



Airports



Energy



Transportation



Urban Infra



Services



Foundation

[www.gmrgroup.in](http://www.gmrgroup.in)

## **“DIGITALIZING OPERATIONS”**

### **BEST PRACTICES IN GWEL THERMAL POWER PLANT FOR LOGBOOK MANAGEMENT**

Diska Prudhvi,  
Manager – Operation,  
GMR Warora Energy Ltd.

*Indian Power Stations – International O&M Conference-2024  
O&M Practices for Safe, Reliable & Cost-effective Power Generation.*

# GWEL At a Glance - Group's Vision, Values & Mission



## Vision

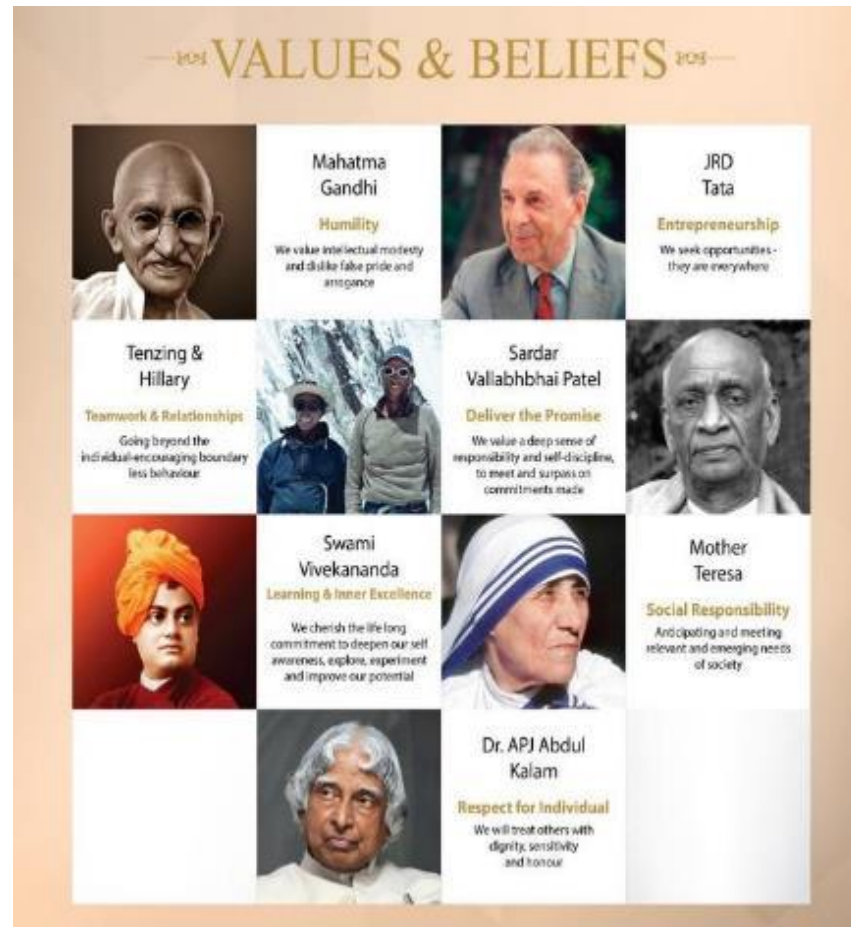
*“GMR Group will be an institution in perpetuity that will build entrepreneurial organization making a difference to society through creation of value.”*

## Mission

GMR Energy wants to be the most profitable and one of the leading Integrated Energy Companies in India and derive value by

- Diversifying strategically across Energy value chain
- Being a preferred employer
- Being socially responsible”

Humility | Entrepreneurship | Teamwork & Respect for Individual | Deliver the Promise | Learning & Inner Excellence | Social Responsibility |



In line with Group's Vision & Mission,

GWEL strives to create a difference to society through creation of Value by Institution Building



