



**INFANT ENGINEERS
PRIVATE LIMITED**

DISRUPTIVE TRANSFORMATION

MSME PERSPECTIVE

**Presented By
Mr. S.RAJASEKARAN
MANAGING DIRECTOR**

INFANT PRODUCTION MANAGEMENT SYSTEM

Phase I - Automation and Digitalization

(2005-2016)

INFANT PRODUCTION MANAGEMENT SYSTEM

OBJECTIVES

Automation of the following

1. Production Plan based on Sales Plan
2. Machine Loading Plan
3. Inspection Process
 - Setup
 - Patrol
4. Tool Monitoring System
5. Calibration Management System

MONTHLY PRODUCTION PLAN :-

1. Monthly production plan is automatically generated (based on Master data) in the ERP system based on Monthly Sales Plan.
2. The relationship between Sales Plan and Production Plan is stored in the Master Data in the ERP System.
3. Formula for infant Production Plan = Sales Plan – (FG stock + Final Firewall + Final Sample + Incoming Sample + Incoming Firewall + Gate Entry + Incoming Stock Verify) for the final stage of the Production Work Order.
4. Work Orders are generated for all items in the Production Plan.
5. Work Order Quantity = Production Plan Quantity.

Daily Shift Wise Machine Loading Plan Based on Work Orders :-

1. Machine loading plan is generated based on the work orders for each shift in the ERP system.
2. Machine Loading Plan enables
 - Part production plan for the shift.
 - Allocation of operators, helpers, setters, inspectors and shift in-charge for the machines in the shop.
 - Job Card.
 - Log Plan – Machine hour rate plan for the shift.
 - Log Plan – Critical operation plan for the shift.
 - Log Plan – IGR plan for the shift.

SETUP INSPECTION :-

1. Setup Inspection is based on Machine Loading Plan.

- New Setup
- New Setup for parts under Production for 7 days.



2. Setup Inspection is approved

- On completion of setup first 3 parts are submitted to setup inspector.
- If setup confirms within 30% of the tolerance limit, setup is approved.
- If setup confirms beyond 30% of the tolerance, re-setup is done and setup is re-inspected.

INPROCESS INSPECTION :-

1. Inprocess inspection is auto generated for all setup inspection approved items.
2. Inprocess inspection is carried out every 1 Hour.
3. A bell is rung to alert the operator for Inprocess Inspection.
4. Last piece produced at the end of each hour is handed over to the Inprocess Inspector for inspection.
5. Inprocess inspection is approved, if the part confirms to
 - Green zone – 60 % of the tolerance limit.
 - Yellow zone – 70 to 100% of the tolerance limit, for the first time.
6. Patrol sample is stored in the Inprocess bay until the shift ends.
7. Inprocess inspection is rejected, if the part confirms to
 - Yellow zone – 70 to 100%, of the tolerance limit, for two consecutive times.
 - Red Zone > 100% of the tolerance limit for the first time.

PRODUCTION OUTPUT

Log entry...

Log entry every 2 hours.

1. A bell is rung to alert the operator to move the produced quantity to Log entry area for counting.
2. Produced quantity is entered in the system after physical verification of the quantity produced.
3. If the quantity produced is less than the planned quantity, downtime entry is entered in the system for the balance quantity.
4. Process scrap is entered in the ERP system and the scrapped parts are moved to Red bin analysis area.
5. Log entry for the shift shall be completed by the end of the shift.

RED BIN ANALYSIS

Rejection Review:

1. Rejected parts are moved to Red bin analysis area at the end of the shift.
2. Rejected parts are placed with red tags with details of rejection is placed in the red bin area for review next day.
3. Red bin analysis report is generated from the ERP system.

FMEA CAR:

1. FMEA CAR is generated by the ERP system if the actual RPN (Occurrence Number > FMEA occurrence number).
2. FMEA CAR has to be analysed by the CAR Team using the specified CAR Format.
3. Corrective action to be arrived for occurrence to reach the FMEA level.
4. Corrective action is updated in the ERP system which reflects in the FMEA report.

TOOL LIFE MONITORING...

1. New tools are issued when setup is made.
2. Asset code of the tools is entered in the ERP system.
3. Based on the log entry the tool life is counted.
4. System generates tool issue alert, on completion of tool life.
5. New tool is issued on completion of tool life.
6. Tool monitoring report is system generated.

