

# India-Japan Environmental Week

The Japan-India Technology Matchmaking Platform (JITMAP)

Seminar On....

## Introduction Of Energy Efficiency Improvement Through JITMAP Activities )



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ENGINEERS PVT LTD  
*The Master Blacksmiths!*

Trinity Engineers Pvt. Ltd., known as the Master Blacksmiths is a company engaged in the manufacture of forgings for the automotive and non – automotive applications, which has been in operation since 1973. Its manufacturing facilities are located at Chinchwad, Maharashtra, Pune 411 019 (India)

Trinity Engineers, exemplifies High Quality, Quest for Perfection and Innovative approach. Over last four decades, we have forged ahead to become a ONE-STOP SOLUTION PROVIDER, from forging and machined automotive components to production of sub-assemblies as required by the automotive industry.

Our clientele represent different sectors like Automobile, Power, Mining, Oil and Gas, and Constructions. For the future, we have plans to diversify into specialized product range to meet the forged parts requirements of the Petrochemical and Food processing industry among others.

## Trinity Engineers Participated In JITMAP Activities For Low Carbon Technology “Compressed Air System”

Japanese Experts visit was arranged in 2017-18 for assessment and improvement scope. A compressed air system study was done with IGES support, & Energy Measurement done, Leakage test for Pipeline and Hammer air.

Based on the assessment and suggestion by Japanese expert Saito San, Pipeline modifications were done, and hammer leakages were plugged. This resulted in energy savings of almost 20%. Further, in addition to this, we started replacing the Old AIR Pipeline which will definitely further improved the more Energy savings.

## Points given for Improvement By Japanese Expert in Visit 2017-2018:

1	Replacement of 3 compressors of 110kW or combined units of 110kW & 200kW with one inverter compressor of 280kW
2	Replacement all older compressors with new ones (Target: A1, A2, A3, A4, A5, A6, A7, and CP except for SULLAIR)
3	Taking measures against broken Screw rotor trouble (broken shaft)
4	Improving environment for compressor
5	Conducting inspection of receiver tank annually and checking thickness of the tank over 10 or more years old
6	Detecting the points causing air leakage and taking proper measures
7	Adopting an efficient multiple-unit panel
8	Adopting energy monitoring system
9	Savings Achieved by controlling air leakages and air guns

## Actions Taken on given points for Improvement By Japanese Expert in Visit:

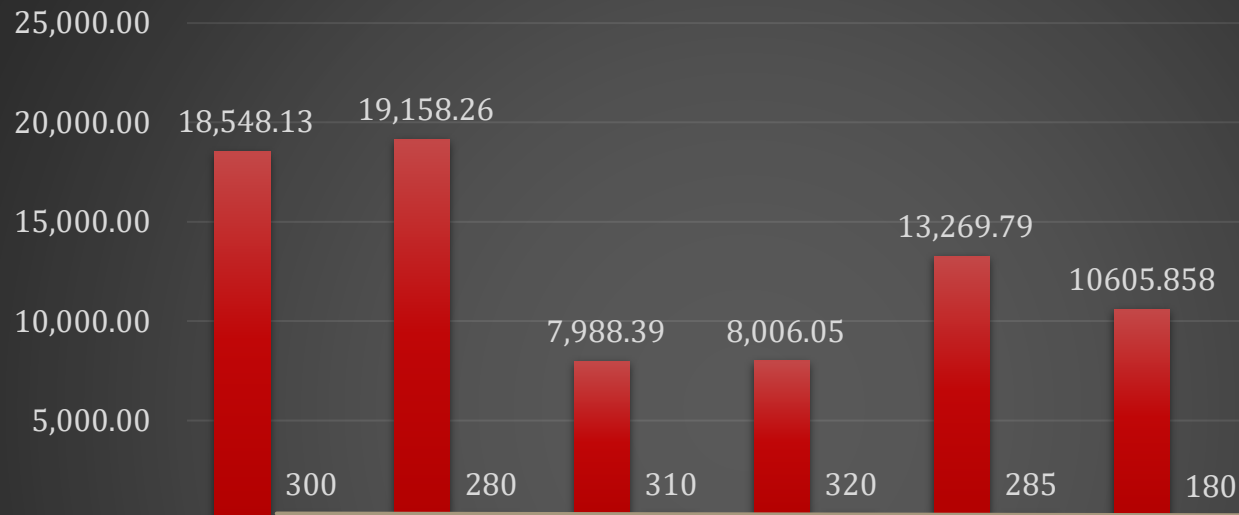
1	All Old Compressors are discarded Now, New 3 ATLAS Compressors of 160kW (1000 Cfm) purchased except Sullair 2 Compressor
2	Old system with 3408 CFM output with power of 679.5 kW is replaced with 3000 CFM with Power of 480kW
3	Separate 375 CFM with 55kW VFD based ATLAS Compressor is placed for Machine shop, which saved 30% Energy.
4	Compressor Shop is totally renewed with proper ventilation & all standard requirements guideline of Atlas Manufacturer. All points of Japanese Expert Improving environment for compressor is done.
5	Started Replacing all old leakage air pipelines with New Aluminum air Pipeline. With replacement 30% of total factory pipeline resulted in 5% Air savings. Expecting 30% Air savings with 100% replacement of Planned New Air Pipeline.
6	IOT based monitoring system is placed to monitor All Energy parameters of Compressors.
7	Pneumatic hammer sleeve leakage work is done, which reduced air leakage of almost 500 CFM- 90 kW equivalent





# Results We have achieved:

Energy Consumption Ratio in kWh/Tons



	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022 to till		
■ Yearly Production in Tons	18,548.13	19,158.26	7,988.39	8,006.05	13,269.79	10,605.858		
■ Ratio kWh/Tons	300	280	310	320	285	180		

■ Yearly Production in Tons    ■ Ratio kWh/Tons    — 線形 (Ratio kWh/Tons)



# Future Action Plan and Energy Savings Proposals

1. Separate Air Line for each shop with loop and pressure regulation from the main air compressor station to avoid air leakages.  
Savings of 109 kW – Rs. 70.6 lakhs/annum ( Pipe line investment cost Rs. 20 lakhs ) ,  
Payback period 4 months
2. Separate air line with 200 CFM air compressor for Machine shop – post forging during weekly off day – to avoid use of 1000 CFM ( 200 kW ) air compressor – Savings -156000 kWh , Rs. 14 lakhs/annum , investment Rs. 20 lakhs , Payback period 17 months
3. Installation of new 2 inverter air compressors of 160 kW each ( 1088 CFM each), Savings – 111 kW, Rs. 71.9 lakhs/annum, investment Rs. 100 lakhs, Payback period 16 months.
4. Air Guns and Air leakage at machine level hammer is controlled one by one presently

## Thanks to.....

Institute for Global Environmental Strategies (IGES)

The Energy and Resources Institute (TERI) of India

Ministry of Environment of Japan & India

- For Launching Japan-India Technology Matchmaking Platform (JITMAP) Framework.
- Providing Comprehensive Support For The Transfer Of Low-carbon Technologies From Japanese Companies To Indian Companies.
- Implementing Activities Which Aimed At Promoting The Transfer Of Japanese Low-carbon Technologies In The Indian Manufacturing Sector