VAMS Mechatronica Private Limited

Making Indian Industry Future Ready

Anand Shekhar

VAMS MECHATRONICA PRIVATE LIMITED

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Agenda

- Overview
- Vision and Mission
- What is Industry 4.0
- Our Expertise
- Experiences
- Project Outcomes & Key Results
- System Architecture, Team & Our Clients

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Overview

VAMS Mechatronica Private Limited, Founded in 2021, is a dynamic and innovative company specializing in delivering cutting-edge solutions in the fields of **mechatronics, automation, and industrial engineering**.

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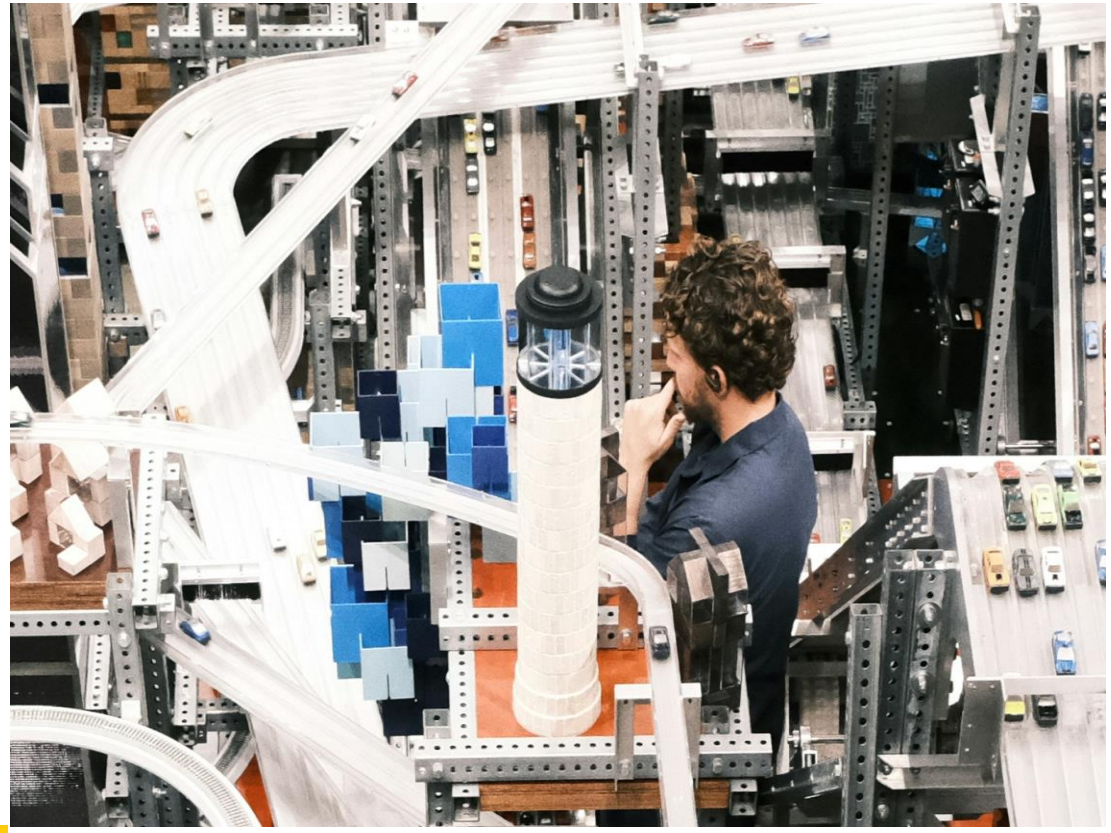
Vision and Mission



At **VAMS Mechatronica Private Limited**, our mission is to **drive innovation at the intersection of mechanics, electronics, and intelligence**. We are committed to delivering high-quality, reliable, and cost-effective mechatronic solutions that empower industries to achieve operational excellence and digital transformation.

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Core Values

At **VAMS Mechatronica Private Limited**, our core values are the foundation of our identity and drive every aspect of our work. We believe in **innovation** as a catalyst for progress, constantly exploring new technologies to deliver smart, efficient, and future-ready solutions. Our commitment to **quality and precision** ensures that every product and service we offer meets the highest standards of engineering excellence.

Industry 4.0


PLANNED
01:29:18
DOWNTIME
SETUP
01:29:18
RUNNING
01:29:18
SHIFT
JOB
OUT
STARTS

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What Is Industry 4.0?

Industry 4.0 represents the fourth industrial revolution characterized by the integration of Internet of Things (IoT), artificial intelligence (AI), and big data into manufacturing processes. This evolution enables smarter factories that enhance operational efficiency and reduce downtime.