INSTRUMENT CALIBRATION SYSTEM...

1. Calibrated checking instruments are made available at Setup Inspection & Patrol Inspection Screens.
2. Inspector selects the actual instrument code used for inspection in the ERP system.
3. Only calibrated instruments appear in the screen for inspection.
4. Out of calibration & calibration due instruments does not appear in the inspection screen.
5. Calibration due alerts are system generated in the inspection screens in advance of the due date.
6. Based on the system alerts, calibration in-charge calibrates the instruments and re-issues the instruments for the inspection.
7. Calibration history card is ERP generated.

PHASE II - INDUSRTY 4.0 (2016-2018)

- **ACE PMS**
 - ACE PRODUCTION MANAGEMENT SYSTEM
- **ACE QMS**
 - ACE QUALITY MANAGEMENT SYSTEM
- **ACE CMS**
 - ACE CALIBRATION MANAGEMENT SYSTEM

PHASE II - INDUSRTY 4.0 (2016-2018)

1. ACE PMS

- ACE PRODUCTION MANAGEMENT SYSTEM

SALIENT FEATURES :

- Direct Machine Connectivity
- Elimination of data entry
- Machine Learning

ACE PMS - ACE PRODUCTION MANAGEMENT SYSTEM

ACE Production Management System - Dashboard

File Master Transaction Report Admin

<p>20520140T0 BODY MACHINING</p>	<p>IEPLTRU014 20520141T0 MACHINING 14:00 -NA- 17:49 25 P.Q: 550 C.Q: 140 A.Q: 0 S.Q: 140 -NA- -NA-</p>	<p>IEPLCNC0043 20520142T0 CNC MACHINING FIRST 14:00 24 20:27 43 P.Q: 540 C.Q: 81 A.Q: 30 39 S.Q: 51 09 14:58 09 14:48</p>	<p>IEPLCNC0042 20520143T0 CNC MACHINING SECOND 14:00 56 21:37 56 P.Q: 490 C.Q: 62 A.Q: 7 30 S.Q: 55 09 14:58 09 14:58</p>	<p>20520230B0 SLEEVE - PB(MBA)</p>	<p>IEPLCNC012 20520232Z0 CNC MACHINING FIRST 14:51 -NA- 21:50 73 P.Q: 345 C.Q: 6 A.Q: 0 S.Q: 6 -NA- -NA-</p>
<p>20520430Z0 INPUT ROD(IA/BA RHD)</p>	<p>IEPLTRU007 20520431Z0 TRAUB MACHINING 14:00 -NA- 21:30 20 P.Q: 1260 C.Q: 175 A.Q: 0 S.Q: 175 -NA- -NA-</p>	<p>IEPLCNC0019 20520430Z0 CNC MACHINING 14:00 37 21:00 37 P.Q: 700 C.Q: 95 A.Q: 26 31 S.Q: 69 09 14:58 09 14:58</p>	<p>20520440B0 INPUT ROD WELD_IA(RHD) - TRIVALENT BLACK</p>	<p>IEPLPRW0001 20520441Z0 PROJECTION WELDING 14:00 -NA- 21:30 6 P.Q: 4500 C.Q: 584 A.Q: 0 S.Q: 584 -NA- -NA-</p>	<p>IEPLARW0001 20520442Z0 CO2 WELDING 14:00 -NA- 16:22 5 P.Q: 1715 C.Q: 701 A.Q: 0 S.Q: 701 -NA- -NA-</p>
<p>20520440T0 INPUT ROD WELD_BA(RHD)_GSL.TRLB</p>	<p>IEPLPRW0001 20520441Z0 PROJECTION WELDING 14:00 -NA- 21:30 6 P.Q: 4500 C.Q: 584 A.Q: 0 S.Q: 584 -NA- -NA-</p>	<p>IEPLARW0001 20520442Z0 CO2 WELDING 14:00 -NA- 16:22 5 P.Q: 1715 C.Q: 701 A.Q: 0 S.Q: 701 -NA- -NA-</p>	<p>20520440Y0 INPUT ROD WELD_BA(RHD)_DSL.TRLY</p>	<p>IEPLPRW0001 20520441Z0 PROJECTION WELDING 14:00 -NA- 21:30 6 P.Q: 4500 C.Q: 584 A.Q: 0 S.Q: 584 -NA- -NA-</p>	<p>IEPLARW0001 20520442Z0 CO2 WELDING 14:00 -NA- 16:22 5 P.Q: 1715 C.Q: 701 A.Q: 0 S.Q: 701 -NA- -NA-</p>
<p>20520610B0 CONTROL PLUNGER(IB)</p>	<p>IEPLTRU0022 20520611Z0 TRAUB MACHINING 14:00 -NA- 20:58 19 P.Q: 1323 C.Q: 184 A.Q: 0 S.Q: 184 -NA- -NA-</p>	<p>IEPLCNC0017 20520612Z0 CNC MACHINING FIRST 14:00 40 21:30 40 P.Q: 675 C.Q: 87 A.Q: 74 5 S.Q: 13 09 14:58 09 14:58</p>	<p>IEPLVTL0002 20520613Z0 CNC MACHINING SECOND 14:00 -NA- 21:30 37 P.Q: 730 C.Q: 94 A.Q: 0 S.Q: 94 -NA- -NA-</p>		
	<p>IEPLTRU013</p>	<p>IEPLCNC0014</p>	<p>IEPLCNC008</p>	<p>IEPLMIL002</p>	

