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TATA HITACHI Construction Machinery Company Private Limited, DHARWAD

Presenter : Mr. Pradeep Repale
Designation: Assistant Divisional Manager

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Project Details

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Project title:

Resource Conservation Projects

- Implementation of reusable Silicon bushes instead of masking tape for masking bore and threaded portion
- Implementation of Electrostatic paint spray gun to improve paint transfer efficiency and reduce paint consumption

Details of the Projects:

- During painting of the components, functional area (electrical/ machined surfaces)to be protected from paint deposition for fastening provision. Earlier to prevent the painting in those functional areas, masking tapes were being used & same will be removed and segregated hazardous waste for disposal. In order to reduce or eliminate hazardous waste generation, masking by silicon bushes implemented and same reused after painting operation.

- To improve the transfer efficiency and reduce the paint wastage, existing air assisted airless painting guns had been converted into Electrostatic paint guns.

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Trigger For The Project

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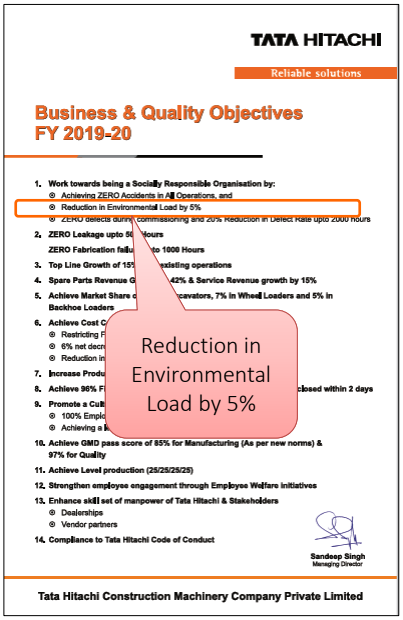
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Business & Quality Objectives FY 2019-20

1. Work towards being a Socially Responsible Organisation by:
   - Achieving ZERO Accidents in All Operations, and
   - Reduction in Environmental Load by 5%
   - ZERO defects during commissioning and 20% Reduction in Defect Rate upto 2000 hours
2. ZERO Leakage upto 5[illegible] hours
   ZERO Fabrication fail[illegible] to 1000 Hours
3. Top Line Growth of 15% [illegible] existing operations
4. Spare Parts Revenue G[illegible] 42% & Service Revenue growth by 15%
5. Achieve Market Share [illegible] cavators, 7% in Wheel Loaders and 5% in Backhoe Loaders
6. Achieve Cost C[illegible]
   - Restricting F[illegible]
   - 6% net decr[illegible]
   - Reduction in[illegible]
7. Increase Produ[illegible]
8. Achieve 96% F[illegible] closed within 2 days
9. Promote a Cul[illegible]
   - 100% Emplo[illegible]
   - Achieving a [illegible]
10. Achieve GMD pass score of 85% for Manufacturing (As per new norms) & 97% for Quality
11. Achieve Level production (25/25/25/25)
12. Strengthen employee engagement through Employee Welfare initiatives
13. Enhance skill set of manpower of Tata Hitachi & Stakeholders
    - Dealerships
    - Vendor partners
14. Compliance to Tata Hitachi Code of Conduct

Sandeep Singh
Managing Director

Tata Hitachi Construction Machinery Company Private Limited

Reduction in Environmental Load by 5%

To adhere THCM Business & quality objectives, our Sr. Management geared up the young Dharwad team for reduction in paint wastages & to conserve the natural resources by kaizens, workplace improvements.

Silicon is paint repellant & can sustain higher temperature up to 200 ° C. These properties of silicon used in silicone bushes development. Silicon bushes can be reused till self destruction while masking tapes can not be used more than single use.

In case of air assisted airless guns, transfer efficiency of paint sprayed is 45% only & remaining 55% is totally wastage which further results in hazardous waste generation in terms of paint sludge. Electrostatic painting gun has transfer efficiency of 60% which reduces the paint wastage by 15%. Consecutively paint sludge generation reduced.

- Date of commencement : April 2019
- Date of completion of project : April 2020

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Challenges Faced And Counter measures

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Challenges faced	Counter measures
Existing paint is not compatible with Electrostatic spray gun application	• Paints are modified to make compatible with electrostatic gun by adjusting paint resistivity from paint supplier • Required short term & long term test conducted as per TATA HITACHI standards
Painters not familiar with application techniques	• On the job training carried out along with paint & electrostatic gun supplier
Manufacturing of customized silicon bush	• Silicon bush drawings designed based on requirement
Cleaning / reuse of bush	• Bush cleaning station provided • 3T management followed to avoid wastages & tracking