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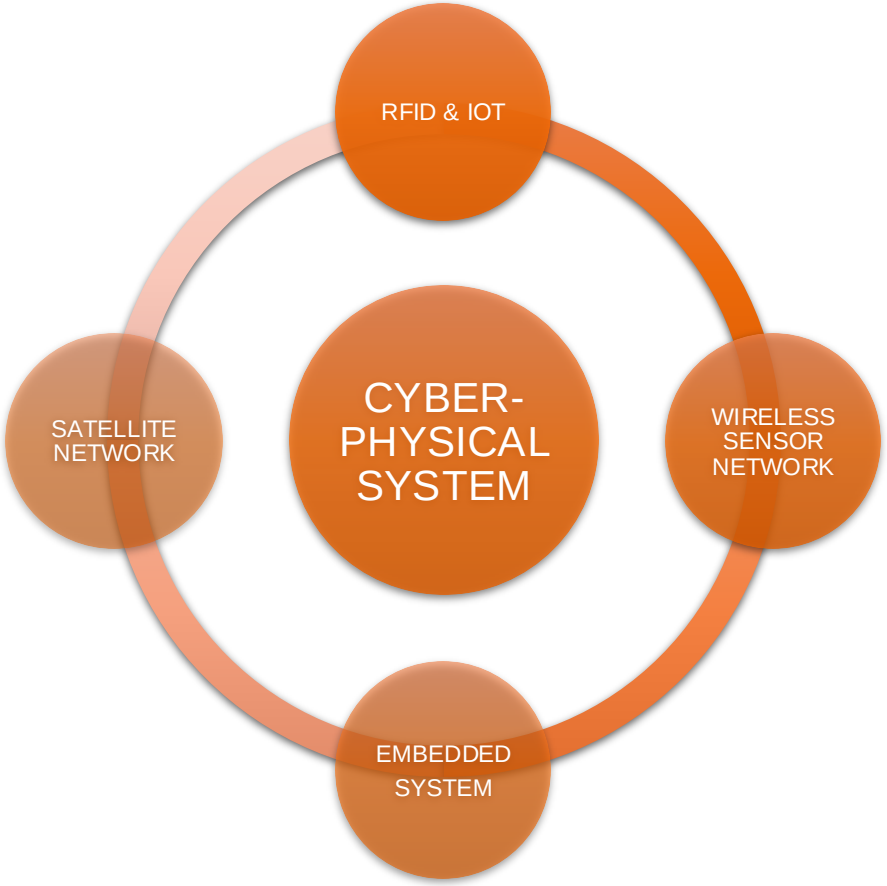
Significance of Cyber-Physical Systems



Cyber-Physical Systems (CPS) are integral to Industry 4.0, linking physical machinery with digital systems. They facilitate real-time analysis and control, leading to improved automation, monitoring, and optimization of manufacturing processes.

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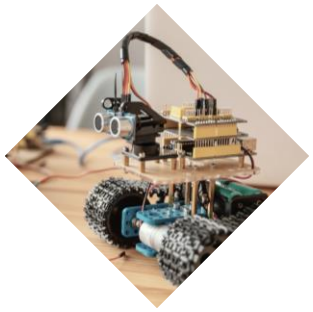
Overview – Areas of Specialization

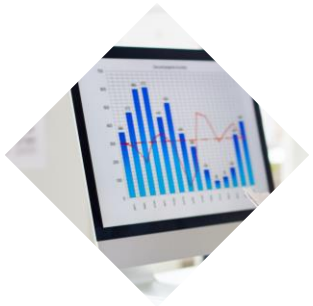
Industry 4.0 Solutions

Design and deployment of automated systems to enhance efficiency, precision, and productivity.



Inventory Management

Tailor-made systems and components for specific client applications across diverse sectors.



Monitoring & Reporting Systems

Real-time monitoring tools with data analytics and performance dashboards.

Predictive Maintenance

Condition-based maintenance using IoT and data analytics to prevent failures.

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Our Experience

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MCF - Raebareli

The Modern Coach Factory (MCF) in Raebareli, Uttar Pradesh, is a premier rail coach manufacturing unit under Indian Railways. Established in 2012 in Lalganj near Raebareli, it stands as one of the most advanced coach production facilities in the country.

We collaborated with IIT Kanpur at MCF to verify the feasibility of implementation of Industry 4.0 and generate job schedule using AI.