# Institution Building through System Approach

## The GWEL Journey Towards Excellence

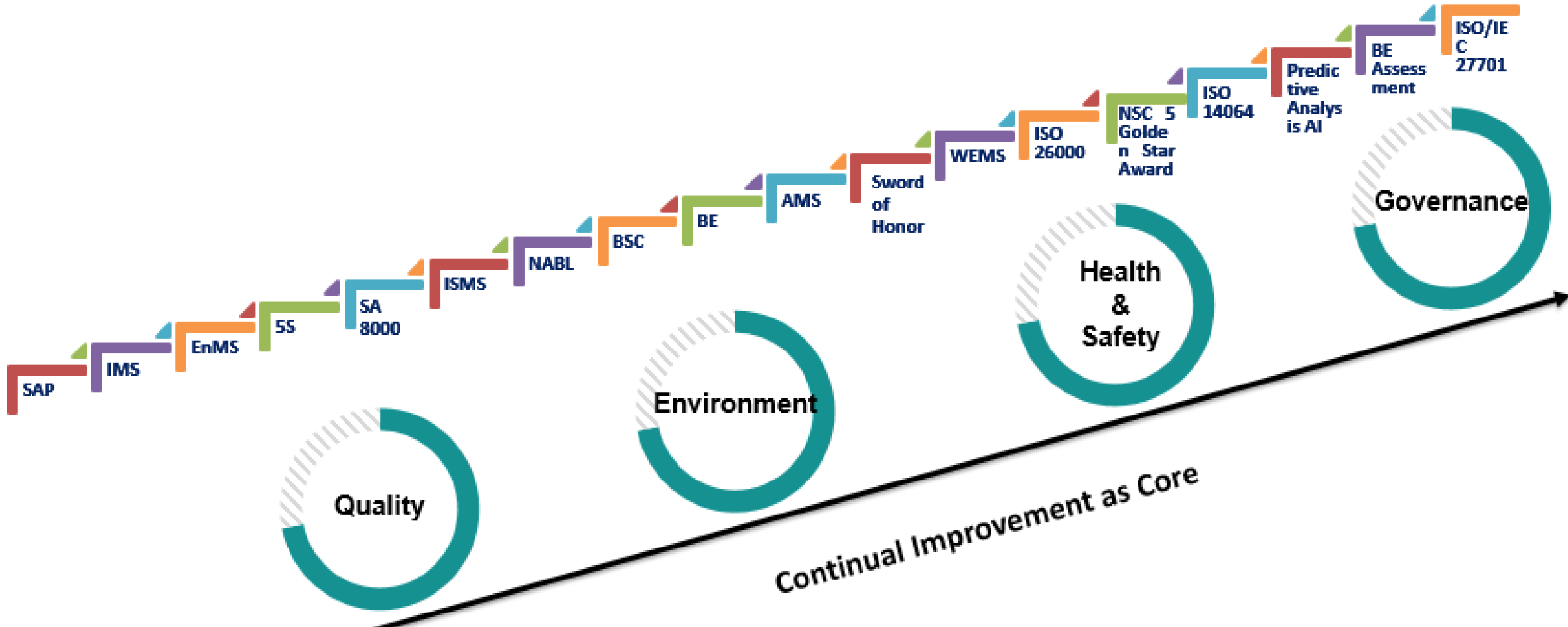


2013-15

2016-18

2019-22

2023-25



# Team Constitution

Mr. Ibrahim Shaikh  
Head - Operations & Chemistry

Author



Mr. Nitin Chandrashekhar Hajbe  
AGM – Operation

Co author



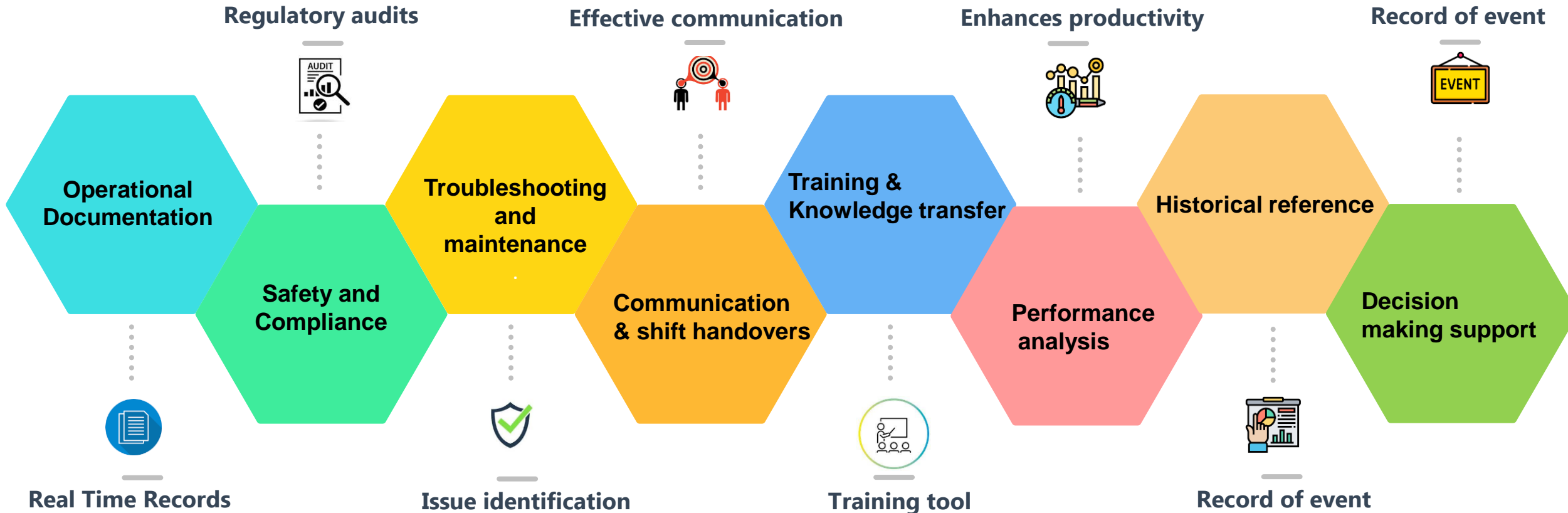
Mr. Prudhvi Diska  
Manager - Operation

Co author



GMR Warora Energy Ltd (GWEL) is a 2×300MW Coal based Thermal Power Plant at Warora in Maharashtra. In GWEL Main plant desk and field operator, BOP area Logbooks maintained for ensuring the safety, efficient and reliable operation of power plant. Here are key aspects highlighting the importance of these logbooks.

## Brief of logbooks



## GWEL have faced following challenges with Traditional logbooks

### Data Accuracy

Traditional logbooks often suffer from poor handwritings, leading to issues with data accuracy, errors in handwritten logs can result in misinterpretation and mistakes in decision – making processes.

### Data Retrieval Time

Searching for specific information in a traditional logbook can be time consuming

### Limited Accessibility

Traditional logbooks are physical documents, in emergency situations or when quick responses are required, having logbooks only available on-site can impede timely decision –making.

### Security & Data Integrity

Handwritten logs are susceptible to physical damage, loss or unauthorized access.

### Integration with Other Systems

Challenging to streamline workflows and share relevant data across different platform.

### Compliance & Auditing

Ensuring compliance with industry regulations and standards can be challenging with traditional logbooks

# Digitalization Of Control Room Logbooks

To overcome challenges, The GWEL operation team planned to transition from traditional logbooks to digital logbook in 2 phases.

## PHASE-1 JOURNEY (Control Room Logbooks)

In the first phase, We focuses on digitalizing the main plant desk operation, unit controller, and shift in charge logbooks. For digitizing we collaborated with a third-party software development team.

