

On line Energy conservation System

13 May,2010

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GM (Electrical)

Content

- ✓ Introduction
- ✓ Aux power at DTSP
- ✓ Aux power reduction Strategy
- ✓ EMS at DTSP
- ✓ Application
- ✓ Benefits

Company Profile – Reliance Energy Limited

- ✓ **Largest integrated private utility company in power sector**
- ✓ **Involved in generation, transmission, distribution, trading of electricity and EPC business related to power projects**
- ✓ **Supplies electricity to 2 out of 3 Mumbai consumers and 1 out of 2 Delhi consumers**
- ✓ **Caters to 25 million people in Mumbai, Delhi and Orissa.**
- ✓ **Distributes > 28 Billion units of electricity .**
- ✓ **Generate > 900 MW of power.**

DTPS Vision

To be amongst the **world class** power plants, delivering **reliable** generation of electricity at competitive costs, with **international standards of environmental emission**.

To set new benchmarks in standards of performance through the pursuit of **operational and financial excellence**.

DTPS Mission

Excellence in Generation of Electricity to :

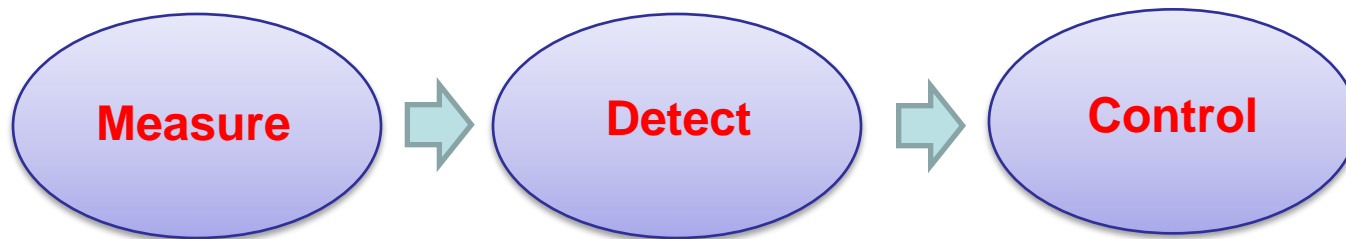
- ✓ **Attain global best practices and become a world-class power plant.**
- ✓ **Provide affordable, reliable and clean power to millions of customers.**
- ✓ **Achieve excellence in service, quality, reliability, safety and customer care.**
- ✓ **Work with vigor, dedication and innovation with total customer satisfaction as the ultimate goal.**
- ✓ **Consistently achieve high growth with the highest levels of productivity.**
- ✓ **Be a technology driven, efficient and financially sound organization.**
- ✓ **Promote a work culture that fosters individual growth, team spirit and creativity to overcome challenges and attain goals.**
- ✓ **Encourage ideas, talent and value systems.**
- ✓ **Uphold the guiding principles of trust, integrity and transparency in all aspects of interactions and dealings.**

Auxiliary power consumption at DTPS

✓ Total Plant Generation	520MW
✓ Auxiliary Power consumption	39.5MW @7.6%
✓ HT Motor consumption	37.50MW
✓ LT Motor consumption	1.50MW
✓ Misc. consumption	0.50MW

Aux. Power consumption reduction strategy

- ✓ DTPS having 16 no's Energy auditors.
- ✓ DTPS O&M has internal energy audit schedule through system.
- ✓ Joint Energy auditing carried out for all utilities by CII & DTPS
- ✓ Recommendations out of audit report are reviewed monthly.



On Line EMS at DTPS



Objective Of EMS

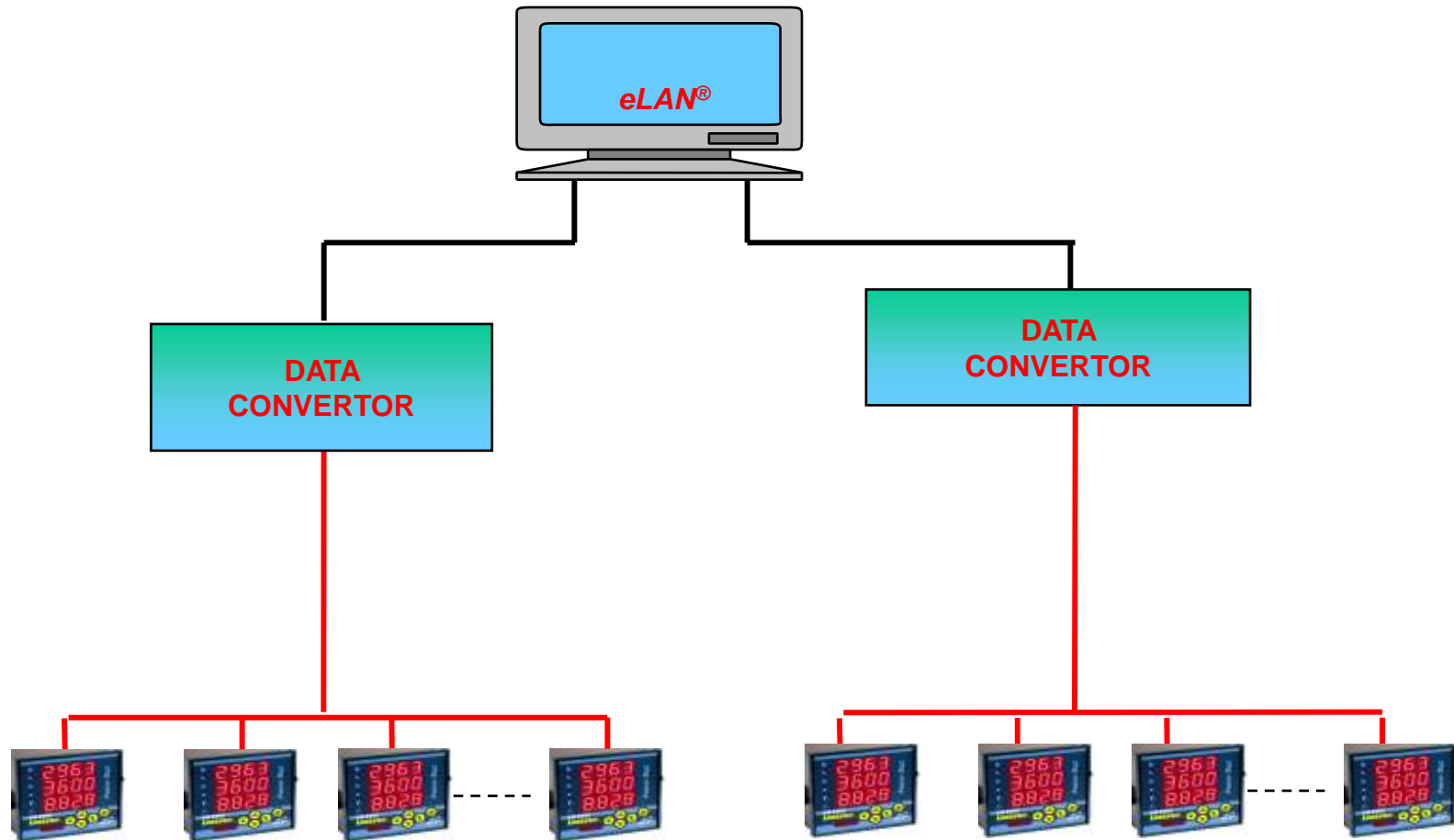
The main objectives of EMS are :

- ✓ Online monitoring of auxiliary wise energy consumption.
- ✓ To optimize the power consumption.
- ✓ Benchmarking energy consumption
- ✓ To identify the inefficient equipment operation
- ✓ To provide useful input for Predictive maintenance decisions

Components of EMS system

- ✓ Energy meter class 1 model -6400 (135)
- ✓ Analog card for the process parameters
- ✓ Data converter
- ✓ Communication cable
- ✓ Dedicated PC and printer
- ✓ Conzerve Energy management software eLAN customized to DTPS.