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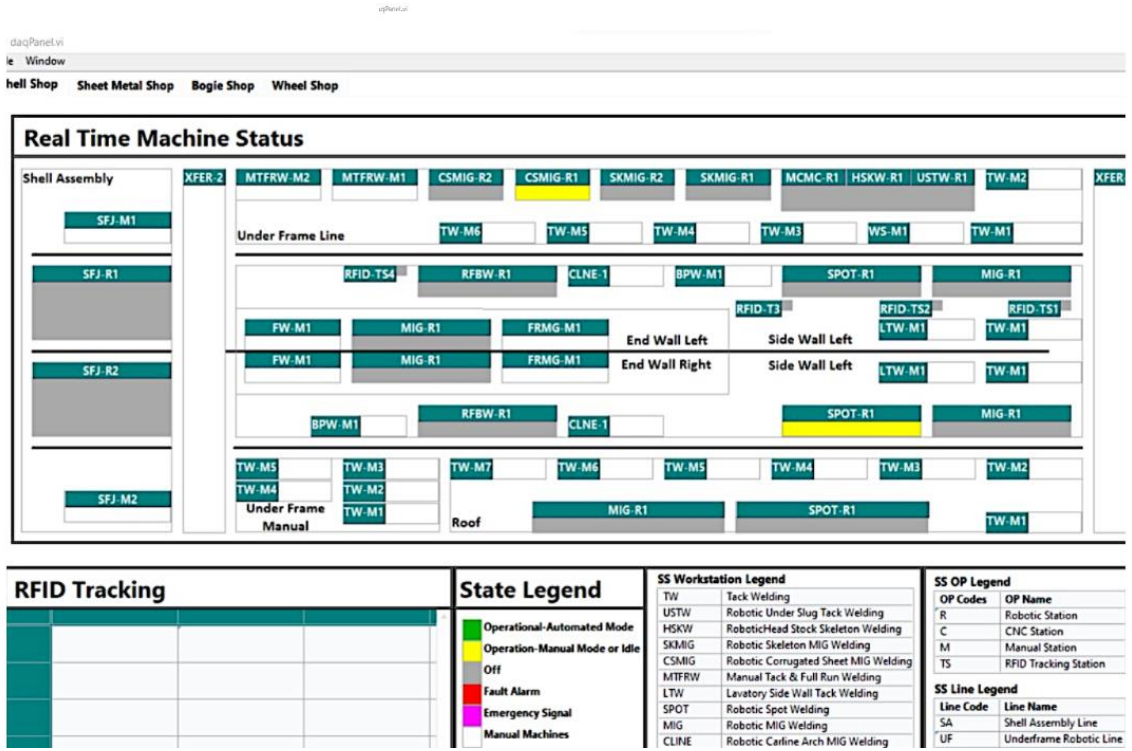
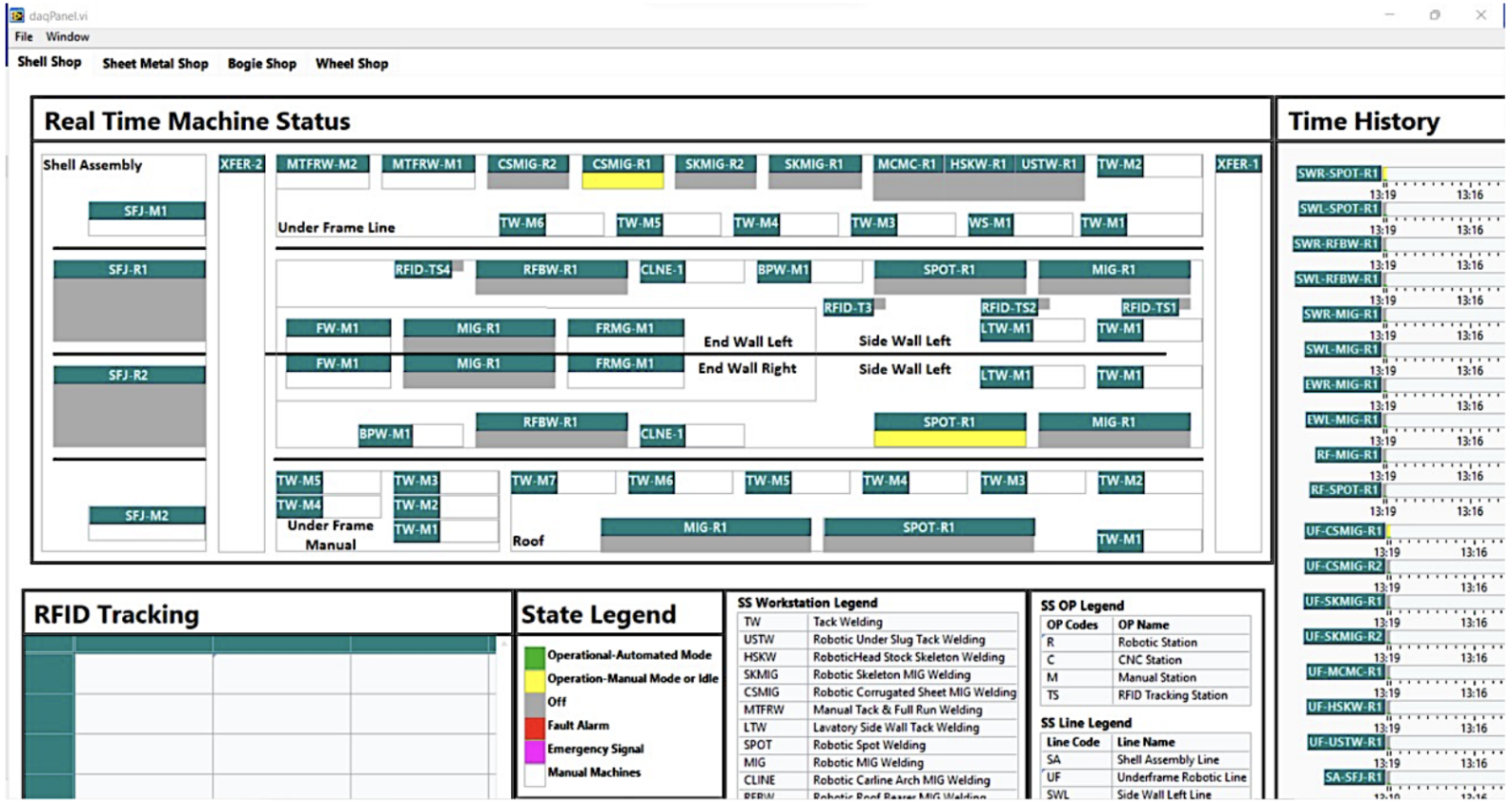
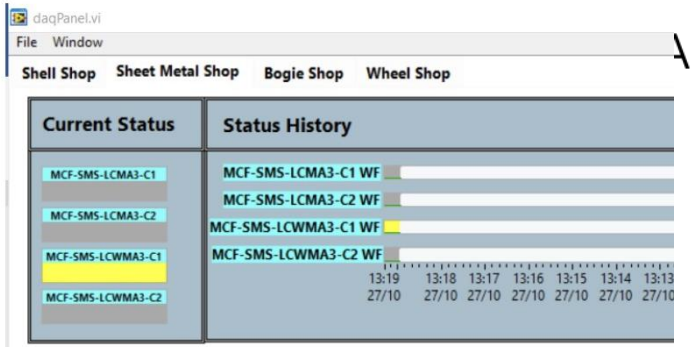
MCF - Raebareli

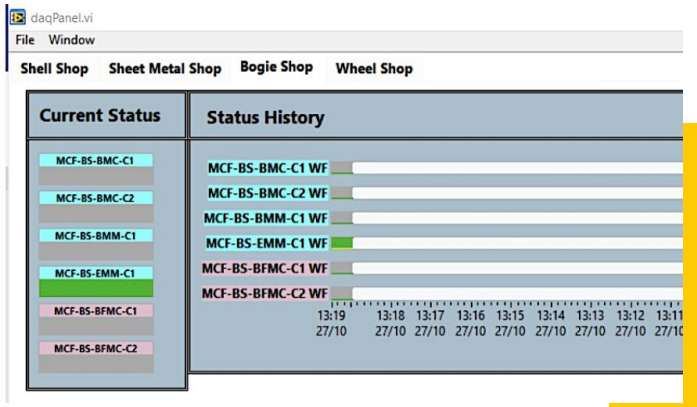
Here, We have delivered a Real-Time Monitoring software for windows machine (Fig. 1). This software was based on LabView from National Instruments, which is a license based software.

