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ENERGY ACCOUNTING SYSTEM AT L&T-ARAKKONAM CEMENT WORKS

There are 2 ways of monitoring & controlling mechanism available in ARCW.

- 1) TPM Way**
- 2) ISO 9001 Way**

We have the following sections in our plant

1. Wagon Tippler – The clinker, which is the main “Raw Material” for Cement (from our mother plant in Railway Rakes) is being tipped here.
2. Cement Mill - The clinker is ground in the Ball mill. Mill contains several auxiliaries & ESP, Sepax Fan & Separator Etc.
3. Compressors & Plant Lighting – Utilities – We have 3 Nos. Screw Compressors – Each driven by 110 Kw
4. Packing Plant – Contains 2 packing machines and its material feeding circuit.

We have the following energy accounting systems in our plant.

1) TPM Way :

For easy Monitoring & Control of parameters of the sections like power, Yield Etc, We have divided all the above indicated plant areas into 3 Controlling Teams (**Area effectiveness Teams - AET**).

This team comprises 3 staff & one leader. The main feature of these AET Teams is that these teams are **“Cross Functional Teams”** .ie. Each team contains employees from various departments like Electrical, Mechanical, Process, Dispatch Etc . **“Process & Asset Care Teams (PAC)”** . Members of the PAC Teams are Technicians, Fitters and Electricians. PAC Team members help the AET Team members in achieving the targets and to maintain cleanliness of equipments.

“Power plant & Utilities” – (Area Effectiveness Team - C)

The following areas are looked after by this team.

Power Plant / DG
Sewage Treatment Plant
Compressors & Pump House
All electrical substations of the plant

Similarly, We have two more teams in our plant for the following

“Cement mill & Wagon Tippler” – (Area Effectiveness Team - A)

The following are the areas looked after by this team.

Clinker, Gypsum, Flyash Feeding System
Cement Mill, Auxiliaries & Transport System
Wagon Tippler & Clinker Transport

“Packing Plant & Laboratory ” – (Area Effectiveness Team - B)

The following are the areas looked after by this team .

Packing Plant & Cement Feeding
Laboratory
Packing & Dispatch of bagged cement.

Monthly KPOV Tracking & savings work-out : KPOV – Key Process Output Variable

During the year starting, each team sets “Targets / Aspirations” for each “Key Parameters” Like DG Yield, Utility Power consumption Etc., These monthly moniterable targets are based on the previous year performance Values and the “Best Achieved” values becomes the Target values for the Forthcoming year. Based on the targets and the last months “Actual Value” , we are calculating the “Actual Savings ” vis-à-vis Savings in Rupees due to that.

See below the targets of the March 2003 and the corresponding savings done by Team C.

POWER GENERATION & UTILITIES **PERFORMANCE PARAMETERS SAVING FOR THE MONTH OF March-2003**

S.No	KEY PARAMETER	UNIT	April to Nov.2002	Best achieved	Aspiration	Achived in March-03	SAVING	ACTUAL SAVING IN "Rs"
1	D.G.Water Consumption	m3/Hr	7.5	7	7.35	7.03	0.47	1202.00
2	Grid power Vs DG power ratio	Ratio	9.37	7.5	8.75	8.03	1.34	19626.00
3	D.G.Yield	Unit/Lt	4.27	4.3	4.29	4.302	0.032	45092.00
4	D.G.Specific lub oil Consumption	Grams/Unit	0.42	0.35	0.39	0.363	0.057	6346.000
5	D.G.Aux power Consumption	%age	3.5	3	3.25	2.69	0.81	48745.00
6	Utilities power Consumption	Unit/Ton of Cement	2.96	2.74	2.9	2.87	0.09	6632.00
							Total Amount Rs.	1,27,643.00

Based on the money saved on monthly basis, the AET Team members & PAC Team members are motivated by the management. The photos of the PAC team & AET Team members are put in the TPM Boards and introduced to the whole plant.

2) Six Sigma Projects:

We have taken 6 sigma projects on “Reduction of cement mill power” and “Reduction of utilities Power”. The following is the project charter for the same.

A detailed study conducted to arrive at the entire scope of the project by considering the total connected load. We have developed As-Is Maps & SIPOC Map (Supplier,Input,Process,Output,Customer). Assigned responsibilities to the individual team members.

After implementation of the project, the mill & utilities power consumption has reduced .

Project Title: REDUCTION IN UTILITIES POWER CONSUMPTION			
Project Leader:		Team Members: NR,SRK,MSP,MJG,KSB,	
Business Case: Click here			
Problem Statement : Click here		Goal Statement:TOACHIEVE IMPROVEMENT OF 0.5 SIGMA LEVEL	
Project Scope:Click here		Roles:Click here	
PRELIMINARY PLAN	Target Date	Actual date	
Start Date			
DEFINE	15-Apr-03	13-May-03	
MEASURE	30-Jun-03	15-Jun-03	
ANALYZE	31-Jul-03		
IMPROVE	31-Aug-03		
CONTROL	30-Nov-03		
Completion Date	15-Dec-03		

