

# Indus Towers Ltd To improve the % DG sites with 100% Uptime at Delhi Circle





we transform lives by enabling communication



#### Indus Towers – A brief background about us



- Largest Mobile Tower Company in the World (Ex-China)
- Indus operates 1,24,000+ towers in 15 Telecom Circles of India



#### **Our Business Model**



Indus provides **shared passive telecom infrastructure** services to wireless telecom service providers, on a non-discriminatory basis



Passive infrastructure provides height (tower), space (shelter) and power to the active equipment of telecom operators to enable mobile communication

## **Typical Site Infra**





#### Passive Telecom Infrastructure

- Includes a physical tower structure (for mounting customers' antennae),
- **Shelter** with controlled environment to house customers' supporting equipment
- Stable and uninterrupted **power supply**

#### **Outsourced Model of Operations**

- Deployment of new sites, infrastructure upgrade on sites and the maintenance of these sites is done by the employees of our outsourced partners
- We work in close collaboration with Build services partners and maintenance partners while our employees supervise and govern their operations



#### **Remote Site Monitoring**





Site gives multiple signals called **Alarms**. **Alarms** are Monitored, Escalated & Analysed at Centralised location for all Sites







## Site Daily management utilizing IT

Daily work related to site is executed using I-Mapp (Geofenced Mobile Application)

- Preventive Maintenance
- Raising Trouble Ticket for Corrective Maintenance
- Site Access management
- Alarm receipt and movement
- Asset Management
- Diesel Management etc...





2017-18

# **Customer Satisfaction to Customer delight**





This project is about journey from Customer Expectation to Customer Delight





# **Project Charter**



#### Idea No: INDC-02-01-03024-2017-INDC



Project Name: ZERO Outage on DG Site									
BUSINESS	CASE:	RISK/BARRIERS:							
In line to ou uptime. Cur 2200 Green Delhi on the To deliver 1 deploy effec at DG Sites	r BHAG of Customer centricity, it is critical to d rently at Delhi, We have around 4500 DG sites Sites. Although at one hand EB availability is contrary we use to struggle on this front in NC 00% on DG sites we need to have a systemati ctive process and working on enhancing overal	<ul> <li>Barriers</li> <li>MCD Sealed sites.</li> <li>24x7 no access/limited access sites</li> </ul>							
GOAL STA	TEMENT:	SCOPE							
To increase March-18	% of DG sites with zero outage from 81% to 9	In scope: All DG Sites Delhi Circle							
PROJECT I	PLAN:	PROJECT TEAM:							
Phase	Milestone	Target							
Define	CTQs identification	Aug 17	Project Champion – Kapil Chanana						
Measure	Data collection with respect to all parameters.	Sept 17	Project Manager – Somesh Mishra						
Analyze	Data analysis: Gap identification, Site specific action plan/solution	Oct 17	<b>Project Team</b> – Suruchi Khurana, Sanjiv Singh, Pawan Sharma, Harjeet Singh, Victor Gaur, Vipin Yadav, Deepak Minhas, Ajeet						
Improve	Solution Implementation and pilot run, PDCA and revisit implementation strategy (if required)	Dec 17	Kumar, Chandra P Pandey PE Mentor – Ankit Rawat						
Control	Sustenance, & Project Closure report	Mar 17							

#### Alignment: Customer satisfaction

#### **Business Impact: 20 Mn Annualized**

# **Baseline performance**







# Pareto Analysis for Failure Reasons



- 66% of failures are due to Automation failure
- 29% of failures are due to power plant failure
- Remaining 4.7% failures are contributed by other equipment





#### Site Automation and its benefits





- Equipment monitoring
- Customer Satisfaction by improving the uptime

## Quiz to assessment of Automation knowledge





- 50% of Technician members scored below 51%
- Very high variance was observed across technicians
- Mobile App based quiz
- Need to enhance the knowledge of Technicians on improved automation logic

#### 2X2 Analysis of Assessment of Logic based on complexity and time to resolve

![](_page_11_Figure_8.jpeg)

- Less Complexity Less Time to resolve Technician to act Con
- . Less Complexity High Time to resolve FSE to act

Quality Control Circle with Technicians

iii. Quadrant 3 & 4 were taken up at Circle level

## TAAZ: A Program to improvement Automation

![](_page_12_Picture_1.jpeg)

![](_page_12_Figure_2.jpeg)

**60 Quality Control Circle** Projects: All FSEs took QCC Project improve the automation which was under the control of FSE and Technician Members

### Equipment prioritization & On Job Training to technicians

![](_page_13_Picture_1.jpeg)