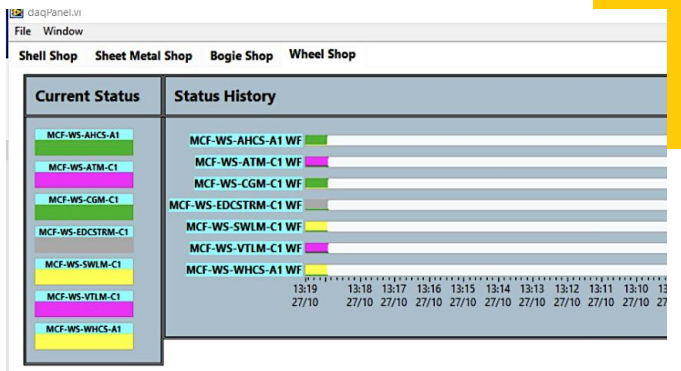


MCF – Real Time Monitoring Dashboard

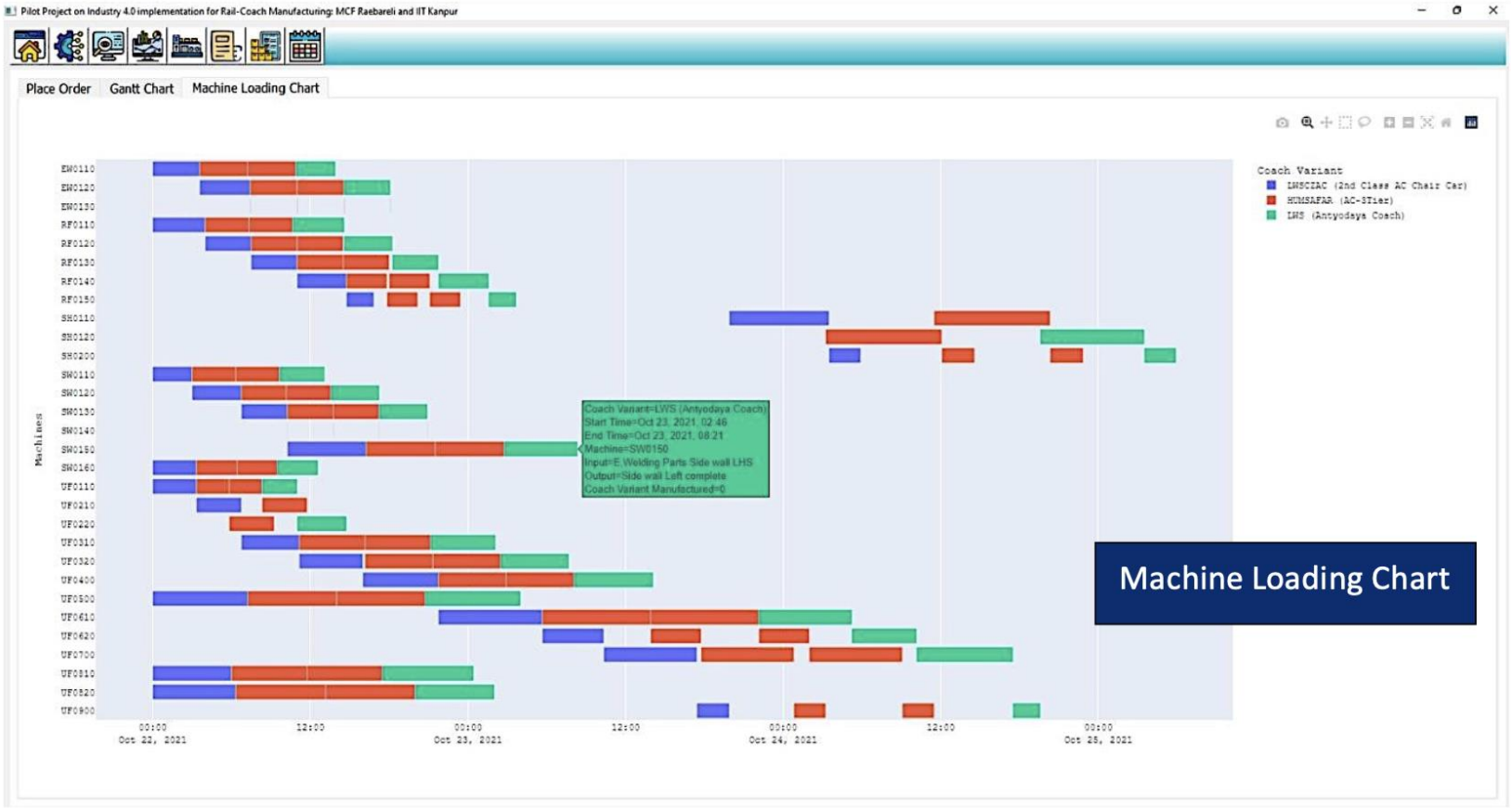


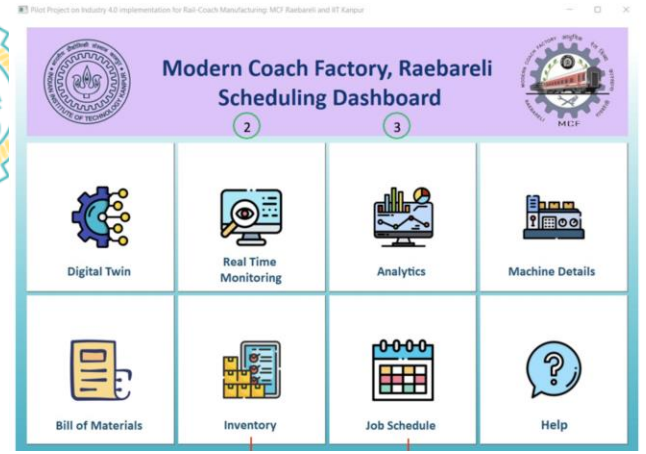


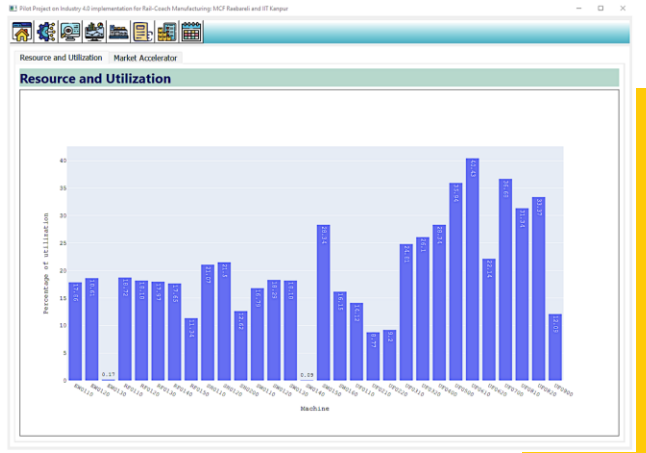


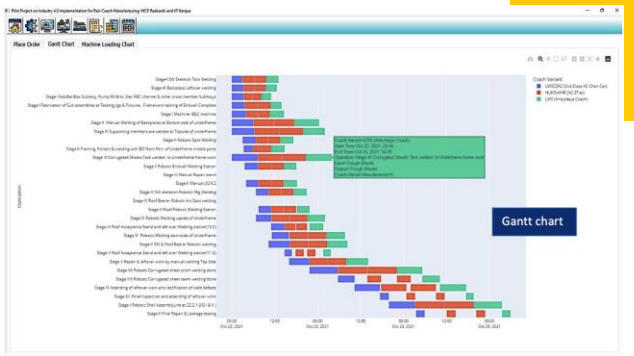


MCF – Job Scheduling Dashboard









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OFC - Kanpur

Ordnance Factory Kanpur is one of India's oldest defense manufacturing units, producing arms, ammunition, and