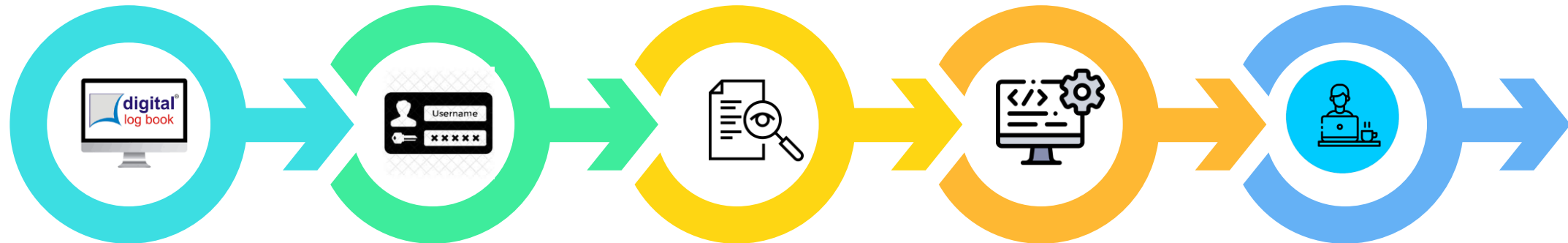
**Customized Digital Logbooks**

**Assigned Login IDs**

**Logbook Review & communication**

**Improved Accessibility**

**Training and Integration**



**In Phase-1 Total 13 Main plant area log books are digitalized and individual operator logins are provided**







# Phase-1 Journey (Control Room Logbooks)

## Assigned individual Login IDs

Assigning individual login IDs for Logbook filling offers several advantages like accountability and traceability and data integrity

❖ **Individual login IDs Provided with specific access levels based on Job roles and responsibilities.**

User Login - Jupiter Systems Gateway

User Name : 12940-SCE

Password : ●●●●●

Shift : A

OK Cancel

User Login - Jupiter Systems Gateway

User Name : 26207-UCE

Password : ●●●●●

Shift : A

OK Cancel

❖ **Each team member has a unique identifier, allowing for precise tracking of entries, modifications, and approvals.**

User Login - Jupiter Systems Gateway

User Name : 13671-DESK

Password : ●●●●●

Shift : A

OK Cancel

# Phase-1 Journey (Control Room Logbooks)

## Log books Review and Access

Logbooks review system help us hierarchical oversight, enhanced accountability, cross verification and validation moreover reduce risk of errors.

❖ Authorized logbook review access is provided in the logbooks for enhance accountability

❖ Reviewer name and Comment section also provided for cross verification & validation and send mail communication

SHIFT A	
DESK OPERATOR	DESK OPERATOR
REVIEWER - I	UNIT CONTROLLER
COMMENTS	
REVIEWER - II	SHIFT INCHARGE
COMMENTS	

Reply Reply All Forward IM

Fri 2/2/2024 7:08 AM

GWEL OPERATION LOG <GWEL.OPERATIONLOG@gmrgroup.in>  
UNIT CONTROLLER CHECK LIST

To: Aabhas Chanekar; Nitin Chandrashekhar Hajbe; Vishal Takalkar; Ibrahim Shaikh; Bharat Pinjarkar; Kaushal Dewangan; GWEL Shift Incharge; GWEL-OPERATION-SERVICES; Pravin Bhaskar Hume; Rahul Walgotwar; Amardeep Satanker; Santosh Kumar Ramdhani Gupta; Nana K Ughade

UC-CHECKLIST-U2-010224.PDF  
52 KB

\*\* EXTERNAL EMAIL - Please verify the sender before taking any action, replying , clicking any links or opening attachments \*\*

Operation log for UNIT CONTROLLER CHECK LIST

# Phase-1 Journey (Control Room Logbooks)



## Improved Accessibility

Laptops with installed software provided at desk consoles for real time data entry and monitoring and efficient shift handovers

❖ 2 Laptops provided to turbine and boiler desk operators.

