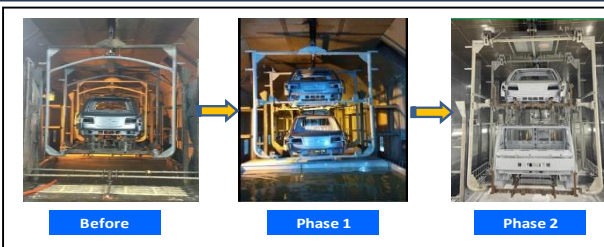


IAQ QUALITY SUSTAINABILITY AWARD 2022 - ONE-PAGE SUMMARY

The One-Page Summary should be filled in and submitted as Appendix 1 to your Application. It will also be published on the IAQ Quality Sustainability Award Homepage; <http://iaqaward.com>. The length of this document must not exceed 1 page.

Project and contact details		
The name of the quality sustainability project (max. 100 characters) T2S : Transformation to Sustainability through Carbon emission reduction (Scope-1) in Paint shop		
Contact Person P M Saravanan	Telephone +91- 9176602226	Email Saravanan.PM@ashokleyland.com
Organisation(s), country, where the project-members are working, including Web-page links Ashok Leyland Ltd. (India), https://ashokleyland.com		
Project description		
Essence of the project and Problem statement: "This generation is the first to feel the impact of climate change, and the last that can do anything about it." ... Mr. Barack Obama, Former president of United States of America.		
<p>In Automotive industry, Paint shop is the most carbon-intensive production process due to the huge amount of heat involved. This project details about reducing carbon emission at cabin Paintshop. Carbon emission has adverse impact on environment leading to global warming and climate change. This project is an example towards reducing carbon emission (Scope 1). Project baseline: 951.9 g/sq.m; Target: 666.3 g/sq.m (30% reduction) Methodology: Six Sigma DMAIC methodology is used to systematically solve the problem. Analysis & Steps taken: Team consulted domain experts, chemical & paint R&D experts, studied technical literatures and analysed historical data for finding out the causes for high carbon emission and analysed through Cause & Effect diagram. By investigating each of these causes with appropriate statistical tools we concluded that, (1) Under utilised painting process (processing of Less surface area per round (2) Usage of Low calorific value Fuel and (3) Variation in Effective metal temperature within cabin Roof & underbody inside oven are the root causes of higher fuel consumption. We have done game changing improvement of processing twin cabins in a hanger in pretreatment and electrodeposition process, first of its kind in the world. This has improved the process utilisation by ~100%. Also we adopted lower carbon alternatives by fuel change over from diesel to propane. To reduce the variation in metal temperature in oven we have gone for smart oven concept where air circulation is given from bottom of the oven to heat the cabin inside out and have uniform heating of cabin – first of its kind.</p>		
Results achieved:		
<ol style="list-style-type: none"> Carbon emission reduced from 951.9 g/sq.m to 636.4 g/sq.m (33% reduction) which is amounting to ~1500 MT annually. Effluent generation reduction by 26000 KL/annum 		
Relevance to UN Sustainability Goals:		
<ol style="list-style-type: none"> Indicator 6.4.1: Change in water use efficiency: Water consumption and effluent generation reduced by ~26000 KL annually. Indicator 9.4.1: CO2 emission per unit of value added. Carbon emission reduced by ~1500 MT annually. Indicator 12.4.2: Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment. Effluent generation per cabin from 974 to 640 liter per cab (34% reduction). CO2 emission reduced by ~1500 MT/annum. Indicator 12.2.2: Domestic material consumption per capita, and domestic material consumption per GDP. Effluent generation reduced by ~26000 KL annually. Fuel consumption reduced by ~500 MT annually. Indicator 6.4.1: Change in water use efficiency. Water consumption and effluent generation reduced by ~26000 KL annually. 		
Project Start & Completion date: The project started on 05-Apr-2019 and completed by 30-Sep-2021.		
Quality methods and tools used: Design of experiments (DOE), Simple Linear Regression, Fitted line, Measurement System Analysis (MSA) – GR&R method, Process capability study, Cause and Effect diagram, Histogram & Variable Control charts.		
Project leverage potential	Picture/Image describing the project	
This project could be replicated with minimal investment in other organizations globally wherever pre-treatment and electrodeposition coating and liquid painting happens. Scope includes, All Auto OEMs, Consumer Durable companies, Home Appliance businesses, Packaging industry, Construction industry etc.	 <p>The image shows a three-stage process of car body painting. The first image, labeled 'Before', shows a car body in a paint shop. The second image, labeled 'Phase 1', shows the car body with a blue coating. The third image, labeled 'Phase 2', shows the car body with a white coating. Arrows indicate the progression from 'Before' to 'Phase 1' and then to 'Phase 2'.</p>	