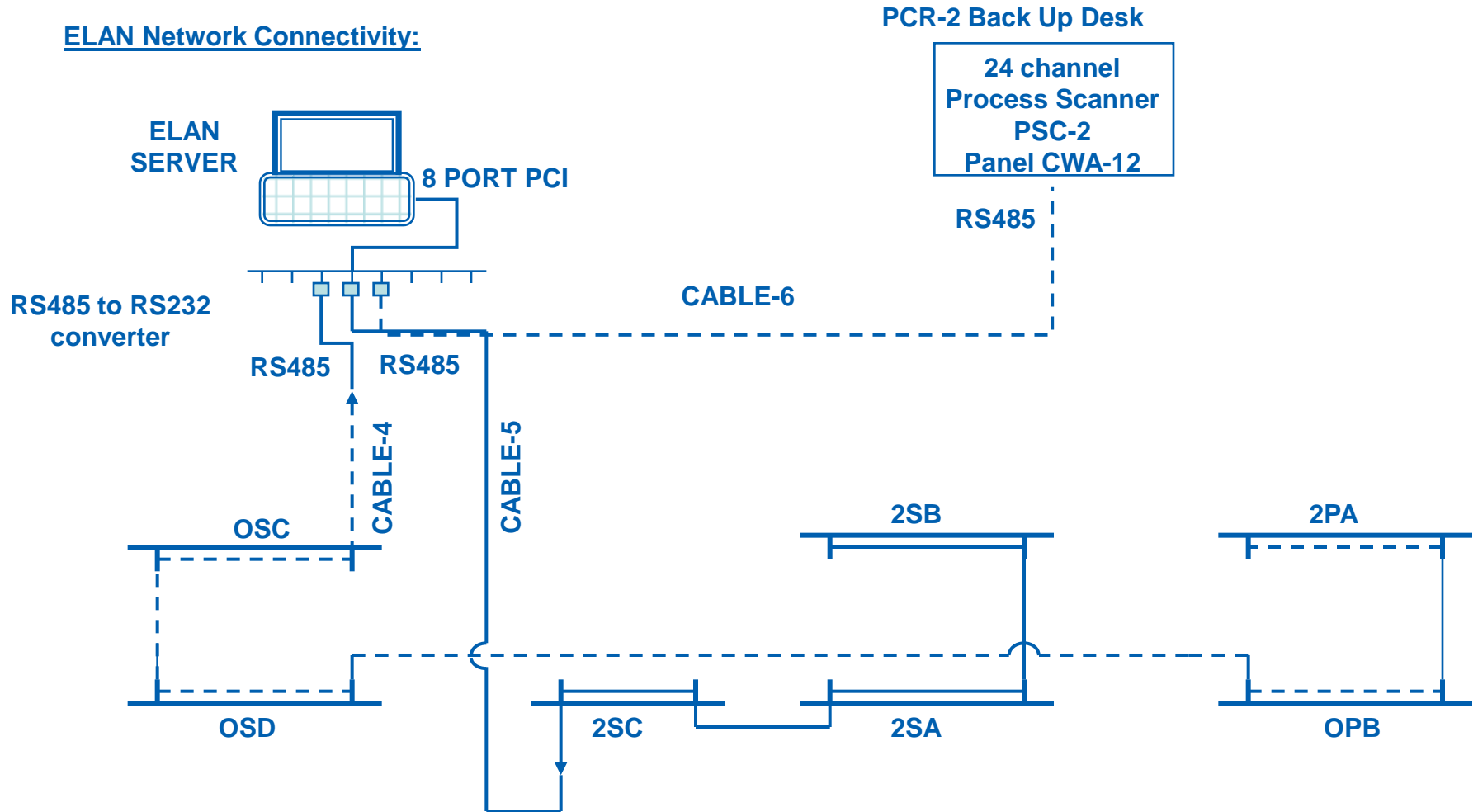
Network Connectivity



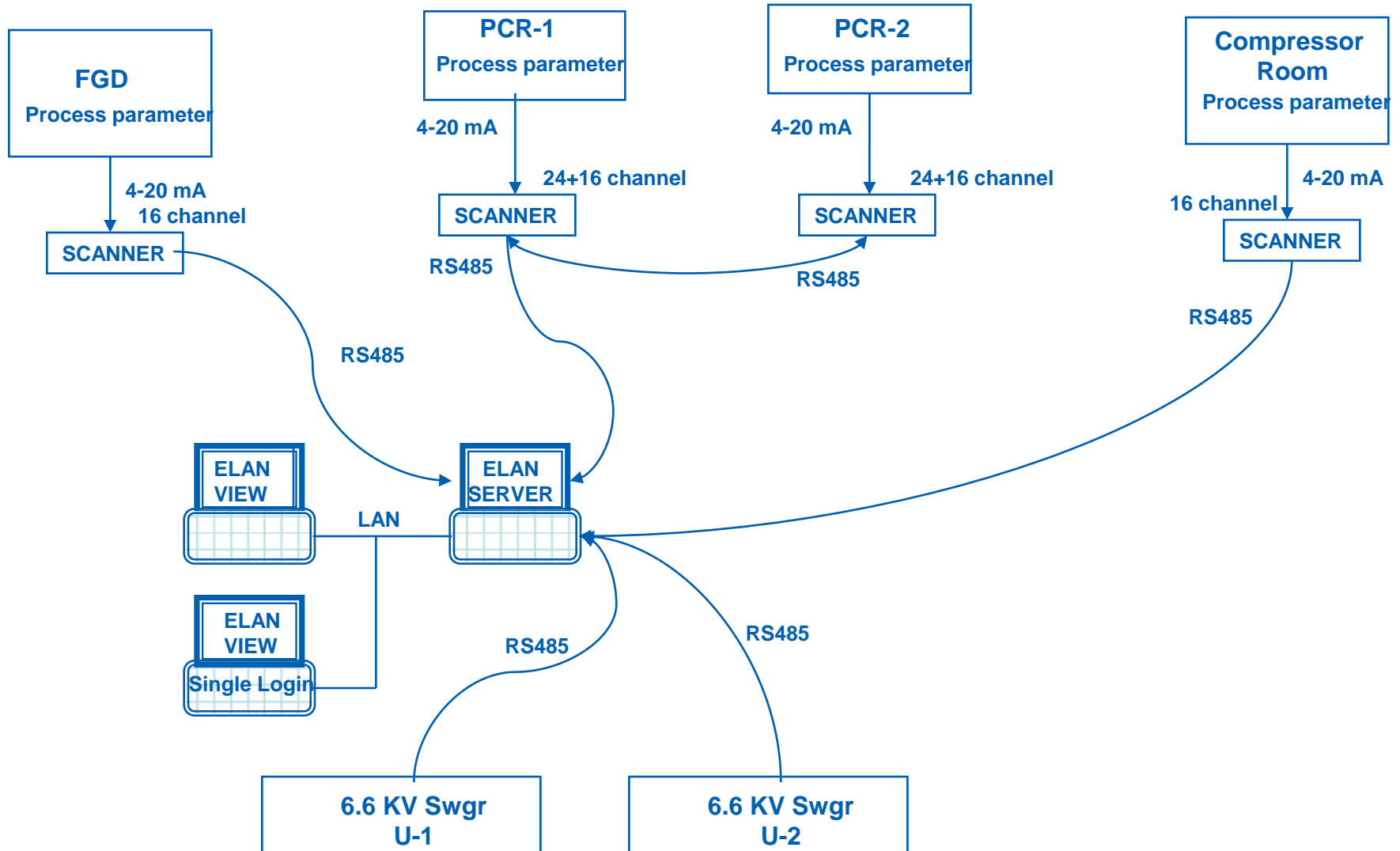
EM-6400 MULTIFUNCTION METERS

Network Connectivity

ELAN Network Connectivity:



Network Connectivity



Display Available

- ✓ Home page
- ✓ Mimic : Can view individual equipment parameters.
- ✓ Matrix : Group of equipment Swgr wise, application wise can be viewed.
- ✓ Trends : This Screen shows of real time data of every individual feeder
- ✓ Dashboard : At a glance provide the data regarding lighting, HVAC etc.
- ✓ History :To monitor trend of the all feeder with selected parameters and time.
- ✓ Alarm : Initiate the alarm when the value cross the max. or min. value.
- ✓ Reports: Hourly, daily, monthly consumption report are available.
- ✓ SLD : Single line diagram with parameters can be viewed.

Home page

The screenshot shows a web browser window titled 'home.cim'. The page header includes the 'RELIANCE Energy' logo and 'Anil Dhirubhai Ambani Group' on the left, and 'Reliance Infrastructure Ltd' and 'Dahanu' on the right. A navigation menu contains: Home, Mimic, Matrix, Trends, Dashboard, History, Alarm, Reports, SLD, View Reports, and Utility. The main title is 'eLAN Energy Management System'. Two images are displayed: a daytime view of a power station with a tall chimney and a nighttime view of the station's lights reflecting in water. On the left, a 'Switch Login User' button points to a box for 'eLAN Client' with 'Dahanu Thermal Power Station' listed below. On the right, a 'Current User: ADMINISTRATOR' box is shown above a contact box for 'Conzerv Systems Pvt Ltd' with address, phone, and website information. A 'Communication Status' button is centered below the images. The footer features the 'CONZERV' logo, 'eLAN® - Energy Management System', and the date/time '10/05/10 | 09:08:40'. The Windows taskbar at the bottom shows the start button, several application icons, and the system tray with the time '9:08 AM'.

Mimic.

Mimic

Next Page >

Select the Feeder Name

S1N40 - ID FAN#1A

ID FAN#1A

Parameters	KVA	KW	KVAR	VLL	VLN	AMPS	PF
Average	1798.0	1472.0	1024.9	6373.2	3690.7	162.4	0.819
R- Phase	604.7	497.5	343.4	6387.1	3678.5	164.4	0.823
Y- Phase	596.4	484.1	346.9	6357.9	3696.9	161.3	0.812
B- Phase	597.0	490.5	334.6	6374.7	3696.8	161.5	0.822

Hz 49.8

Integrated Parameters	
KWH	26499989.5
KVAH	32777490.4
KVARH	19225718.8

Matrix

Group Wise Matrix Menu All Feders

Switchyard and Generator	Station HT Switchgear	Unit #1 HT Switchgear
Unit #2 HT Switchgear	Raw Water Pump House	Ash Handling Plant
FGD Plant	Sea Water Pump House	Cooling Water Pump House
Station LT SWGR-OPA	Station LT SWGR-OPB	Unit LT SWGR-1PA & 2PA

Group Wise Matrix Menu For Process Parameters

Scanner-1	Scanner-2	Scanner-3
	Scanner-4	

Group Wise Matrix Menu For ID Fan , Compressor and Pumps

ID & FD Fan	PA & Seal Air Fan Unit -1	PA & Seal Air Fan Unit -2
BFP & CEP Pump	Air Compressor	Coal Mills