Equipment Name	Impact on safety	Previous CM TT Trend	Impact on Automation	Overall	Prirority	
Weitgage	50%	20%	30%	Tating		
Battery Bank	3	2	3	2.8	4	
Diesel Generator	3	4	5	3.8	2	
Power Integrated Unit	5	4	5	4.8	1	
Power Plant	4	3	4	3.8	2	
Simple Panel System	4	2	5	3.9	3	

#### Train The Trainer concept to enhance Skill of FSEs & Technicians

![](_page_13_Figure_4.jpeg)

Short training module was prepared for all equipment and their settings

![](_page_13_Picture_6.jpeg)

![](_page_13_Picture_7.jpeg)

![](_page_13_Picture_8.jpeg)

#### QI & II: 60 QCC Execution by FSEs Snap shot

![](_page_14_Picture_1.jpeg)

![](_page_14_Picture_2.jpeg)

#### Q III : Cause & effect Analysis for DG fail to start

![](_page_15_Picture_1.jpeg)

![](_page_15_Figure_2.jpeg)

Cause - Effect Analysis

Validation of Root causes

Actions were taken to resolve the root causes- Major root causes & actions are

- 1. Cooling system PM was not part of PM Checklist: Incorporate in I-mapp PM Checklist
- 2. Lack of knowledge: Covered with on job training
- 3. DG Battery Theft New solution of DG Cranking system to replace DG Battery at 758 Theft Prone sites
- 4. In Effective DG Preventive Maintenance (PM) mandated FSEs presence during DG PM

20/12/2018

![](_page_15_Picture_11.jpeg)

## **Recognitions to team and Automation**

![](_page_16_Picture_1.jpeg)

![](_page_16_Picture_2.jpeg)

Recognition to teams based on defined Mechanism

![](_page_16_Figure_4.jpeg)

- Site Automation improved to 82% in Oct-17
- Automation % increased by 30% in 60 days
- 93% reached in Mar-18

#### **Power Plant Failure Causes Analysis**

![](_page_17_Picture_1.jpeg)

![](_page_17_Figure_2.jpeg)

Major root causes identified were

- Back Plane Faulty due to overheating of cable : Cable changed from 280 mm single wire to 300 mm Double wire cable
- 2. Lack of knowledge: Covered with on job training
- 3. Controller faulty Issue resolution with SME and Mechanism to validate CM TTs in I-Mapp

![](_page_17_Picture_8.jpeg)

#### Effects: % DG Sites with 100% Uptime

![](_page_18_Picture_1.jpeg)

![](_page_18_Figure_2.jpeg)

Emergency fuel management SOP designed based on weather forecast to handle long power failure due to weather

20/12/2018

![](_page_18_Picture_5.jpeg)

![](_page_19_Picture_1.jpeg)

Below Parameters are finalised as Metric for FSEs to ensure sustenance

- % of Diesel Generator Preventive maintenance in presence of FSE
- % of CM TT Validated by FSEs

New update on I-Mapp(Mobile and Web App):

- PM by Technician in presence of FSE: ensured through geofence validation of PM by FSE on same date
- ✓ CM TT geofence validation within 24 Hrs of CM TT Closure on I-Mapp

The issue of data availability on his performance with was FSE observed

![](_page_19_Picture_9.jpeg)

### Automation of performance reporting

![](_page_20_Picture_1.jpeg)

Automated Progress reporting mechanism created with IT to share the Target and actual achievement of respective FSE on weekly basis on system generate email with excel of site wise details

				MONTH(2	60CT-25NOV)	WEEK1(2	EOCT-1NOV)	WEEK2(	2NOV-8NOV)	WEEK3(9	NOV-15NOV)	WEEK4(1	SNOV-22NOV)
	FSE	Circle	Parameter	Target	Achieved	Target	Achieved	Target	Achieved	Target	Achieved	Target	Achieved
	102195 - ARUN KUN	AR PUNJAE	% Alarm Compliance	90%	87.1 %	25%	18.55 %	50%	40.32 %	75%	55.65 %	90%	73.39 %
			% I-Hygiene TT Cleared withih TAT	90%	0%	90%	0 %	90%	0 %	90%	0%	90%	0 %
Snapshot of Email			% P1 Compliance	67%	64.52 %	41%	46.77 %	49%	48.39 %	57%	54.84 %	65%	61.29 %
			% of Audit Validation in IMAPP for CM	20%	No Data	20%	No Data	20%	No Data	20%	No Data	20%	No Data
			% of Audit Validation in IMAPP for DG PM	100%	54.55 %	100%	60 %	100%	75 %	100%	No Data	100%	0 %

#### Refresh - Export

# Online portal also made available to Field as backup to download history/ running data

![](_page_20_Figure_6.jpeg)

![](_page_21_Picture_0.jpeg)

# Thank You.

![](_page_21_Picture_2.jpeg)

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