equipment for the armed forces, supporting national defense since the British era.

We have been given Gun Shop (GS) I & II for implementation of Industry 4.0 Software for monitoring of 12 Siemens Controlled (Sinumerik 828D) Jyoti CNCs.

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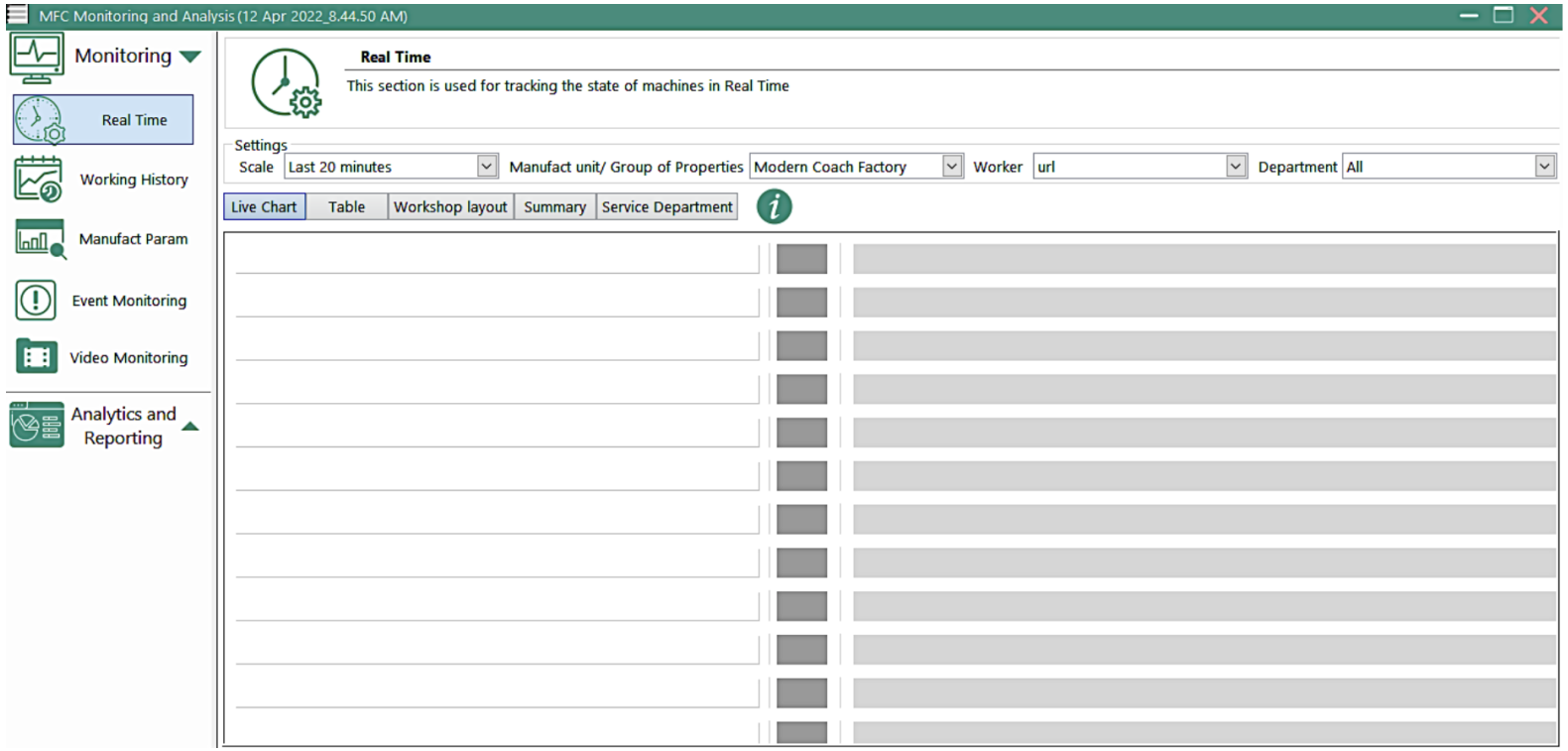
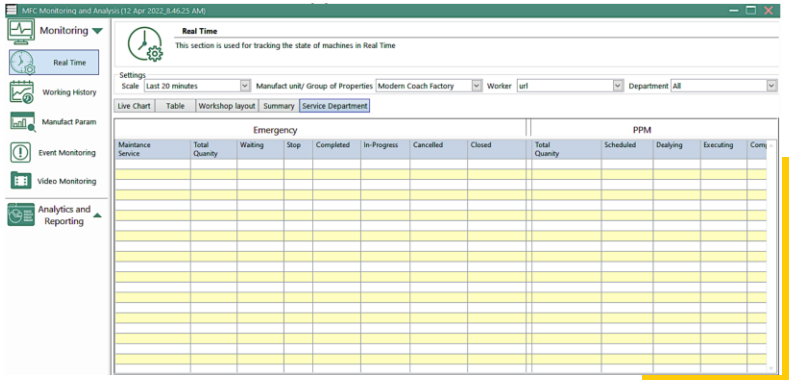
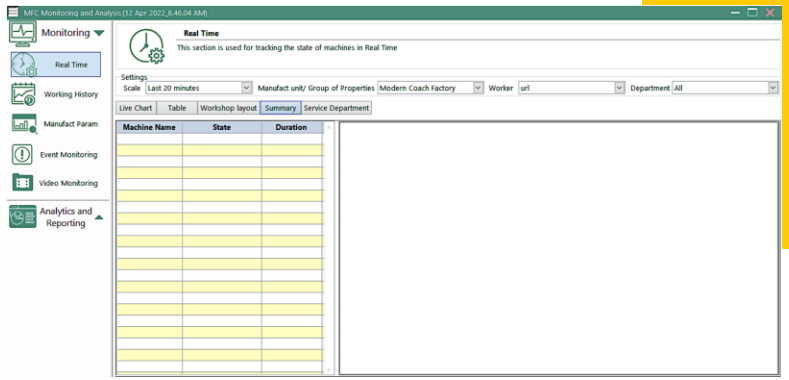
OFC – Real Time Monitoring Dashboard