FEEDERS	VLL	VLN	A	KVA	KW	KVAR	PF	HZ	KVAH	KWH
1SA I/C From U	6387.7	3688.2	565.5	6257.3	5138.5	3584.9	0.821	49.6	50766893	41392157
IAC#1A	6377.7	3684.2	21.5	238.1	200.1	128.1	0.840	49.6	1889029	1553763
ID FAN#1A	6385.0	3692.2	161.8	1792.2	1458.1	1032.1	0.814	49.6	32777591	26500071
FD FAN#1A	6375.4	3684.4	38.1	420.7	280.5	312.9	0.667	49.6	8597445	5965821
PA FAN#1A	6373.6	3683.0	84.3	931.5	819.1	443.5	0.879	49.6	14535297	12368160
MILL#1EF	6375.1	3684.9	137.3	1517.3	1100.2	1047.7	0.725	49.6	20416926	15361555
ECW#1A	6374.4	3678.0	30.0	331.2	293.8	151.2	0.887	49.6	3894331	3453481
Trf. 1XD	000	000	000	000	000	000	0.00	000	0000	0000
Trf. 1XB	000	000	000	000	000	000	0.00	000	0000	0000
CEP #1A	6375.8	3680.0	48.7	537.7	521.1	134.0	0.969	49.6	8878848	8418901
Tie To OSA	6573.8	3796.1	0.0	0.0	0.0	0.0	0.000	49.6	18030707	14950321
1SB I/C From U	6413.0	3707.7	529.2	5886.5	4761.0	3447.4	0.809	49.6	52831633	41744331
SAC #1A	6400.3	3696.2	20.2	224.3	189.9	117.2	0.847	49.6	1805039	1531301
ECW #IB	6406.0	3703.3	30.8	342.1	303.5	154.8	0.887	49.6	3937342	3504995
MILL #1AB	6400.2	3693.9	159.8	1771.3	1367.1	1134.7	0.772	49.6	16112729	12464319
MILL #1CD	6399.7	3692.9	0.0	0.0	0.0	0.0	0.000	49.6	22357119	17010941



Equipment	Flow	Pressure	SEC
Boiler Feed Pump-1A	845	187	8.56
Boiler Feed Pump-1B	0	10	000
Condesnsate Extraction Pump-1A	608.00	19	0.86
Condesnsate Extraction Pump-1B	608.00	19	0.00
Primary air fan - 1A	116.50	886	6.95
Primary air fan - 1B	116.50	898	6.97
Forced Draft Fan-1A	273.00	214	1.04
Forced Draft Fan-1B	273.00	196	1.00
Induced Draft Fan-1A	000	61	000
Induced Draft Fan-1B	000	33	000
Seal Air Fan1A/1B	000	874	000
Seal Air Fan1C/1D	000	-32	000
Seal Air Fan1E/1F	000	1029	000
Coal Mill - 1AB	0.00	NA	000
Coal Mill - 1CD	0.00	NA	000
Coal Mill - 1EF	85.00	NA	13.06

Trends

trendmenu.cim

File View Help

RELIANCE Energy
Anil Dhirubhai Ambani Group

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Dahanu

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Trend Selection Menu

Electrical Parameter Trend Process Parameter Trend

Equipment Wise Trend

BFP-1A	IDF-1A	CWPP-1
BFP-1B	IDF-1B	CWPP-2
BFP-2A	IDF-2A	CWPP-3
BFP-2B	IDF-2B	CWPP-4
CEP-1A	SAC-1A	BF-1A
CEP-1B	SAC-1B	BF-2A
CEP-2A	SAC-1C	SWP-1
CEP-2B	CM-1AB	SWP-2
PAF-1A	CM-1CD	SWP-3
PAF-1B	CM-1EF	SWP-4
PAF-2A	CM-2AB	OB-1
PAF-2B	CM-2CD	OB-2
FDF-1A	CM-2EF	OB-3
FDF-1B	IAC-1A	OB-4
FDF-2A	IAC-1B	
FDF-2B		

CONZERV Smart Energy Management **eLAN® - Energy Management System**

10/05/10 | 09:12:11

This Screen shows Trend (of real time data of every individual feeder (Flow, pressure, Active power).

BFP-1A.cim

File View Help

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Dahanu

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Go To Trend Selection Menu **Boiler Feed Pump-1A**

FLOW (Tons/Hr)

Line ID	Slider Value	Slider Value	Time	Description
S1N1_CH	***	***		BFP 1A Flow

PRESSURE (Kg/cm2)

Line ID	Slider Value	Slider Value	Time	Description
S1N2_CH	***	***		BFP 1A Pressure

Active Power (KW)

Line ID	Slider Value	Slider Value	Time	Description
S1N62_KW	***	***		BFP #1A

Specific Power Consumption(KW/Flow)

Line ID	Slider Value	Slider Value	Time	Description

CONZERV® eLAN® - Energy Management System

10/05/10 | 09:23:40

Dashboard

Dashboard.cim

File View Help

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Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Date : 05/10/10 Time : 09:26:51 **Dashboard - Online Status** Shift Day Month

GCR & PCR Status

Unit #	000	MW	000	AMP	000	KV	000	PF
Unit # 1	000	MW	000	AMP	000	KV	000	PF
Unit # 2	000	MW	000	AMP	000	KV	000	PF
Boisar Line	000	MW	000	AMP	000	KV	000	PF
Versova Line	000	MW	000	AMP	000	KV	000	PF
Ghod Line-1	000	MW	000	AMP	000	KV	000	PF
Ghod Line-2	000	MW	000	AMP	000	KV	000	PF
ST - 1	000	MW	000	AMP	000	KV	000	PF
ST - 2	000	MW	000	AMP	000	KV	000	PF
GT - 1	000	MW	000	AMP	000	KV	000	PF
GT - 2	000	MW	000	AMP	000	KV	000	PF

Aux Power Status

Total Gen.	000	MW			
Total Imp.	000	MW	Total Exp.	000	MW
Aux.Power	000	MW	% Aux.Power	000	%

Area Wise Status

CHP	0.6	MW	85	AMP	6.59	KV
AHP	0.3	MW	27	AMP	6.61	KV
RWPH	0.7	MW	70	AMP	6.60	KV
CWPH	3.4	MW	410	AMP	6.60	KV
FGD	3.9	MW	414	AMP	6.59	KV

Specific Power Consumption

	KW	SPC		KW	SPC		KW	SPC
BFP-1A	7293	8.57	MILL-1A	1366	000	SWP-1	000	000
BFP-1B	0	000	MILL-1C	0	000	SWP-2	000	000
BFP-2A	0	000	MILL-1E	1108	000	SWP-3	000	000
BFP-2B	7055	000	MILL-2A	1360	000	SWP-4	000	000
CEP-1A	523	000	MILL-2C	0	000	OB-1	000	000
CEP-1B	0	000	MILL-2E	1082	000	OB-2	000	000
CEP-2A	498	000	ID-1A	1426	000	OB-3	000	000
CEP-2B	0	000	ID-1B	1433	000	OB-4	000	000
PA-1A	822	000	ID-2A	1364	000	BF-1	000	000
PA-1B	807	000	ID-2B	1387	000	BF-2	000	000
PA-2A	748	000	FD-1A	282	000	CWP-1	000	000
PA-2B	731	000	FD-1B	274	000	CWP-2	000	000
SAC-1A	190	000	FD-2A	304	000	CWP-3	000	000
SAC-2A	0	000	FD-2B	298	000	CWP-4	000	000
IAC-1A	197	000	IAC-2B	0	000	IAC-1C	0	000
SAF-1A	000	000	SAF-1C	000	000	SAF-1E	000	000
SAF-1B	000	000	SAF-1D	000	000	SAF-1F	000	000
SAF-2A	000	000	SAF-2C	000	000	SAF-2E	000	000
SAF-2B	000	000	SAF-2D	000	000	SAF-2F	000	000

AC, Vent, Lighting, VAM Load

	Unit - 1	Unit - 2	Total
Vent.Sys	000	000	000
A/C.Sys	000	000	000
Lighting	58.6	45	103.37
VAM			000

CONZERV® eLAN® - Energy Management System

10/05/10 | 09:26:51

History

History3.cim

File View Help

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Dahanu

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Process Parameter Trend History and Realtime Move to ID 100 to 200 Move to ID 1 to 90

Line ID	Slider Value	Slider Value Time	Slider Value Date	Description
S1N1_ch	849	10:50:00.007 AM	05/09/2010	BFP 1A Flow
S1N2_ch	186	10:50:00.007 AM	05/09/2010	BFP 1A Pressure

Slider Date: 05/09/2010 Slider Time: 10:50:41 AM

Clear All Trends See All Trends

1 S1N1_ch 2 S1N2_ch 3 Select Pen 4 Select Pen 5 Select Pen 6 Select Pen 7 Select Pen 8 Select Pen

CONZERV eLAN® - Energy Management System

10/05/10 | 09:43:29

History

History1.cim

File View Help

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Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Electrical Parameter Trend History and Realtime Process Trends Move to ID 100 to 200

Line ID	Slider Value	Slider Value Time	Slider Value Date	Current Value	Description
S1N47_KWH	8100638.21	7:49:50.017 PM	04/14/2010	8419610.11	CEP #1A
S1N47_KW	524.71	7:49:50.017 PM	04/14/2010	525.44	CEP #1A
S1N47_vll	6393.47	7:49:50.017 PM	04/14/2010	6372.15	CEP #1A
S1N47_a	48.89	7:49:50.017 PM	04/14/2010	49.12	CEP #1A