❖ Desktop with installed software provided to unit controller.



# Digitalization of all Field Logbooks

In Phase-II digitalizing field logbooks is a challenging journey for GWEL. In the Second phase, the team focuses on digitalizing all field logbooks.

## Phase-2 Journey (Field Logbooks)

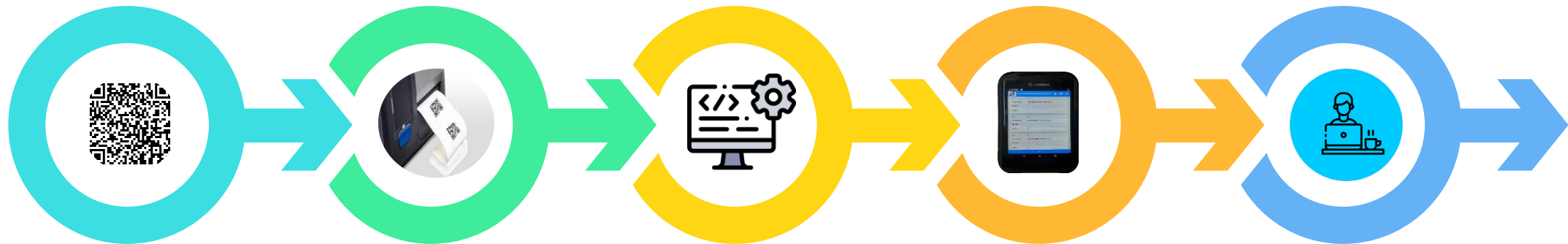
**Customized QR-Based Digital Logbooks**

**QR code Printing machine**

**QR codes placed at all equipment's & Data fetching facility**

**Real-time Data Stamping**

**Training and Integration**



**In phase-II Total 17 field log books are digitalized through QR code scan-based logbook filling**

# Phase-2 Journey (Field Logbooks)



## Customized QR-Based Digital Logbooks

Introducing a QR code-based solution for field logbook entry in Phase-II of the digitalization journey for (GWEL) operations is a commendable initiative to address the challenges associated with manual data entry and the potential for errors. This innovative solution enhance accuracy, streamline data collection, and improve overall Field operational efficiency.


❖ The shift-wise data entry system created

❖ Equipment Parameter Normal Range configured

- 📄 DG TRIAL FIELD BOOK U1
- 📄 BOILER FIELD BOOK U1
- 📄 BOILER FIELD BOOK U2
- 📄 TURBINE FIELD BOOK U1
- 📄 TURBINE FIELD BOOK U2
- 📄 DG TRIAL FIELD BOOK U2
- 📄 PA SYSTEM DAILY TRIAL CHECKLIST U1
- 📄 PA SYSTEM DAILY TRIAL CHECKLIST U2
- 📄 FIRE WATER
- 📄 COMPRESSOR FIELD LOG BOOK
- 📄 BOP FIELD LOG BOOK
- 📄 EOPH
- 📄 6.6 KV SWITCHGEAR FLD U1
- 📄 400KVSWITCHFIELD
- 📄 AIR WASHER UNIT
- 📄 6.6 KV SWITCHGEAR FLD U2

TURBINE FIELD BOOK U1-TURBINEFIELDU1\_26102023

Add Information...