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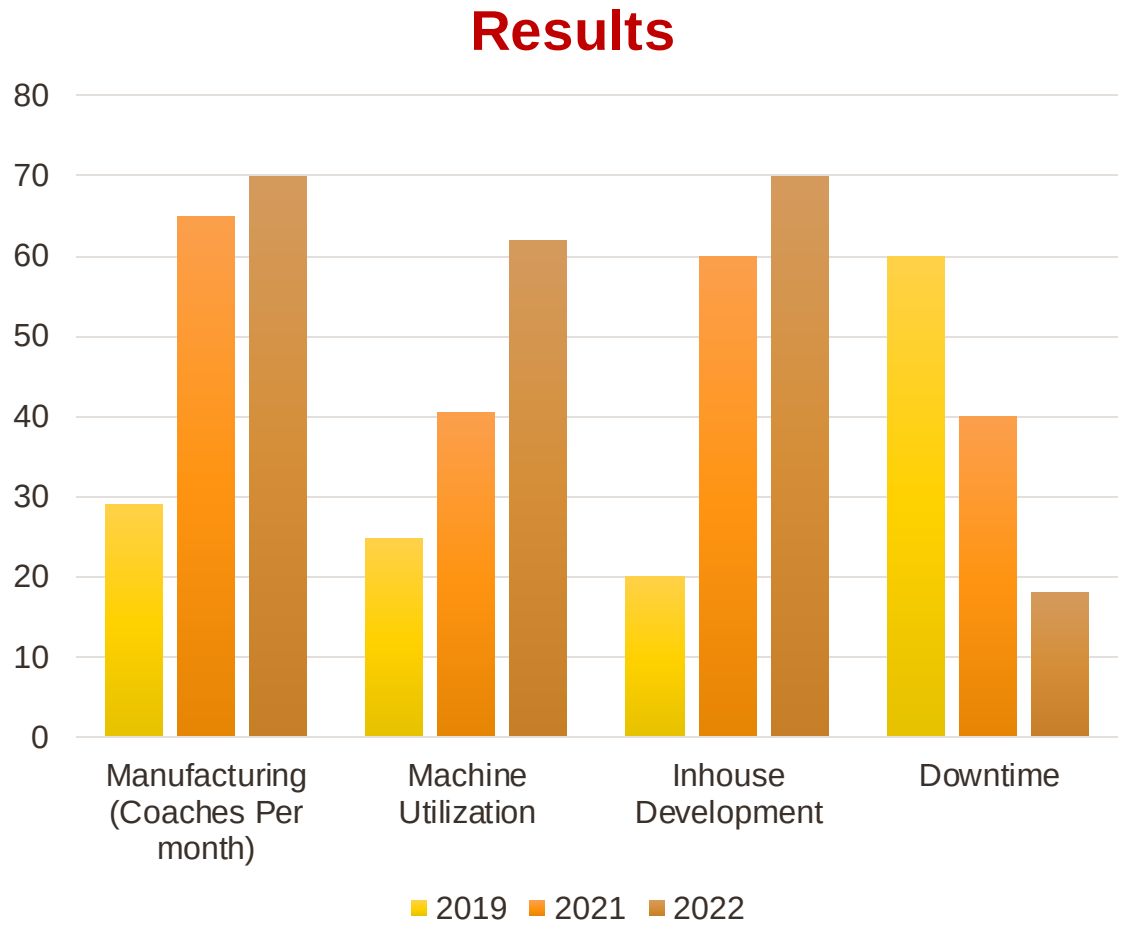
Project Outcomes & Key Results - MCF

Following were the outcomes of implementation of Industry 4.0 application.