Clear All Trends See All Trends

1 S1N47_KWH 2 S1N47_KW 3 S1N47_vll 4 S1N47_a 5 Select Pen 6 Select Pen 7 Select Pen 8 Select Pen


CONZERV® eLAN® - Energy Management System Smart Energy Management

10/05/10 | 10:30:36

History

History1.cim
_ □ ×

File View Help

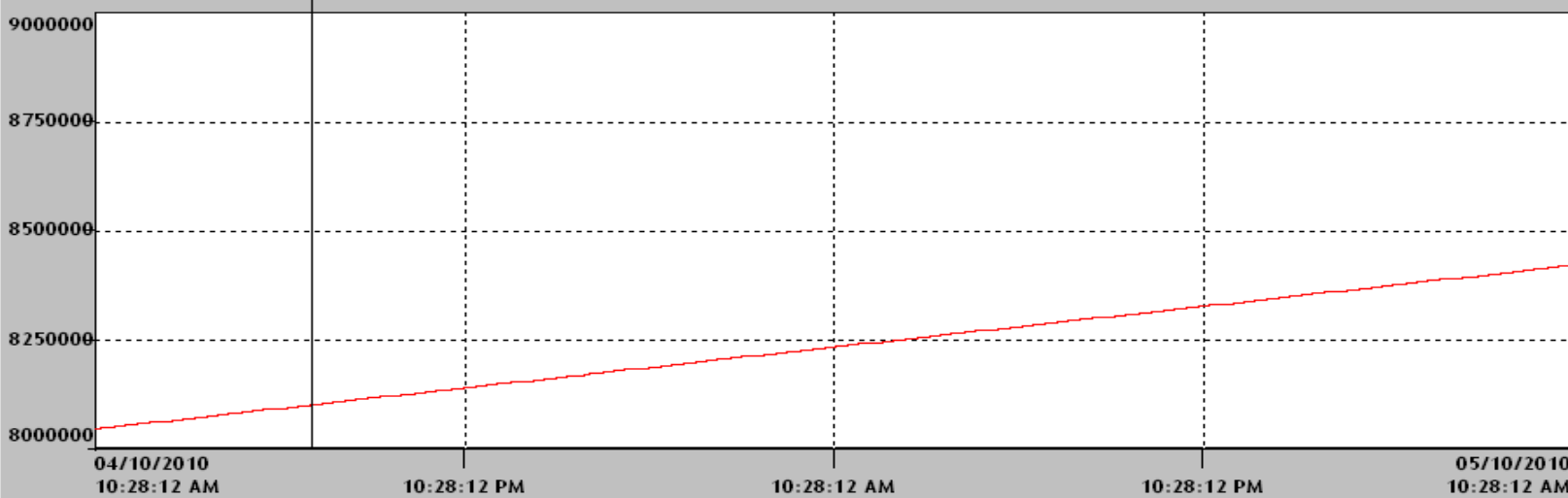


Reliance Infrastructure Ltd
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Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Process Trends
Move to ID 100 to 200

Electrical Parameter Trend History and Realtime




The graph displays a single red line representing the trend of an electrical parameter. The y-axis ranges from 8,000,000 to 9,000,000 with major grid lines every 250,000. The x-axis shows dates from 04/10/2010 to 05/10/2010. The line starts at approximately 8,000,000 on 04/10/2010 and rises steadily to about 8,400,000 by 05/10/2010.

Line ID	Slider Value	Slider Value Time	Slider Value Date	Current Value	Description
S1N47_KWH	8100616.19	7:47:30.020 PM	04/14/2010	8419591.17	CEP #1A

Clear All Trends
See All Trends

1 S1N47_KWH ↺	3 S1N47_vll ↺	5 Select Pen ↺	7 Select Pen ↺
2 S1N47_KW ↺	4 S1N47_a ↺	6 Select Pen ↺	8 Select Pen ↺



eLAN® - Energy Management System

10/05/10 | 10:28:12

start | Welcome - IBM Lotus ... | History1.cim | Microsoft PowerPoint ... | 10:28 AM

History

History1.cim

File View Help

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Reliance Infrastructure Ltd Dahanu

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

Electrical Parameter Trend History and Realtime Process Trends Move to ID 100 to 200

Trend history for one month

Line ID	Slider Value	Slider Value Time	Slider Value Date	Current Value	Description
S1N47_a	48.64	5:18:40.020 PM	04/14/2010	49.15	CEP #1A

Clear All Trends See All Trends

1 S1N47_KWH 2 S1N47_KW 3 S1N47_vll 4 S1N47_a 5 Select Pen 6 Select Pen 7 Select Pen 8 Select Pen

CONZERV eLAN® - Energy Management System

Smart Energy Management 10/05/10 | 10:36:49

start Welcome - IBM Lotus ... History1.cim 10:36 AM

Alarm

Alarms.cim File View Help

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

ALARMS

ALARM COUNTS : 139
DATE : May 10
TIME : 09:45

Date	Time	Duration	Ack	Class	State	Reference	Message
5/10...	09:4...	00:33	Y	HIGH	ALARM	S1N129_PF	LoLo Limit is 0.500000 Current
5/10...	09:3...	06:45	Y	HIGH	ALARM	S1N19_VLN	Hi Limit is 3800.000000 Current
5/10...	09:3...	09:55	Y	HIGH	ALARM	S1N34_PF	LoLo Limit is 0.500000 Current
5/10...	09:2...	16:46	Y	HIGH	ALARM	S1N126_PF	LoLo Limit is 0.500000 Current
5/10...	07:0...	2.7h	Y	HIGH	ALARM	S1N49_KW	HiHi Limit is 550.000000 Curren
5/10...	06:3...	3.2h	Y	HIGH	ALARM	S1N13_KW	HiHi Limit is 275.000000 Curren
5/10...	06:3...	3.2h	Y	HIGH	ALARM	S1N42_KW	HiHi Limit is 550.000000 Curren
5/10...	04:4...	5.0h	Y	HIGH	ALARM	S1N13_KVA	HiHi Limit is 300.000000 Curren
5/10...	04:2...	5.4h	Y	HIGH	ALARM	S1N12_PF	LoLo Limit is 0.500000 Current
5/9/10	09:2...	12.3h	Y	HIGH	ALARM	S1N76_KVA	LoLo Limit is 0.000000 Current
5/9/10	07:2...	14.4h	Y	HIGH	ALARM	S1N124_PF	LoLo Limit is 0.500000 Current
5/9/10	07:1...	14.5h	Y	HIGH	ALARM	S1N70_KVA	LoLo Limit is 0.000000 Current
5/9/10	07:1...	14.5h	Y	HIGH	ALARM	S1N70_PF	LoLo Limit is 0.500000 Current
5/8/10	07:0...	20.0d	Y	HIGH	ALARM	S1N11_KW	HiHi Limit is 1000.000000 Curre
5/8/10	12:0...	1.9d	Y	HIGH	ALARM	S1N60_PF	LoLo Limit is 0.500000 Current
5/8/10	03:5...	2.2d	Y	HIGH	ALARM	S1N38_KW	HiHi Limit is 550.000000 Curren
5/7/10	06:2...	2.6d	Y	HIGH	ALARM	S1N53_PF	LoLo Limit is 0.500000 Current
5/7/10	06:2...	3.1d	Y	HIGH	ALARM	S1N54_KW	HiHi Limit is 550.000000 Curren
5/5/10	07:0...	4.6d	Y	HIGH	ALARM	S1N76 PF	LoLo Limit is 0.500000 Current

Ack Delete Ack All

Set Alarm Limits

start Welcome - IBM Lotus ... Alarms.cim 9:46 AM

Reports

Microsoft Excel - REL.xls

File Edit View Insert Format Tools Data Window Help

Comic Sans MS 10 B I U

Reliance Energy Reliance Energy Limited , Dahanu
Anil Dhirubhai Ambani Group

DAILY REPORT
 MONTHLY REPORT

DAY MONTH YEAR
 10 MAY 2010

Note : To Generate Daily , Monthly , Click on Execute Button
 Note : To Generate Periodic Report Click on Execute (D to D) B
 Note : To View Report Click on View reports Button

Periodic Report

From 25/03/2010 Hrs 15.0
 To 25/03/2010 Hrs 16.0
 mm/dd/yyyy

EXECUTE(D to D)