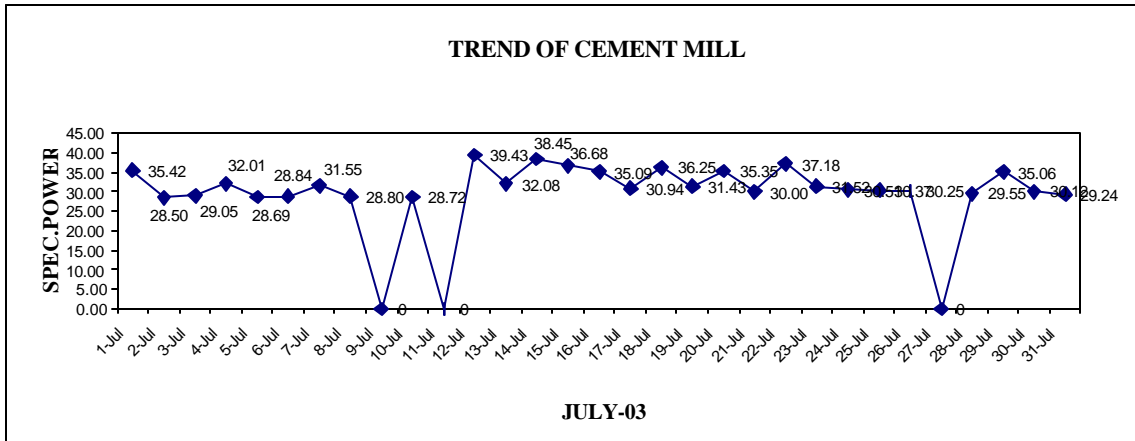
3) ISO 9001 Way :

Our's is an ISO 9001 Certified Company. Each month, we are monitoring the specific power of each section , on daily basis.

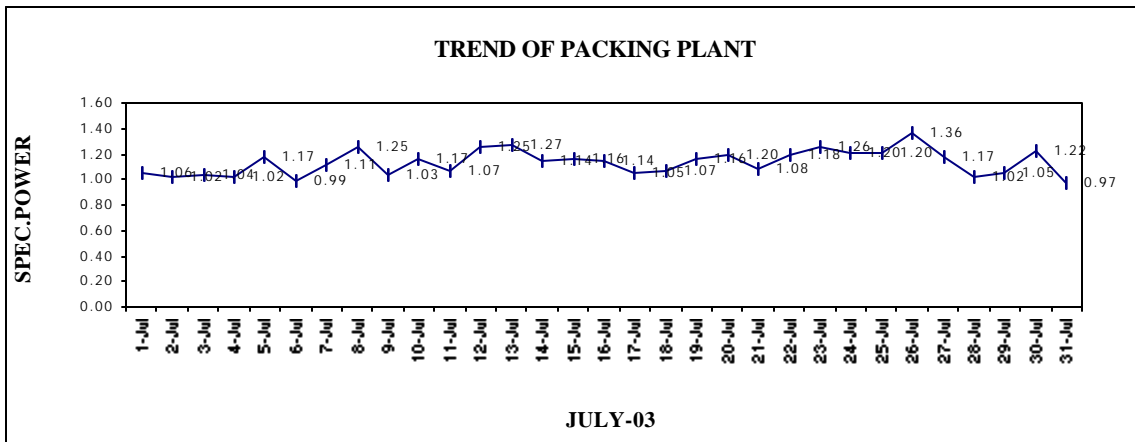
Daily Sectionwise Trend of Sp. Power Consumption & MD :

SPECIFIC POWER TREND FOR THE MONTH OF JULY 03

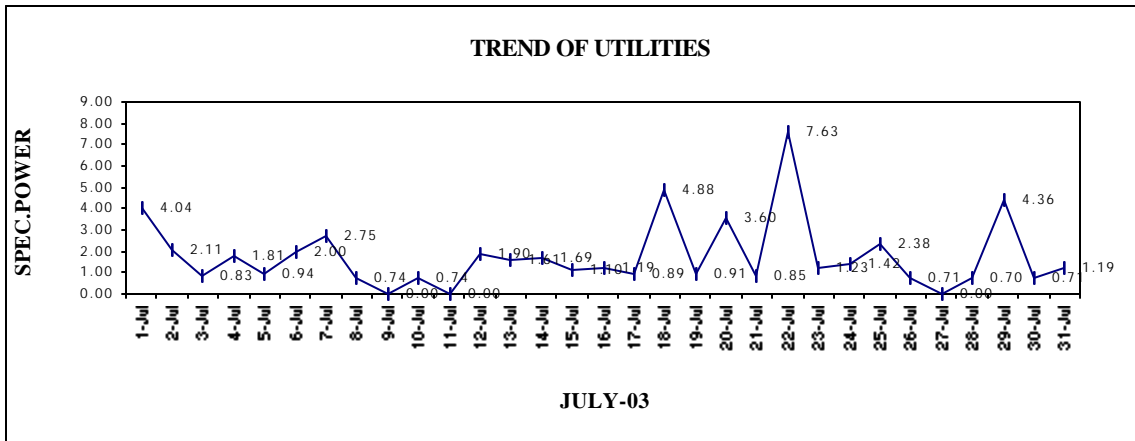
CEMENT MILL



CPACKING PLANT



UTILITIES



The respective team should have a genuine reason for any parameter going above/below the targeted value of SPC. If the SPC is going out of control, the team will be asked to explain the reason.