- 60% increase in Inhouse manufacturing of rail coaches per month.
- 59.67% increase in machine utilization
- 70% decrease in machine downtime/breakdown



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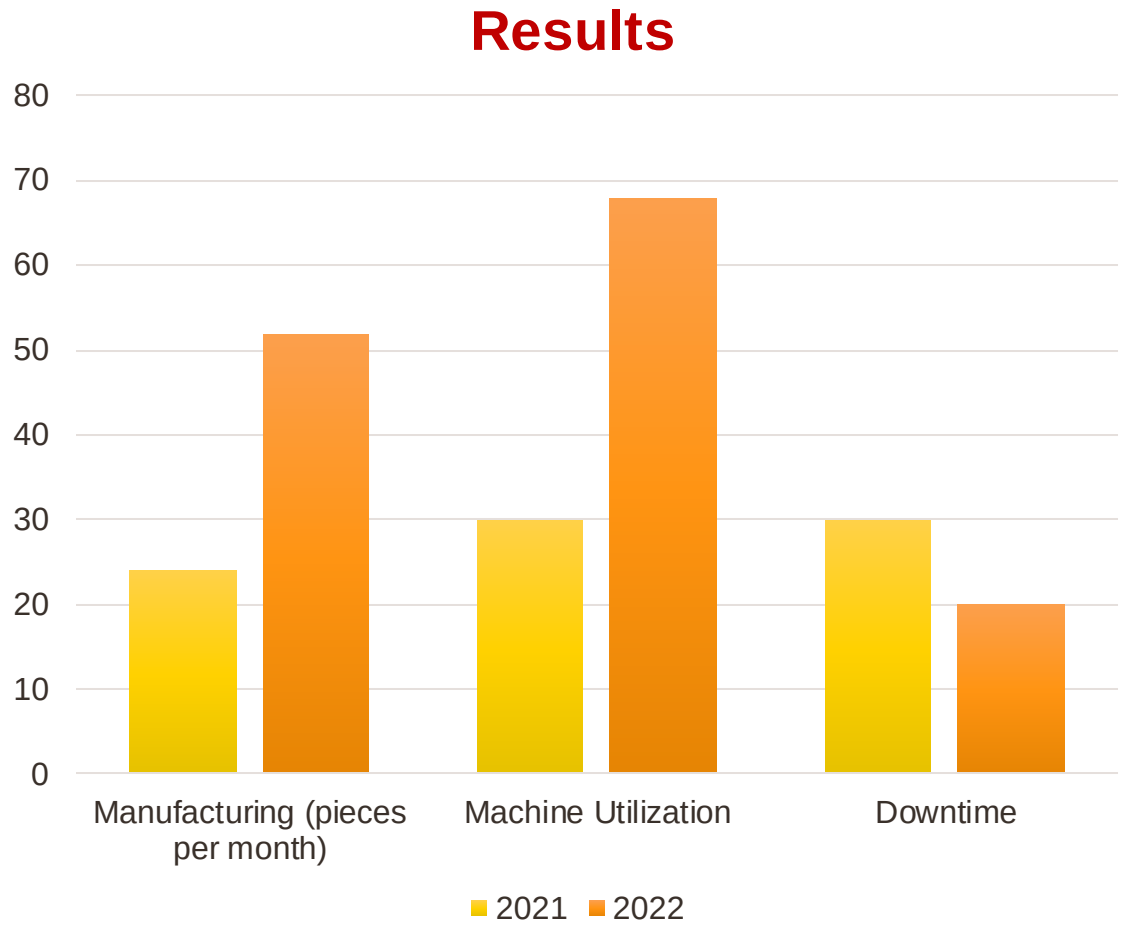
Project Outcomes & Key Results - OFC

Following were the outcomes of implementation of Industry 4.0 application.

- 53.84% increase in Inhouse manufacturing of barrels per month.
- 55.88% increase in machine utilization
- 33% decrease in machine downtime/breakdown