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Tangible Benefits

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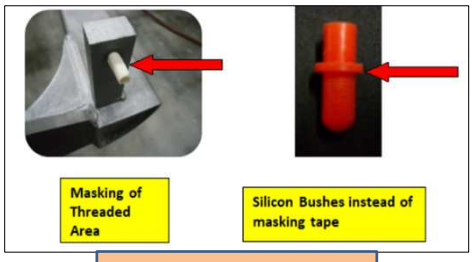
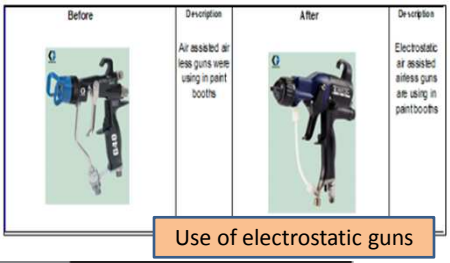
- ✓ Eliminated the hazardous waste generation by 5kg/day
- ✓ Masking time reduction by 47 minutes per machine
- ✓ Primer paint reduction by 25%
- ✓ Topcoat paint reduction 30%
- ✓ Achieved cost saving of 5 MN INR per annum by implementing these project



Use of silicon bush



Use of electrostatic guns

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Intangible Benefits

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- ✓ Reduction in material consumption (Masking tape & Paint)
- ✓ Environmental pollution reduction
- ✓ Reduces volume of waste collection, segregation, disposal and treatment
- ✓ Reduced operator fatigue
- ✓ Operator morale increase
- ✓ Reduction in paint spray fumes
- ✓ VOC reduction

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Replication Potential of Project within sector

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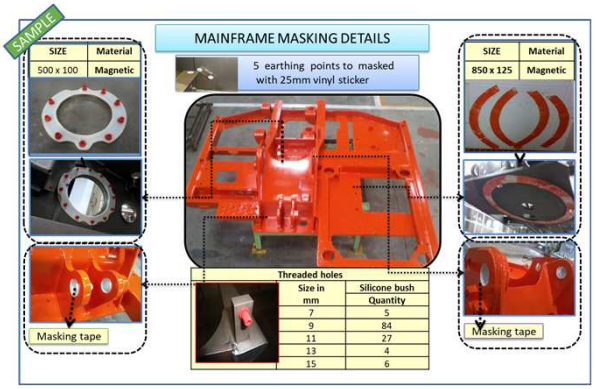

- Standardized the silicon bush masking and implemented in other paint shops of THCM
- Painting sequence standardized for electrostatic painting & implemented at THCM KGP plant

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Benchmarks/Standards

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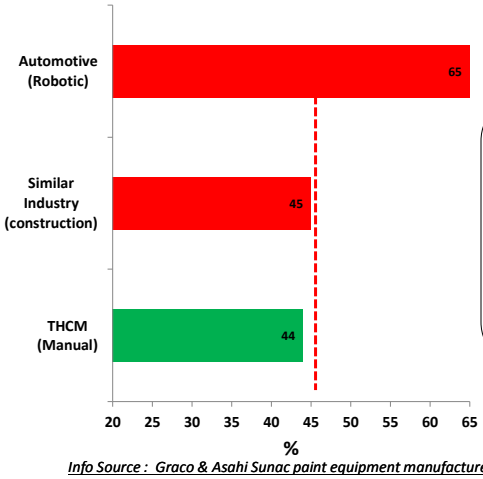
Industrial standards for Paint Yield



Info Source : Graco & Asahi Sunac paint equipment manufacturer

The losses as per the industry standard is based on the following;

a. Considering the type & shape of components
b. Efficiency of the painting system
c. Finish requirement
d. Production cycle time etc.

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Priority plans

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Sl.no	Projects	Target
1	Use of high solids paint to reduce paint consumption	21-22
2	Thinner intake reduction for liquid paints	21-22
3	Mono coat paint implementation to eliminate primer painting on C class parts	21-22

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Major learnings from the project implementation

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	Category	Strength	Weakness	Opportunity	Threat
P	Choice of Theme	Capacity to take up the Challenge	Number of meetings	Effective Way of Communication	-
	Initial Background				
	Goal Setting				
	Activity Planning				
D	Analysis of Issue	Knowledge of QC tools	Time Span : 3 Months	Improving Upon the Efficiency	Splitting Up of the Team
	Action and Reaction				
C	Verification And Validation	Effeciveness of QC Tools	-	Implementation of QC Tools	-
A	Standardization and Horizontal Deployment	Summarization through 5W 1H	Dedicated Time for Meetings	Pro Active approach	Consequential Hurdles during Horizontal Deployment

Team's Capacity to take up challenge

Opportunities for Increasing the Operation Efficiency

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Environmental Performance Evaluation (EPE)

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1. **Management performance indicator (MPI) of the plant**– environmental performance indicator that provides information about the management efforts to influence an organization's environmental performance.

Parameter	2018-19	2019-20	2020-21
Power usage KWh / Mc	1440	1526	1415
Haz waste generated kgs/ mc	4.63	4.24	3.93

2. Operational performance indicator (OPI) - environmental performance indicator that provides information about the environmental performance of the project submitted.

Parameter	2018-19	2019-20	2020-21
Water consumed	6.25 KL/ Mc	7.74 KL/Mc	7.23 KL /Mc
Waste water generated	51.61 KLD	40.92KLD	40.77 KLD
Tco2/Machine	1.32	1.21	1.18
VOC	1179.65	984.92	982.54

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Thank you

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