ACE PMS
PRODUCTION MANAGEMENT SYSTEM

ACE PMS - ACE PRODUCTION MANAGEMENT SYSTEM

Production Employee Master

FmOperator

Production Employee Master

Employee Code :

Employee Name :

Designation :

Department :

Shift Date : 06/08/2018

Upload

Save Clear Close

Production Plan

ProductionPlan

PRODUCTION PLAN

Plan Date: 06/08/2018 Plan Quantity:

Shift: Start Time: 06:00:00

Machine Code: IEPLCNC0038 End Time: 14:00:00

Item Code: 2052067320 Operator Name:

Save Clear Close

Cycle Time Update

Enter Cycle Time to Change

IEPLCNC0039

Program No: 30 Without character '0'

Item Code: 2052067320

Item Description: ADAPTOR (PCR)

Cycle Time (in Sec): *Including loading unloading time 6 sec

Update Cancel

Log Entry

LogEntry

Log Entry

Machine Code: IEPLCNC0038 Accepted Quantity: 3979 Nos.

Item Code: 2052067320 Rejected Quantity: 0 Nos.

Log Date: 06/08/2018 12:07: Rework Quantity: 0 Nos.

Log Quantity: 3979 Nos. Scrap Quantity: 0 Nos.

Calc. Quantity: 7486 Nos. Short. Quantity: 3507 Nos. Down Time: 184026 Secs.

Start	End	Downtime (Sec)	Reason
02/08/2018 13:08:35	02/08/2018 13:39:05	1830	Operator Inefficiency
02/08/2018 13:56:31	02/08/2018 14:16:00	1169	
02/08/2018 14:24:05	02/08/2018 14:31:44	459	
02/08/2018 15:34:09	02/08/2018 15:45:32	683	

Save Clear Close

Downtime Entry

DowntimeEntry

Down Time Entry

Machine Code: IEPLCNC0039 Item Code: 2052067320

Calc. Quantity: 7483 Nos. Short. Quantity: 3504 Nos. Down Time: 182232 Secs.

Start	End	Downtime (Sec)	Reason
02/08/2018 13:08:35	02/08/2018 13:39:05	1830	Operator Inefficiency
02/08/2018 13:56:31	02/08/2018 14:16:00	1169	
02/08/2018 14:24:05	02/08/2018 14:31:44	459	
02/08/2018 15:34:09	02/08/2018 15:45:32	683	

Save Clear Close



PHASE II - INDUSRTY 4.0 (2016-2018)

2. ACE QMS

– ACE QUALITY MANAGEMENT SYSTEM

SALIENT FEATURES :

- Automated Process Control (Tool Wear Offset)
- Automated Process Monitoring and User Alerts.
- Machine Learning for Tool wear prediction.