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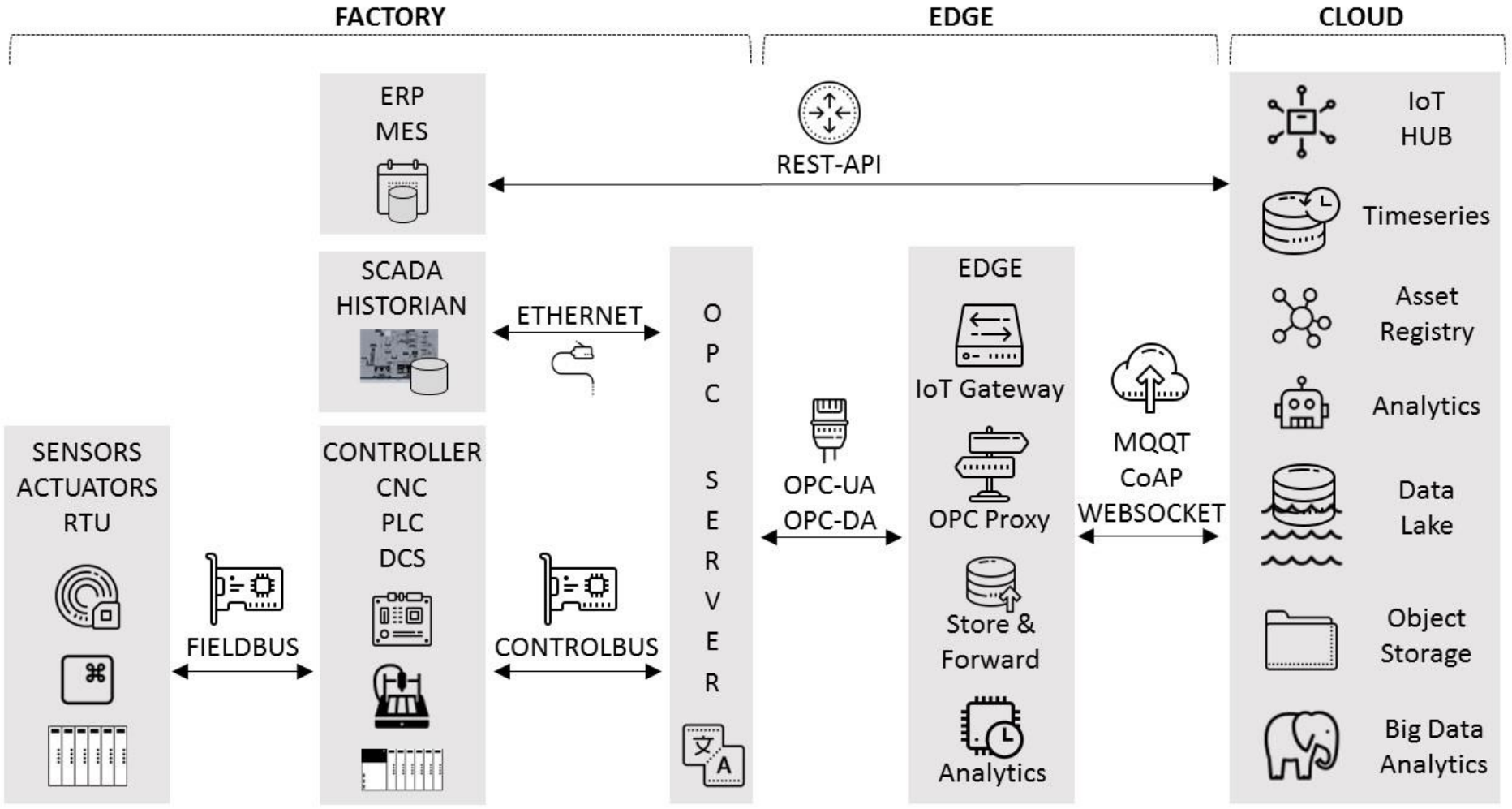
System Architecture



Industrial IoT Platform

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ERP

MES

IOT/SCADA

Local Systems /Excel Based

Production Planning

Equipment Management

Quality Management

Mass & Energy Balance

Optimization ML-models

Predictive ML-models

Computer Vision Solutions

Development & Integration Tools

Data Collection and Storage Services

Data Processing & Analytics Services

Configuration & Maintenance Services

ML-models Development & Maintenance Services

IaaS and PaaS Services

DIGITAL PLATFORM PROMONITOR INDUSTRIAL INTERNET OF THINGS PLATFORM

DATA SOURCES

Platform Technology Stack:

- Internet of Things
- Machine Learning
- Big Data/Advance Analytics
- Elastic Cloud Computing
- Edge
- OPCUA

Controllers & Their Versions

Controller Name	Controller Model	Version	Connection Via
Siemens	Simatic S7-1500	V2.5	OPCUA
Siemens	Simatic S7-1200	V2.5	OPCUA
Siemens	Simatic S7-300	V2.5	TCP/IP
HeidenHain	TNC 640	34059x-11	OPCUA
HeidenHain	TNC 620	81760x-08	OPCUA
HeidenHain	TNC 7	81762x-17	OPCUA
Fanuc	Oi-Model F Plus		OPCUA via MT-LINKi
Fanuc	30*i*/31*i*/32*i*-Model B Plus		OPCUA via MT-LINKi
Mitsubishi	MELSEC iQ-R		OPCUA

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Team Members

CS Yadav
CEO, VAMS Mechatronica
35+ years experience in manufacturing & automotive Industry.

Anand Shekhar
CTO, VAMS Mechatronica
6+ years experience in Industry 4.0.

Vandana Prakash
CFO, VAMS Mechatronica
6+ years experience in Industry 4.0

Abhishek Yadav
COO, VAMS Mechatronica
5+ years experience in AI, ML, DL & Analytics

Discussion Notes recorded during the Co-ordination Meeting held on 15.12.2021 at RDSO regarding the project 'Implementation of Industry 4.0'

(Ref: RB letter No. 2019/E&R/7(17) /1 Pt. dated 09.12.2021)

Participants:

Shri Sanjiv Bhutani, DG /RDSO
Prof. N.S.Vyas, IIT-Kanpur
Shri S.K. Katiyar, CPE/MCF
Shri Amit Srivastava, ED/Research/RDSO
Shri S.S.Kero, CWE/ Shell /MCF
Shri Sanjeev Garg, Dir/Res/Mech/RDSO
Shri Sumit Kumar SSE/M&P/MCF
Shri Shailesh Pandey Project Engineer, IIT-Kanpur
Shri Anand Shekhar Project Engineer, IIT-Kanpur
Shri Mayur Rathore Project Engineer, IIT-Kanpur
Ms. Vandana Prakash Project Engineer, IIT-Kanpur

The co-ordination meeting was organized at RDSO in compliance to the directives given during the review meeting of Industry 4.0 project of TMIR held on 23.11.2021 to decide further course of action regarding project on 'Implementation of Industry4.0' at MCF/RBL. During the meeting

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Our Clients

STERISON TECHNOLOGY PVT. LTD.

HAVELLS

BCG

MARUTI SUZUKI

Hindustan Shipyard Limited

(The First ISO-9001 Ship Building Company in the Country)

A Govt. of India Undertaking-Ministry of Defence

CIN: U74899AP1952GOI076711, GST no. 37AAACH4275P1Z2, PAN no.AAACH4275P

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We in Media

INDIA SMART MANUFACTURING MARKET SIZE & ANALYSIS - FORECASTS TO 2029

Q&A Session

Thank You!