EXECUTE **CLOSE**

VIEW REPORTS

Update E-Mail **PASSWORD for eMailID**

Auto e-Mail send

Ready MAIN

start Welcome - IBM Lotus ... Alarms.cim Microsoft Excel - REL.... 9:47 AM

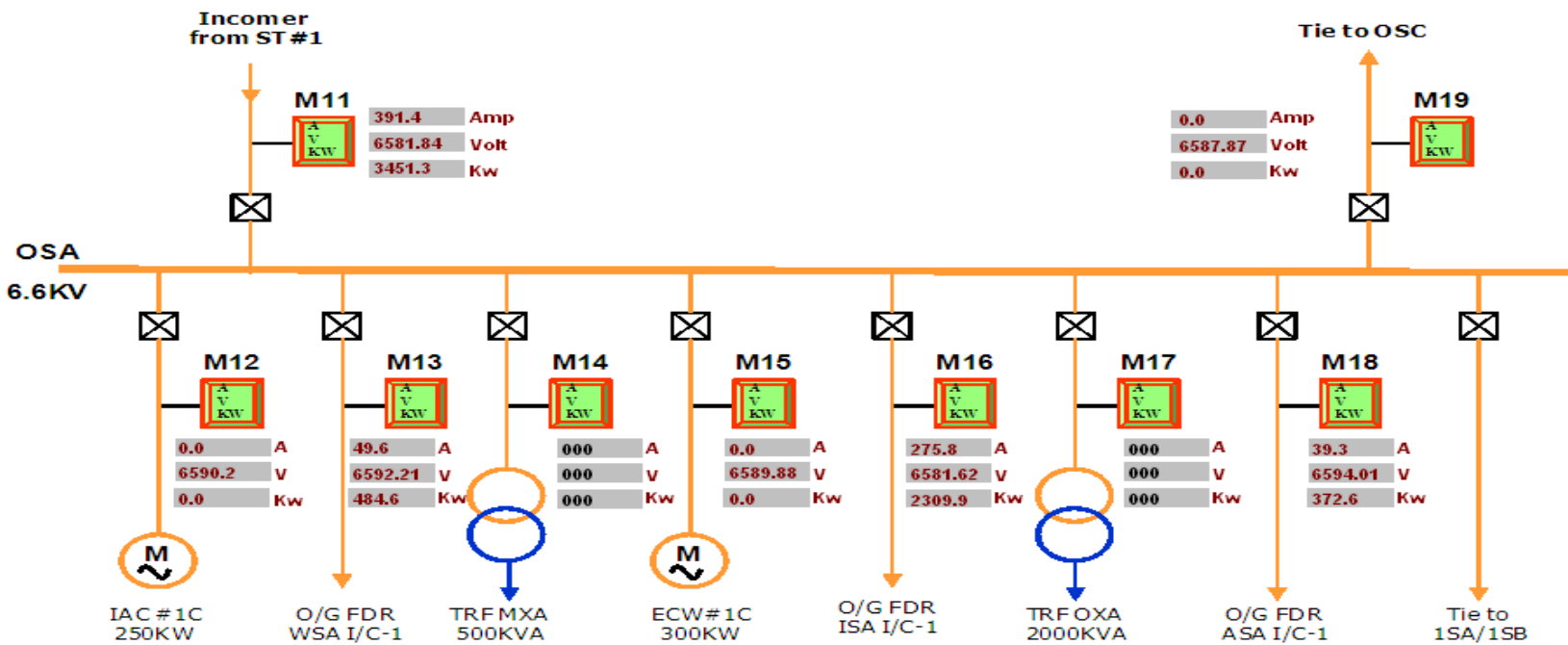
SLD

SLD2.cim File View Help

Home Mimic Matrix Trends Dashboard History Alarm Reports SLD View Reports Utility

< Back Next >

6.6KV STATION SWITCHGEAR OSA



View Reports

Microsoft Excel - Consumption_09052010_D.xls

File Edit View Insert Format Tools Data Window Help

Verdana 8 B I U

Security...

Type a question for help

A61 fx

AH AI AK AL AM AN AO AP AQ AR AS

1
2
3
4

RELIANCE Energy
Anil Dhirubhai Ambani Group

Feeder name

Timings OSD I/C FROM ST-2 CSA O/G BFP#2B FSA O/G - 2 ISA I/C FROM UAT#1 IAC#1A ID FAN#1A FD FAN#1A PA FAN#1A MILL#1EF ECW#1A

Timings	OSD I/C FROM ST-2	CSA O/G	BFP#2B	FSA O/G - 2	ISA I/C FROM UAT#1	IAC#1A	ID FAN#1A	FD FAN#1A	PA FAN#1A	MILL#1EF	ECW#1A
11:00a.m-11:30a.m	9367.77	152.07	7190.61	1824.14	5046.11	202.47	1432.74	283.37	797.59	1095.66	298.09
11:30a.m-12:00a.m	9249.50	83.36	7189.97	1777.63	5071.55	202.34	1438.10	282.96	805.41	1096.34	296.95
12:00a.m-12:30p.m	9321.95	35.44	7205.57	1862.25	5077.19	201.98	1450.13	283.34	806.39	1089.38	297.72
12:30p.m-01:00p.m	9317.52	7.93	7212.35	1862.06	5091.80	201.74	1452.82	282.56	815.64	1096.27	297.70
01:00p.m-01:30p.m	9250.66	0.00	7153.12	1850.76	5123.59	201.10	1468.95	280.79	828.68	1095.52	295.59
01:30p.m-02:00p.m	9244.95	0.00	7151.16	1851.82	5128.62	200.96	1481.95	280.26	835.62	1090.60	296.66
02:00p.m-02:30p.m	9218.63	16.69	7115.16	1847.60	5127.64	201.40	1483.63	279.94	843.24	1090.28	296.52
02:30p.m-03:00p.m	9397.98	222.24	7121.79	1842.63	5102.26	199.64	1465.22	281.37	829.80	1085.58	295.10
03:00p.m-03:30p.m	9476.58	320.27	7094.88	1850.06	5124.28	200.04	1467.65	284.04	826.15	1083.69	296.96
03:30p.m-04:00p.m	9540.34	344.92	7165.13	1842.17	5049.77	142.64	1466.10	283.25	821.23	1075.85	296.81
04:00p.m-04:30p.m	9685.83	400.73	7218.82	1858.63	4965.80	56.86	1471.12	286.58	814.57	1081.90	300.98
04:30p.m-05:00p.m	9596.68	354.43	7201.78	1848.25	5093.03	187.89	1463.57	285.61	809.74	1090.03	299.90
05:00p.m-05:30p.m	9725.69	467.85	7182.34	1860.61	5094.54	175.83	1472.10	286.75	808.47	1097.82	301.91
05:30p.m-06:00p.m	9803.43	571.43	7164.33	1860.41	5097.54	187.82	1466.81	288.20	811.21	1106.56	301.57
06:00p.m-06:30p.m	9784.20	758.76	7182.94	1875.64	5132.00	203.46	1483.80	288.47	805.41	1112.78	304.31
06:30p.m-07:00p.m	9727.45	515.52	7162.69	1855.65	5145.94	202.74	1475.47	287.08	800.87	1115.34	301.02
07:00p.m-07:30p.m	9665.65	515.27	7112.11	1840.06	5139.76	201.58	1467.98	287.23	803.88	1133.63	298.84
07:30p.m-08:00p.m	9682.36	516.92	7114.74	1831.53	5181.02	201.02	1483.92	284.77	818.89	1132.35	296.51
08:00p.m-08:30p.m	9642.79	463.94	7110.05	1835.82	5182.35	201.37	1480.46	284.10	809.80	1133.46	297.44
08:30p.m-09:00p.m	9738.79	553.21	7134.77	1832.53	5147.27	199.19	1458.62	283.58	802.93	1133.15	296.14
09:00p.m-09:30p.m	9750.23	564.56	7132.76	1835.09	5105.13	199.88	1445.97	283.97	794.65	1137.43	295.50
09:30p.m-10:00p.m	9771.73	513.86	7182.99	1856.36	5106.67	200.95	1444.97	287.57	780.64	1137.19	298.61
10:00p.m-10:30p.m	9528.31	378.51	7119.05	1830.85	5104.28	200.13	1431.53	283.80	797.64	1121.40	293.85
10:30p.m-11:00p.m	9467.45	255.33	7157.05	1838.79	5106.60	199.30	1456.93	284.13	794.80	1117.32	294.57
11:00p.m-11:30p.m	9401.05	238.84	7119.13	1828.63	5116.54	196.74	1458.28	282.65	810.33	1107.27	292.39
11:30p.m-00:00a.m	9450.63	247.84	7131.19	1851.70	5129.29	198.91	1473.94	286.54	804.42	1103.51	296.82
Daily Avg kw	9435.66	241.25	7155.50	1829.19	5122.13	195.79	1463.56	287.23	814.73	1108.78	297.83
Daily Min kw	8974.72	0.00	7008.76	1513.10	4884.68	28.75	1390.75	268.81	772.59	1072.46	288.73
Daily Max kw	9902.08	1977.80	7319.43	1897.32	5289.99	208.35	1519.67	314.79	852.72	1145.79	307.68

O&E DailyReport / DailySECRReport / ProcessParameter \kw /kva /PF / Hourly / kw_graph / kva_graph / pf_graph / hourly graph /

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Utility

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Utility- 1

<< Back Next >>

S1N1	ST - 1	S1N11	OSA I/C From ST-1	S1N21	BFP #1B
S1N2	GT - 1	S1N12	IAC#1C	S1N22	Trf. OXB
S1N3	Boisar Line	S1N13	O/G Fdr. WSA I/C-1	S1N23	O/G Fdr. CSA I/C-1
S1N4	Versova Line	S1N14	Trf. MXA	S1N24	Tie To OSD
S1N5	ST - 2	S1N15	ECW #1C	S1N25	O/G Fdr. FSA I/C-1
S1N6	GT - 2	S1N16	O/G Fdr. ISA I/C-1	S1N26	OSC I/C From ST-2
S1N7	Ghod. Line-1	S1N17	Trf. OXA	S1N27	O/G Fdr. WSA I/C-2
S1N8	Ghod. Line-2	S1N18	O/G Fdr. ASA I/C-1	S1N28	Trf. MXB
S1N9	Generator-1	S1N19	Tie To OSC	S1N29	ECW #2C
S1N10	Generator-2	S1N20	OSB I/C From ST-1	S1N30	Trf. OXC

* Enter Max 12 Characters only



Click here to Change Feeder Description

Update (All Descriptions) SQL Database

Update for reports (All Descriptions) SQL Database

Application

A. Data Monitoring

- ✓ Electrical parameters like
 - Current,
 - Voltage,
 - Power
 - Freq.
 - Power factor
 - KWH
- ✓ Process parameters like flow ,pressure etc
- ✓ Specific energy consumption and comparison
- ✓ Historical data equipment wise.