ACE QMS - ACE QUALITY MANAGEMENT SYSTEM

Internet Of Things V5 5.0.0 - INFANT ENGINEERS PRIVATE LIMITED [04-2018 03-2019] User : ADMIN(10001) - [Wear OffSet Process - Create]

File Modules Master Process Machine Tool Process Options

Select Machine & Product

Machine Code: IEPLCNC0033 CNC MACHINE

Product Code: 20520782Z0 BODY MACHINING... - CNC MACHINING FIRST OPERATION

Setting Closing Time: 30/06/2018 21:35:57 Overwrite Offset Reading

Instance Report

Display Offset Data

Process

Current

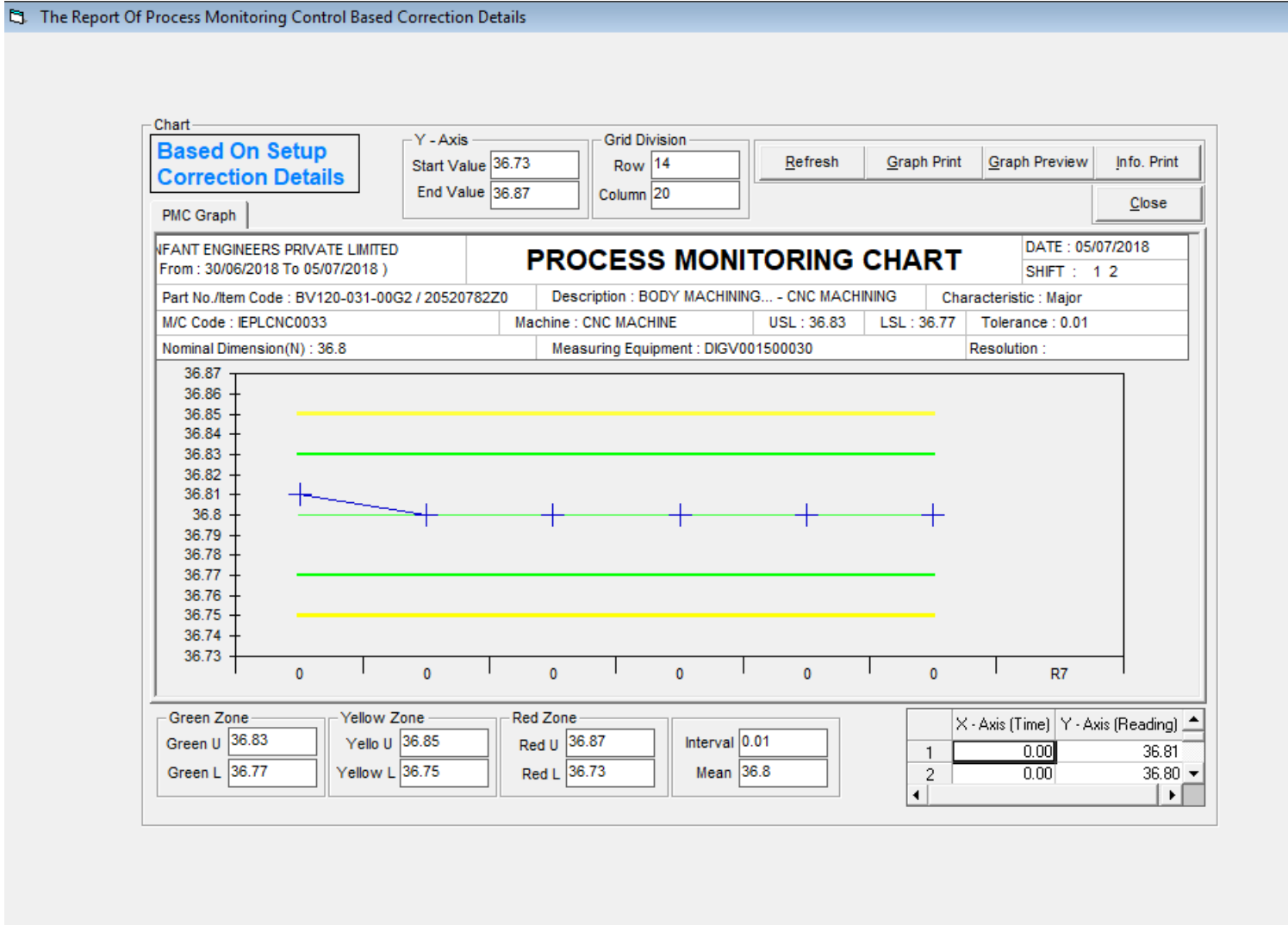
History

Master

Setup & Offset							Patrol Inspection					
Wear OffSet Data							Setting - [30/06/2018 21:35:57]					
Param Master												
	Parameter Descriptoin	xControl Param	zControl Param	Dimension by Toolwear	From Value	Mean	To Value	X Axis	Z Axis	Reading 1	Reading 2	Reading 3
1	LENGTH	NA	Dep	Const	0.9	1	1.1	-203.445	-82.610	1.0200	1.0200	1.0200
2	TOTAL LENGTH	NA	Dep	Increase	36.75	36.8	36.85	-203.445	-82.610	36.8100	36.8000	36.8000
3	OUTER DIAMETER	Dep	NA	Increase	23.9	24	24.10	-174.860	-132.997	24.0000	24.0000	24.0000
4	DIAMETER	Dep	NA	Decrease	20.50	20.55	20.60	-203.445	-82.610	20.5600	20.5600	20.5600
5	INNER DIAMETER	Dep	NA	Decrease	20.02	20.04	20.06	-203.445	-82.610	20.0500	20.0500	20.0500
6	INNER DIAMETER	Dep	NA	Decrease	12.4	12.5	12.6	-203.445	-82.610	12.5100	12.5100	12.5100
7	INNER DIAMETER	Dep	NA	Decrease	10.6	10.7	10.8	-203.445	-82.610	10.6600	10.6600	10.6600
8	CHAMFER LENGTH(4.35 DIA)	NA	Dep	Const	0.4	0.5	0.6	-203.445	-82.610	0.5300	0.5300	0.5300