 **GMR WARORA ENERGY**

TURBINE FIELD LOG SHEET U

DATE: 02/02/2024

DESCRIPTION	UNITS	RANGE	A-SHIFT
<b>EH OIL SYSTMES 6 MTR</b>			
PUMP IN SERVICE		A/B	▼
TANK LEVEL	cm	44-55	
TANK TEMPERATURE	°c	43.00-54.00	55.00
DISCHARGE PRESSURE	MPa	9.8-15.0	
SYSTEM PRESSURE	MPa	9.8-14.3	9.70
COOLER IN SERVICE		A/B/BOTH	▼
FILTER PUMP	MPa	0.32	
FILTER DP			▼



# Phase-2 Journey (Field Logbooks)

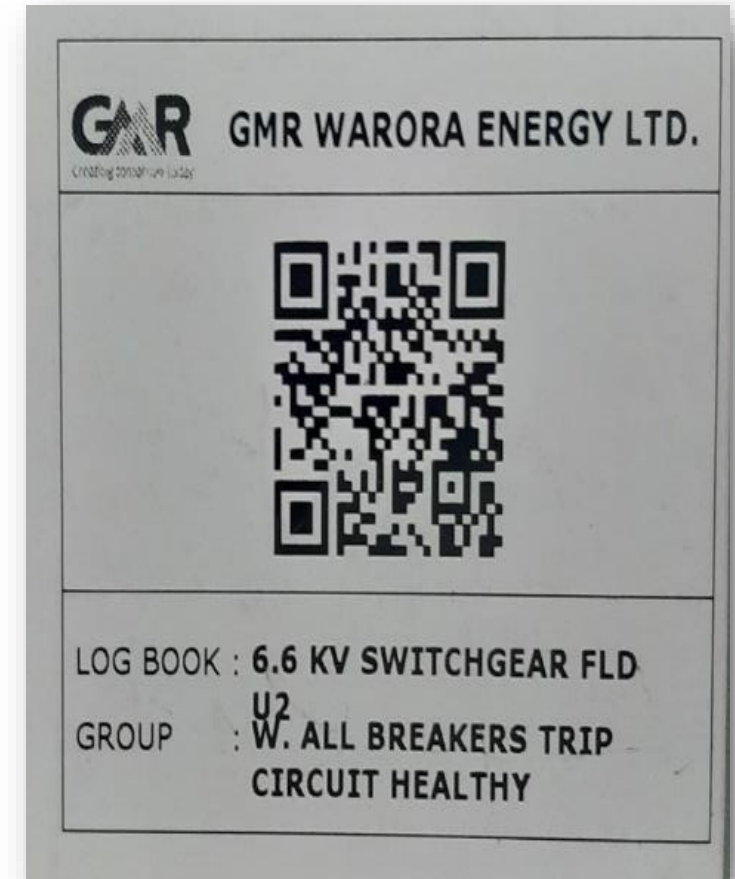
## QR Code Printing machine

Provide flexibility in QR code design and content to accommodate diverse operational needs and ensure high print quality to guarantee the readability and scanning reliability of QR codes in various operational conditions.

❖ QR codes prepared for individual equipment's

❖ QR code Printing machine

❖ QR codes stickers are placed at all equipment's





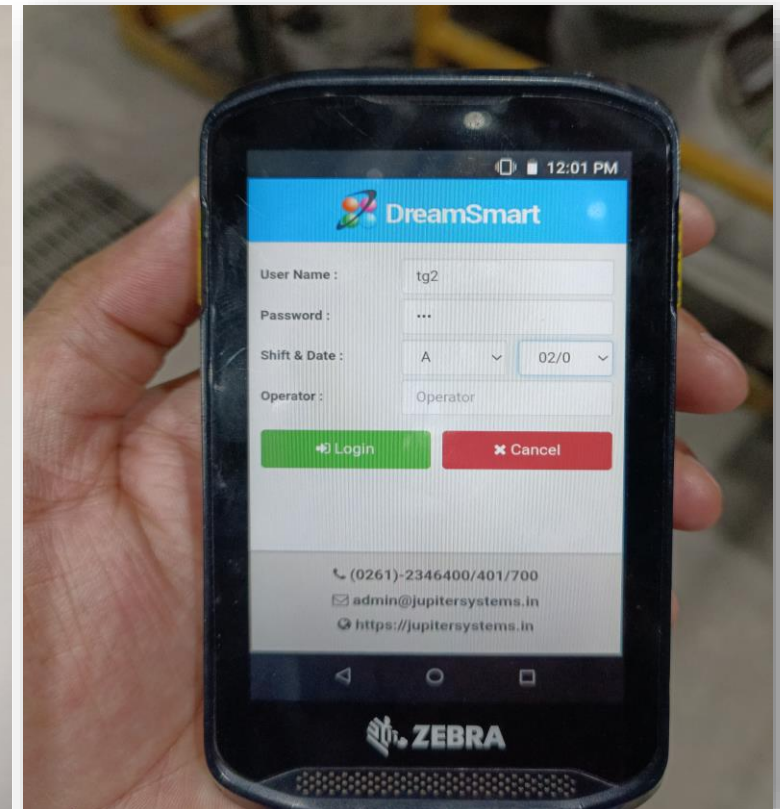
# Phase-2 Journey (Field Logbooks)