"RELIANCE INFRASTRUCTURE LIMITED"

DTPS
2 X 250 MW

DAILY "ENERGY" DEVIATION REPORT

FORMAT NO: 10.1.1B

Date

7-May-10 **6-May-10** **7-May-10** **6-May-10**

HT Auxiliaries	Design/ PG Test Rating	Running Hrs	Actual KW	Guarranteed KWH	Actual KWH	Energy Deviation	Energy Deviation	Sp. Power Cons	Sp. Power Cons
UNIT	Kw	Hrs	Kw	Kwh	Kwh	Kwh	Kwh	Kw/TN	Kw/TN

TURBINE AUXILIARIES

BFP - 1A	7116	24.0	7243	170784	173842	3058	3493	9.13	9.1
BFP - 1B	7116	0.0	0	0	0	0	0	0.00	0.00
BFP - 2A	7116	0.0	0	0	0	0	0	0.00	0.00
BFP - 2B	7116	24.0	7146	170784	171508	724	257	9.03	9.00
CEP-1A	590	24.0	520	14160	12487	-1673	-1600	0.81	0.81
CEP-1B	590	0.0	0	0	0	0	0	0.00	0.00
CEP-2A	590	24.0	436	14160	10469	-3691	-3703	0.70	0.70
CEP-2B	590	0.0	0	0	0	0	0	0.00	0.00
ECW - 1A	300	24.0	298	7200	7158	-42	-95	0.23	0.23
ECW - 1B	300	24.0	307	7200	7378	178	128	0.24	0.23
ECW - 1C	300	0.0	0	0	0	0	0	0.00	0.00
ECW - 2A	300	24.0	320	7200	7669	469	414	0.25	0.24
ECW - 2B	300	24.0	308	7200	7397	197	138	0.24	0.24
ECW - 2C	300	0.0	0	0	0	0	0	0.00	0.00
TURBINE TOTAL	16612		16579	398688	397908	-780	-969		

BOILER AUXILIARIES

ID FAN - 1A	1344	24.0	1474	32256	35377	3121	2638	1.23	1.21
ID FAN - 1B	1344	24.0	1465	32256	35150	2894	2431	1.22	1.20
ID FAN - 2A	1344	24.0	1376	32256	33018	762	656	1.15	1.14
ID FAN - 2B	1344	24.0	1402	32256	33647	1391	1313	1.17	1.17
FD FAN - 1A	319	24.0	295	7656	7078	-578	-797	1.02	0.98
FD FAN - 1B	319	24.0	276	7656	6628	-1028	-1177	0.90	0.88
FD FAN - 2A	319	24.0	319	7656	7667	11	-36	1.11	1.10
FD FAN - 2B	319	24.0	353	7656	8473	817	519	1.15	1.12
PA FAN - 1A	657	24.0	831	15768	19953	4185	4054	7.11	7.37
PA FAN - 1B	657	24.0	825	15768	19807	4039	3914	7.05	7.32
PA FAN - 2A	657	24.0	714	15768	17148	1380	1521	7.37	7.13
PA FAN - 2B	657	24.0	695	15768	16678	910	1061	7.16	6.94
COAL MILL - 1AB	1267	24.0	1385	30408	33251	2843	2657	16.40	17.55
COAL MILL - 1CD	1267	0.0	0	0	0	0	0	0.00	0.00
COAL MILL - 1EF	1267	24.0	1113	30408	26720	-3688	-3830	13.94	13.17
COAL MILL - 2AB	1267	24.0	1394	30408	33456	3048	2691	17.66	17.43
COAL MILL - 2CD	1267	0.0	0	0	0	0	0	0.00	0.00
COAL MILL - 2EF	1267	24.0	1105	30408	26527	-3881	-3970	13.80	13.78
BOILER TOTAL	9708		9308	344352	360578	16226	13645		

OFFSITE AUXILIARIES

CW PUMP - 1	1230	24.0	1133	29520	27190	-2330	-2391	0.06	0.06
CW PUMP - 2	1230	9.4	1175	11562	11044	-518	-1409	0.06	0.06
CW PUMP - 3	1230	14.6	1141	17958	16654	-1304	0	0.06	0.00
CW PUMP - 4	1230	24.0	1134	29520	27225	-2295	-2626	0.06	0.06
IAC-1A	197	24.0	203	4728	4874	146	134	0.16	0.16
IAC-2A	197	0.0	0	0	0	0	0	0.00	0.00
IAC-1C	197	5.0	195	985	974	-11	-18	0.16	0.16
SAC-1A	197	24.0	194	4728	4649	-79	-90	0.16	0.16
SAC-2A	197	0.0	0	0	0	0	0	0.00	0.00
AD PUMP-A	180	9.5	175	1710	1662	-48	0	0.25	0.00
AD PUMP-B	180	0.0	0	0	0	0	-3704	0.00	0.25
AD PUMP-C	180	0.0	0	0	0	0	0	0.00	0.00
AD PUMP-D	180	11.8	175	2129	2069	-60	0	0.25	0.00
HP PUMP-A	178	21.3	165	3783	3510	-272	-131	0.32	0.34
HP PUMP-B	178	1.0	0	178	0	-178	0	0.00	0.00
HP PUMP-C	178	1.0	0	178	0	-178	0	0.00	0.00
SW PUMP-1	680	24.0	625	16320	15010	-1310	-1270	0.106	0.106
SW PUMP-2	680	24.0	637	16320	15290	-1030	-890	0.108	0.109
SW PUMP-3	680	24.0	631	16320	15150	-1170	-1150	0.107	0.107
SW PUMP-4	680	0.0	0	0	0	0	0	0.000	0.000
Booster Fan-1	1900	24.0	1471	45600	35300	-10300	-12600	1.23	1.15
Booster Fan-2	1900	24.0	1471	45600	35300	-10300	-10200	1.23	1.23
Oxida Blower -1	350	24.0	339	8400	8140	-260	-290	0.021	0.021
Oxida Blower -2	350	24.0	325	8400	7800	-600	-78	0.020	0.020
Oxida Blower -3	350	0.0	0	0	0	0	-212	0.000	0.021
Oxida Blower -4	350	24.0	329	8400	7890	-510	-510	0.021	0.021
OFFSITE TOTAL	11879		11518	272339	239730	-32609	-37435		

Application

B. Strategy for operation of equipment

1 .Scheduled operation

- Daily Auxiliary load profile helps to reschedule the changeover operation

Ex. Mill changeover, BFP changeover by comparing power consumption.

- Priority base scheduling peak/off-peak hours

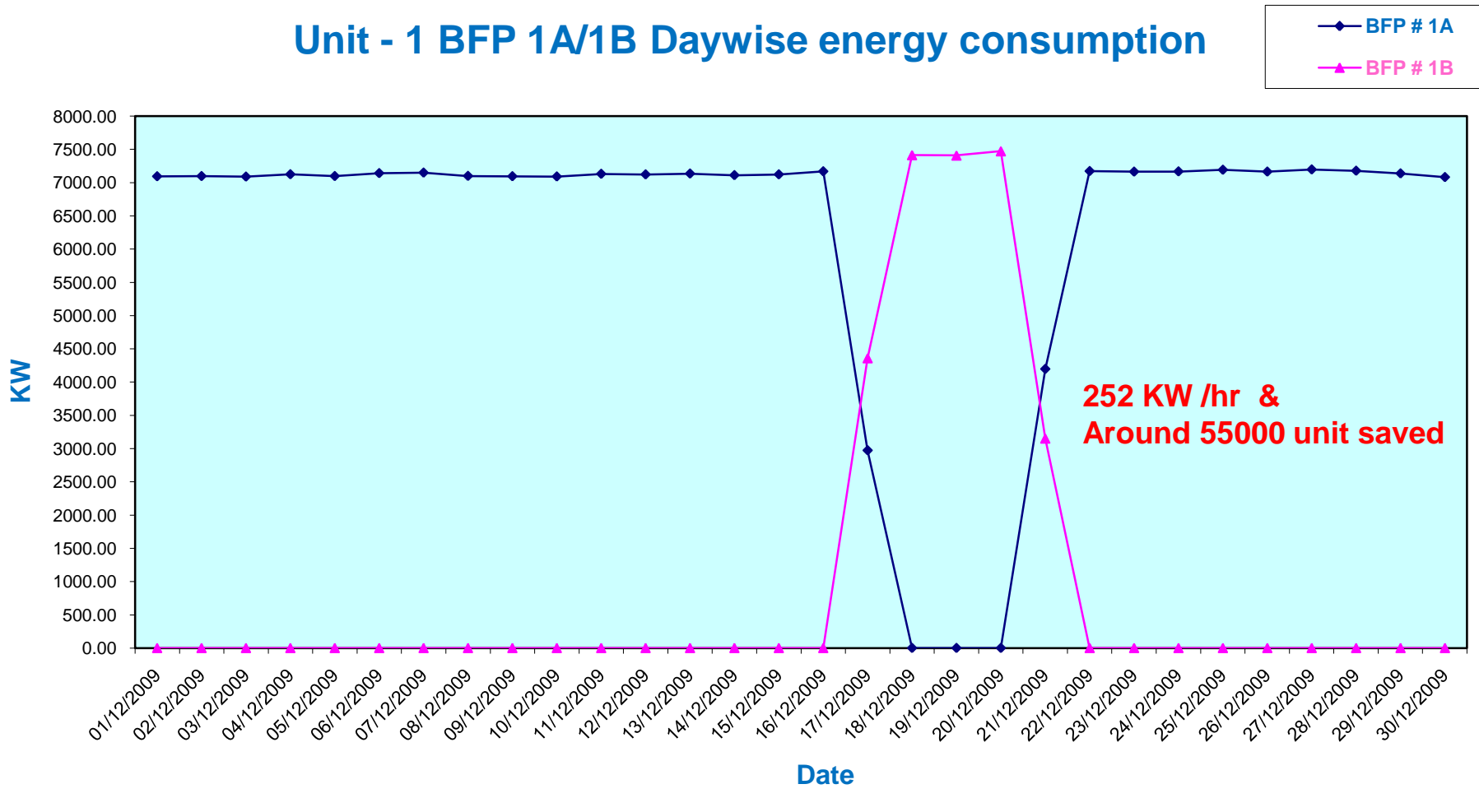
Ex. operating the coal bunkering, Hydrogen/ DM plant during off-peak hours.