9	CHAMFER ANGLE	NA	NA	Const	44	45	46	-203.445	-82.610	45.2000	45.2000	45.2000
10	RADIUS	NA	NA	Const	0	0.125	0.25	-203.445	-82.610	0.2070	0.2070	0.2070
11	THREAD	Dep	NA	Decrease	M18*1.0-6G	0	M18*1.0-6G	-203.445	-82.610	OK	OK	OK
12	THREAD LENGTH	NA	Dep	Decrease	7.10	7.6	8.10	-203.445	-82.610	7.8500	7.8500	7.8500
13	LENGTH	NA	Dep	Decrease	11.4	11.5	11.6	-203.445	-82.610	11.5400	11.5400	11.5400
14	LENGTH	NA	Dep	Const	21.5	21.6	21.7	-203.445	-82.610	21.6300	21.6300	21.6300
15	LENGTH	NA	Dep	Const	3.95	4	4.05	-203.445	-82.610	4.0200	4.0200	4.0200
16	ANGLE	NA	NA	Const	29	30	31	-203.445	-82.610	30.4200	30.4200	30.4200
17	RADIUS	NA	NA	Const	0.4	0.5	0.6	-203.445	-82.610	0.5200	0.5200	0.5200
18	APPEARANCE				FREE FROM LI	0	FREE FROM L	0.000	0.000			
19	APPEARANCE				NO BURRS AT	0	NO BURRS AT	0.000	0.000			

All WearOffset Data

ACE QMS - ACE QUALITY MANAGEMENT SYSTEM



PHASE II - INDUSRTY 4.0 (2016-2018)

3. ACE CMS

- ACE CALIBRATION MANAGEMENT SYSTEM

SALIENT FEATURES :


- Live Updates to Calibration Labs (Inhouse and External)
- Calibration status alerts to all Users.

ACE CMS - ACE CALIBRATION MANAGEMENT SYSTEM


- Dashboard
- Reports
- Equipment Creation
- Equipment Opening Balance
- New Equipment Receipt
- Asset Master Modify
- Calibration Issue
- Internal Calibration ^{Pro}
- Calibration Details Update
- Equipment Location Transfer
- Equipment Return
- Equipment Repair
- Equipment Scrap
- Certificate Management
- MSA Plan ^{Pro}
- MSA For Variable ^{Pro}
- MSA For Attribute ^{Pro}
- Additional Info
- Company Info
- Report Format Revision
- Data Import From Excel