## Real-time Data Stamping Device

The use of QR codes significantly reduces the likelihood of errors during data entry. By scanning the QR codes on individual equipment, field operators can ensure that the parameters recorded are directly associated with the specific equipment, minimizing the risk of discrepancies.

❖ The mobile-compatible devices with installed software

❖ Device has an individual field engineer login



# Phase-2 Journey (Field Logbooks)

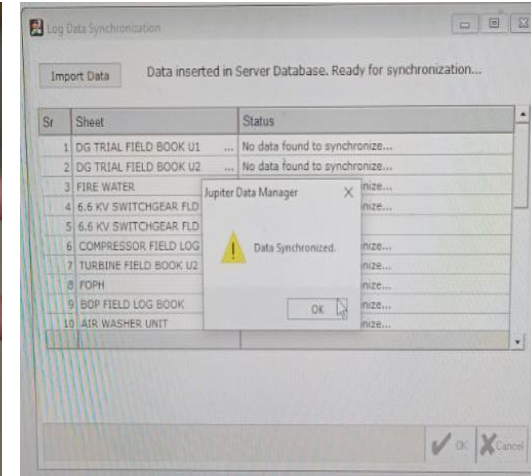
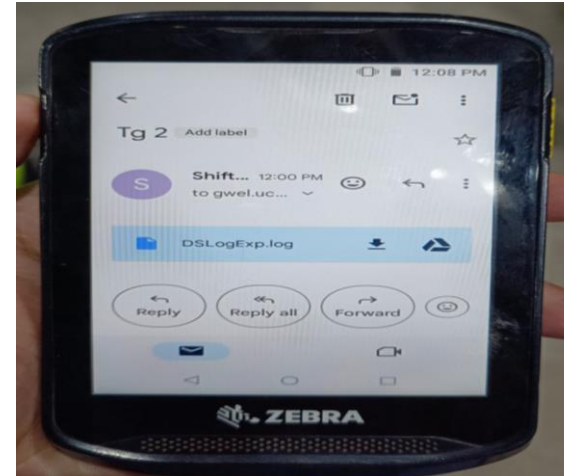
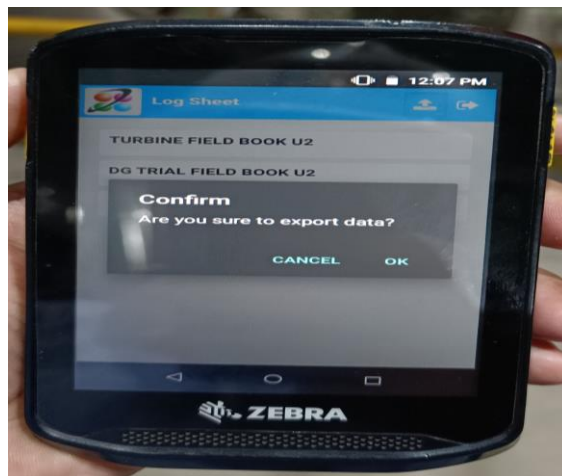


