As all the component formed here is used in automobile, the name of the division is given such way. ✓ In this division, the process flow is as follows Raw material → Circle cutting → Cup forming → Centre hole press → Facing → Notching → Coining → Bulging → Vibro Finishing→ automated inspection → packing. ✓ Here all the machines are semi automated well placed in the line. ✓ The press machines are having various capacity ranging from 16 T to 315 T. Inspection is done with the help of image processing and automation, that is very fast.
02	11:30 AM to 1:00 PM	Brass Division	Mr. Rohit Trivedi	✓ In the brass division, the brass bearing cage is manufactured with the casting and forging method. ✓ First, the raw material in the form of alloys and scrap material melted in the furnace, followed by the centrifugal casting the desired diameter of raw material is formed. ✓ After that, Raw material is turned to desire size and shape and then pocket forming in milling machines in that the Brass bearing cage is formed. Later on the burrs on the machined part is removed manually. ✓ Before the final inspection, the product is put into vibro finish machine. ✓ Finally, rust resistant oil is applied and inspected before dispatch.
03	02:00 PM to 3:30 PM	C & C Division	Mr. Alkesh Patel	✓ The cut and carry department is mainly having heavy-duty press machines with auto transfer and which can perform all the processes in step.

				✓ Processes are Cup forming → Centre hole press → Facing → Notching → Coining → Bulging. ✓ The press in this division varies from 150 T to 500 T. ✓ All the cages are inspected with image processing technique.
04	03:30 PM to 04:30 PM	Stamping Division	Mr. Parmindar Singh	✓ In the stamping division the parts for Auto, Railway, Air Compressor, and Chain gauge for bike is manufactured. ✓ The material used in this division is steel. ✓ The process flow in this division varies according to the type of component and need of a customer.

Day – 3: 28th May, 2021-06-01

Schedule, Topics, Learning

Sr. No.	Schedule	Visit	Speaker	Learning
01	9:30 AM to 11: 30 AM	DGBB Division	Mr. Ajaipal Singh	✓ In the DGBB (Deep-groove Ball bearing) division, the cage is manufactured from the metal circular ring. ✓ Processes of the metal ring as follows: pre-bending- final bending, and piercing operation in the same mechanical press. ✓ A rivet will be inserted in the preformed rings, two similar parts of the preformed ring one with rivet and another without rivet are joined together with riveting operation. ✓ The product is then fed into the Vibro finish machine for 10 to 15 minutes and later inspected after applying a coat of rust prevention oil. Here also inspection is automated.
02	11:30 AM to 1:00 PM	SRB Division	Mr. Jignesh Vandara	✓ In SRB (Spherical roller bearing) cage division the capacity of all the installed lines is more than 8.5 lacks pieces per month. ✓ The process flow for SRB cages is as follows: Raw material → Circle cutting → Cup forming → Facing → Notching → Coining/shaving → top facing → bottom facing → shot blasting →Vibro Finishing→ Coating (ZN/MN) →inspection → packing.

				✓ In the SRB division, the inspection is done manually.
03	02:00 PM to 3:30 PM	Polyamide Division	Ms. Hetal Naik	✓ In this division, cages are manufactured by the polyamide material, a mixture of nylon and glass fiber ✓ Plastic granules are melted at 200 degree and injected in the moulding machine. The moulding machines manufactured polyamide cages of different outer diameters.as per mold. ✓ The inspection of the cages is carried out manually.
04	03:30 PM to 04:30 PM	Tool Room Division	Mr. Chetan Prabhu	✓ The high-tech tool room is one of the states of the art facilities of Harsha Engineers Ltd. ✓ All the tools required for processing the material and manufacturing the cage are designed and manufactured here only. ✓ This makes the company self sustain for tooling and thus chances of the errors are almost negligible. ✓ In the tool room more than 8 high-tech CNC turning and milling centres 2 Wire cuts and 1 engraving machine are available. ✓ The standard room is also equipped with all the necessary and high-tech instruments for calibration of tools and other measuring equipment's like different gauges, micrometre, vernier etc ✓ Here, calibration is carried out of the measuring equipment's on a routine scheduled basis to eliminate the chances of measurement error of various process parameters of the all divisions.

Day-04: 29-05-2021

During 9:30 AM to 01: PM, preparations of presentations for 3-days interaction in terms of learning, understanding, best practices, and observations by the faculty members have been carried out.

In the afternoon session, sharing of learning, understanding, experience, and observation by the faculty members have been presented to the team of Harsha Engineers.

During the session, Shri. Rajendra Shah, Chairman, Harsha Engineers, Hon'ble Vice Chancellor Prof. (Dr.) Navin Sheth, GTU, Prof. (Dr.) S. D. Panchal, Director, GTU-GSET, Mr. Raajkumar Tarwani, HR Manager, Harsha Engineers, & Mr. Vipulbhai Kher, Associate HR , Harsha Engineers are remained presence.

Glimpse of the presentation by the faculty members

Objectives:

- To explore industrial working environment
- To develop relation and bridge the gap between University and Industry
- To initiate collaboration at both the ends
- To prepare the students as per the industrial demands

Best Practices at Harsha Engieers

- Healthy Industrial Environment for the employee
  - ✓ Discipline, Satisfaction, well-trained, dedication, ownership, confidence, high retention ratio
- Efficient Implementation of the TPM model & 5S Criteria
  - ✓ Improvement in productivity,
  - ✓ Optimization use of machinery, space, manpower, energy,
  - ✓ Reduction of rejection ratio, manufacturing cost, system breakdowns, wastes (food, water),
  - ✓ Identification of bottlenecks and having systems to solve the bottlenecks themselves,
  - ✓ Maintain high standards of quality & safety standards (ISO14001, IATF 16949, IRIS ISO 22163)
- Atmanirbhar Models
- Well-coordination among all the divisions
- Regular health-checkups and recreations activities

Observations by the Faculty Members

- The faculty members have identified various observations on various processes, instruments, equipments, techniques, and machineries as per their technical abilities and discussed the observations with possible solutions to the team of the Harsha Engineers.
- The observations by the faculty members have presented in the front of Shri. Rajubhai Shah, and his team for better understanding and learning.
- Shri.Rajubhai has explored various other aspects to be considered during the solution of the observations at Harsha Engineers.

Future Prospects from Harsha Engineers

- Possibilities of consultancy for industrial problem resolution
- Involvement of students and faculties in various practical base training in different divisions.
- Training on TPM Model, 5S criteria, and automations to the students, and faculty
- Collaborative certificate courses for students / faculties.
- Placement of students

At the end of the presentation, Shri. Rajendra Shah appreciated our efforts and discussed other aspects of the observations required in the industries.

Shri. Rajubhai Shah, Chairman, Harsha Engineers, Prof. (Dr.) Navin Sheth, Hon'ble Vice Chancellor, Prof. (Dr.) S. D. Panchal, Director, GTU-GSET, Mr. Raajkumar Tarwani, HR Manager, Harsha Engineers, & Mr. Vipulbhai Kher, Associate HR , Harsha Engineers with team of the faculty members of GTU

Open discussion by Shri. Rajubhai Shah, Prof. (Dr.) Navin Sheth, Prof. (Dr.) S. D. Panchal on roadmap for Industrial – Academic Interacation

Appreciation to Prof. Gautam D. Makwana

Appreciation to Prof. S. K. Hadia

Appreciation to Prof. Rutika Gharia

Appreciation to Prof. Soniya Jain

Appreciation to Dr. Hema Mehta

Prof. Piyush Miyani

Appreciation to Prof. Sumit Kumar

Appreciation to Dr. Utsav Gadhia