Dashboard


CALIBRATION STATUS




OVER DUE
0 Equipment



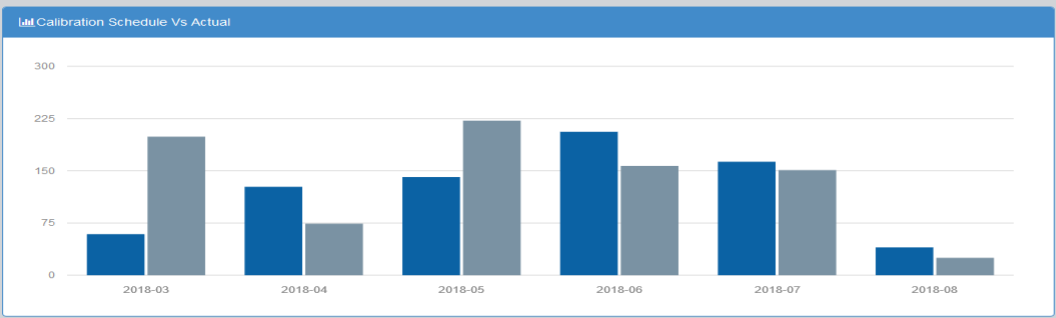
DUE FOR THE WEEK
29 Equipment



DUE FOR THE MONTH
207 Equipment



DUE FOR THE YEAR
384 Equipment

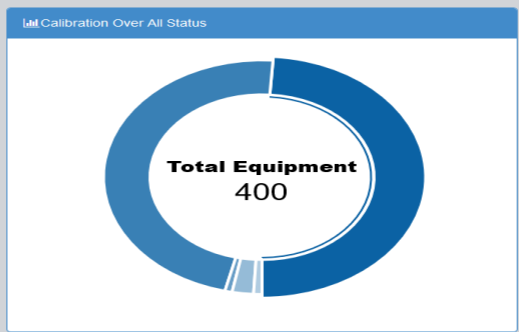


Location Wise Assets(Equipment)

Location	Assets
PATROL PLANT-01	261
INFANT ENGINEERS PVT LTD	13
BASE SHELL OPERATION P2	13
BODY MACHINING 1ST OPERATION P1	13
BODY MACHINING 2ND OPERATION P1	13
FINAL INSPECTION	10

License Info

- Assets Licensed - 500
- Assets Used - 420
- Assets Can Be Added - 80
- Renewal Date -
- Renewal Amount - 7500.00 + GST (Applicable).
- Renewal Days To Go - 0



👍
1482
Calibration Done During Past 1 Year

!
57
Out Of Calibration Equipment During Past 1 Year

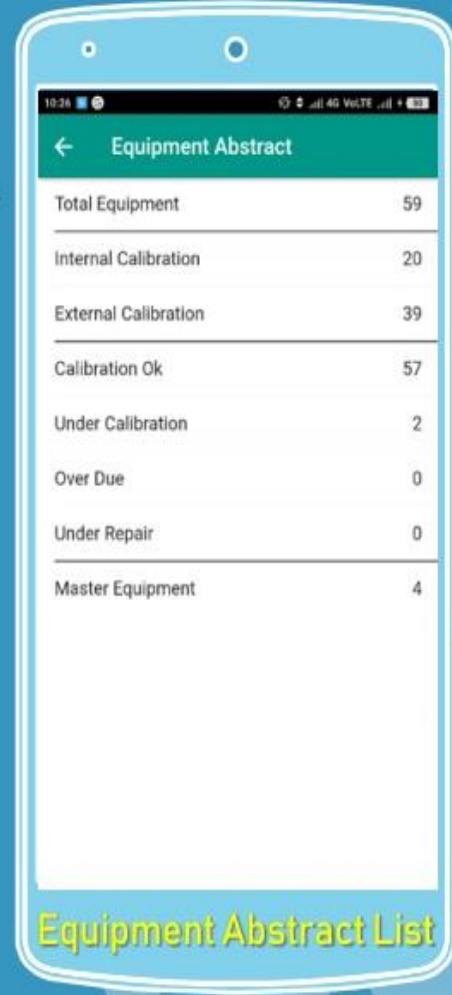
✔️
10
Equipment Repaired During Past 1 Year

🗑️
124
Equipment Scrapped During Past 1 Year

FeedBack

Send

ACE CMS - ACE CALIBRATION MANAGEMENT SYSTEM





THANK
YOU