## Real-time Data Stamping Procedure

❖ Field operators scan QR codes at equipment and input parameters data



❖ Data is entered in the device



❖ One click data transfer from device to digital logbook

This ensures that the Field logbook reflects the most current and accurate status of equipment

## Efficiency in Field Rounds

### Real-time Data Stamping

- ❖ Field operators no longer need to memorize parameters or manually write them down before transferring the information to the logbook

### Time saving

- ❖ Time saving and utilize in other activities



### Equipment Healthiness

- ❖ Ensure Equipment parameters are in the normal operating range

### Prevent from Data duplication

- ❖ Errors in handwritten logs can result in misinterpretation and mistakes in decision – making processes



# Phase-2 Journey (Field Logbooks)

## Training and Integration

We provide training to all main plant control room engineers for well-versed in using the Digital logbooks software and enhances user adoption and minimizes disruptions during the transition.

❖ **Training Provided to all main plant operation team and associates**

❖ **Knowledge sharing to sister company GMR Kamlanga energy ltd.**

❖ **Digital logbook user access SOP prepared and integrated in management system.**

### Digital logbook Procedure in GWEL

Field Operator	Desk Operator	Unit controller	Shift Incharge
<ul style="list-style-type: none"> <li>Scan QR code and Enters values in zebra device</li> </ul>	<ul style="list-style-type: none"> <li>Fill Digital Desk log books (Boiler and turbine)</li> </ul>	<ul style="list-style-type: none"> <li>Review the desk operator logbook, enter comments if required</li> </ul>	<ul style="list-style-type: none"> <li>Fill SCE logbook and review Unit control logbooks</li> </ul>
<ul style="list-style-type: none"> <li>Transfer the file in computer</li> </ul>	<ul style="list-style-type: none"> <li>Review the field logbooks</li> </ul>	<ul style="list-style-type: none"> <li>Fill digital UC checklist and logbook</li> </ul>	<ul style="list-style-type: none"> <li>Click on UC and SCE logbooks mail option, automatically mail trigger to all assigned team and document saved in assigned folder</li> </ul>
<ul style="list-style-type: none"> <li>Create logbooks data automatically enter into system</li> </ul>	<ul style="list-style-type: none"> <li>Digital Log book Review-1 by: Unit controller</li> </ul>	<ul style="list-style-type: none"> <li>Digital Log book Review by: Shift Incharge</li> </ul>	
<ul style="list-style-type: none"> <li>Digital Log book Review -1 by: Desk engineer</li> </ul>	<ul style="list-style-type: none"> <li>Digital Log book Review -2 by: Shift Incharge</li> </ul>	<ul style="list-style-type: none"> <li>Click on Field and desk logbooks mail option, automatically mail trigger to all assigned team and document saved in assigned folder</li> </ul>	
<ul style="list-style-type: none"> <li>Digital Log book Review -2 by: Unit controller</li> </ul>			

## Best Practices In GWEL Thermal Power Plant For Logbook Management

### ❖ We achieved Paperless Process

GWEL has established a user-friendly digital platform for the submission of logbook data, eliminating the need for paper-based processes. **As of now GWEL total 30 Main plant and BOP area log books are digitalized and saved more than 1 lakh sheets of papers.**

### ❖ Data Security Measures and Privacy

Digital log book application is purely TCP-IP network-based desktop application with multi-tasking, multi user (no limitation for application users) support. TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet and it is having firewall setup.

The digitalization of all logbooks through advanced technologies like QR codes and centralized platforms not only enhances operational efficiency but also aligns with industry standards such as those set by NTPC. Implementing these best Practices, GWEL Thermal Power Plants ensures a seamless transition to a paperless and digitally secure environment, promoting sustainable and reliable power generation.



**Integrating equipment's field sop, isolation and normalization checklists.**

**Field Parameter history trend access.**

**Maintenance checklists.**



---

*Thank you*