2. Enhancing the efficient operation by

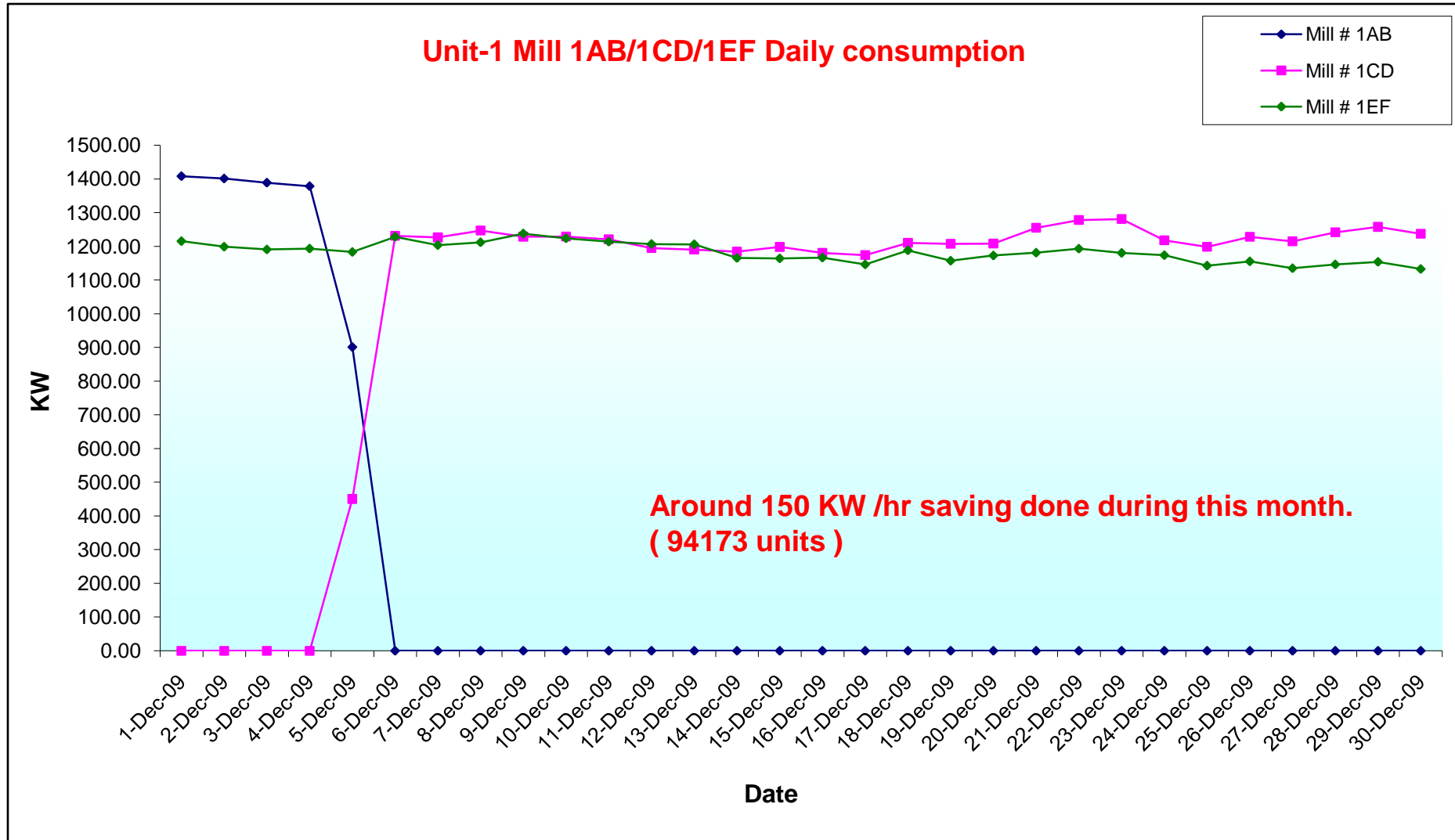
- Identifying the inefficient equipment.
- Operating the most efficient equipment comparing the power consumption.

Case :1

Unit - 1 BFP 1A/1B Daywise energy consumption



Case :2



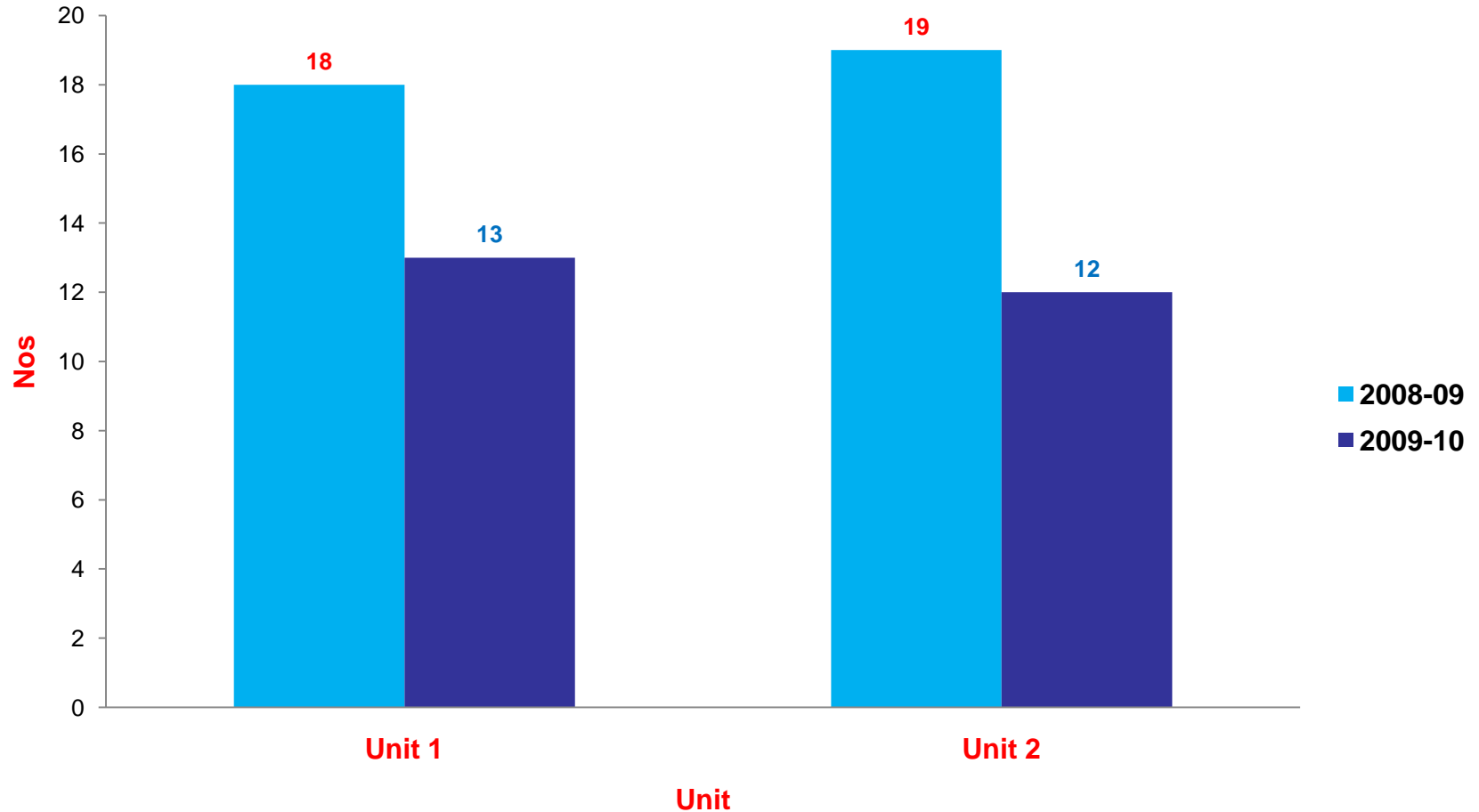
Benefits

- ✓ **Elimination of human error in measurement**
- ✓ **Benchmarking energy consumption**
- ✓ **Different type of reports like daily, monthly, quarterly or yearly can be generated automatically.**
- ✓ **Enhanced the efficient equipment operation**
- ✓ **Useful Data available for Predictive maintenance decision.**
- ✓ **Availability of online data of all electrical and process at single point which is very useful for Energy audit.**
- ✓ **Measurement and verification**

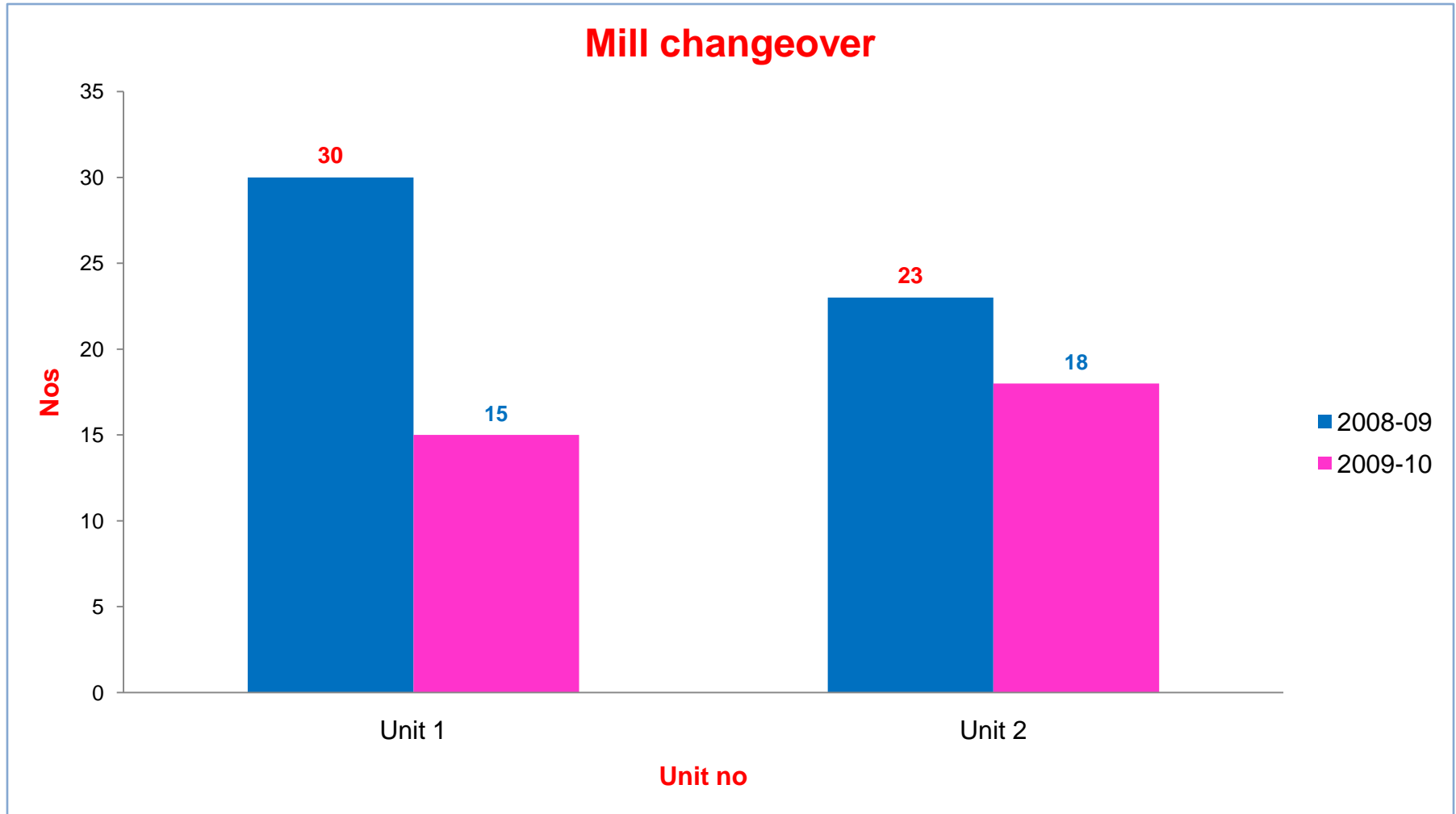
Thank you

Predictive maintenance

BFP Changeover

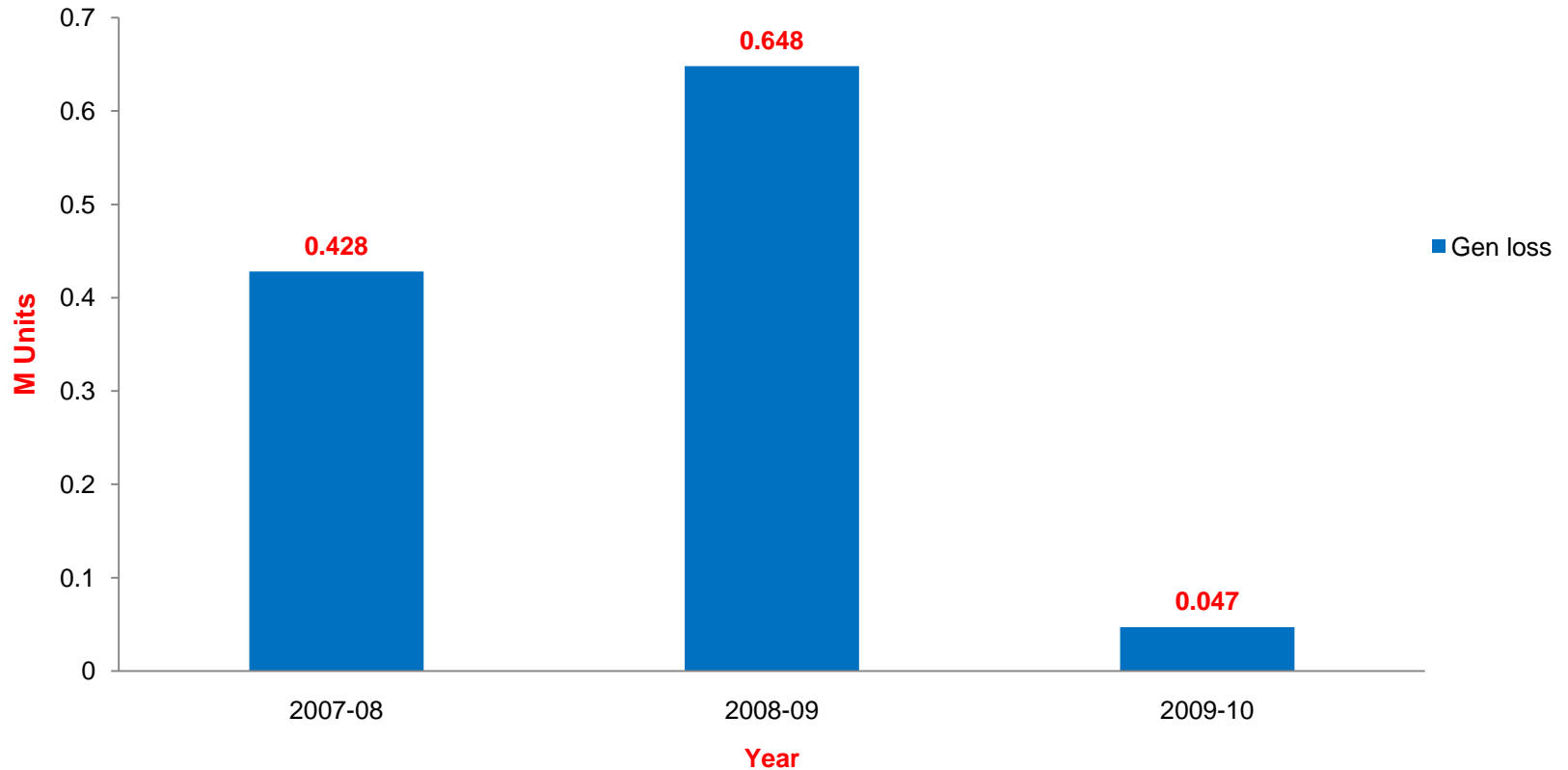


Predictive Maintenance



Predictive Maintenance

Generation Loss due to Mill Changeover



Multi Function Meter

Make	:	M/s. Conzerv Limited
Model	:	EM 6400
Measurement parameters	:	All electrical parameters
Accuracy class	:	1.0 class
Auxiliary power supply	:	44-300V AC/DC
Display	:	3 lines,4 digits LED
Dimensions	:	92 X 92 mm

Software

- Make : Conzerve Limited
- Data cable : EIA Industrial RS-485 cable, 22 AWG (7x30) stranded tinned copper. Twisted pairs. Overall standard tinned copper drain wire.
- Converter kit : 2W/4W operation – Half Duplex ,Data range – 064Kbps, Communication speed for distance upto 4000 ft – 64Kbps, Termination resistor can be enabled/disabled, Surge suppression & Fuse protection provided, Optical isolation as protection from ground loops
- Data repeater : 05 Nos.
- PC for EMS : 02 Nos

No. of meters installed

- ❑ Meters installed on HT feeders : 99
- ❑ Meters installed on LT feeders : 36
- ❑ Meters installed on lighting feeders in plant area : 19
- ❑ Meters installed in colony : 7

Benefits

- ✓ Availability of online monitoring of all electrical and process parameters of critical auxiliary at single point which is very useful in Energy audit.
- ✓ Elimination of human error in measurement due to real time energy management.
- ✓ Measurable outputs in terms of area wise, equipment wise energy consumption and aux power measurement is possible.
- ✓ Compares and identifies the efficient processes & equipment which will be helpful in taking important operational and maintenance decisions.
- ✓ Report generation and archiving is possible.
- ✓ Different type of reports like daily, monthly, quarterly or yearly can be generated automatically.