

Unit Profile :

Bajaj auto limited, Waluj ,Aurangabad, is a division of Bajaj Auto Limited, Pune, a flagship company of Bajaj Group. Bajaj Group was formed by Mr. Jamanalal Bajaj in 1929. Bajaj Auto Limited, Pune started scooter production in 1960. As an expansion plan, Bajaj Auto Limited, Waluj Plant is started in 1985. In 1999, a State of Art Plant was started at Chakan.

Objectives of Bajaj Auto Limited are to cater the market needs of transportation by providing 2 wheeler and 3 wheeler vehicles. BALW has been producing the catalogue products to cater to the changing market requirements. Based on the customer feedback, improvements are being made continuously in the existing products. In the process of introducing new products, emission requirements are being taken into consideration and products manufactured are meeting the regulatory requirements.

The site of BAL-W is located in MIDC Waluj area.

Bajaj Auto Limited, is an ISO-9001 company, having ISO-9001 (2000) Quality Management certification.

A constant watch is kept on the technological developments taking place in the areas of energy reduction, waste reduction and pollution prevention. Environment Management System is integral part of overall management systems at BALW. ISO 14001 certification was awarded to BAL-W in 1997 .

In 2003-04, Bajaj Auto Limited has posted its highest ever gross turnover of Rs.59.34 billion. Bajaj Auto has resolutely engaged in a process of fundamental change. This has involved changes in the organisational structure; in product and models; in the approach to markets and consumer preferences, in R&D engineering, product design and speed to market; in rationalising of cost; and in a complete overhaul of the way in which Bajaj Auto do business. This change process is now epitomised by Bajaj Auto's new corporate identity.

Quality Policy, Environmental Policy and TPM Policy are guidelines for our working. Photographs of the same are attached. (For readability, the said policies are reproduced as it is).

Manufacturing Process

The industrial complex of Bajaj Auto Limited-Waluj is spread over an area of 906 acres. The manufacturing activity consists of manufacturing motorized 2-wheelers ,3-wheelers & parts thereof and also machine tools required for captive consumption. The scooter plant was started in 1985 and other plants were started subsequently.

The manufacturing process for 2-wheelers and 3-wheelers as well as machine building is basically metal cutting and metal forming. The basic raw materials are steel and aluminium. Surface treatment processes like heat treatment, painting and electroplating are carried out in the factory.

Flow Chart of Manufacturing Process is depicted on next page:

Energy Conservation : Method and working at BALW

Top Management Committee fixes Corporate Objective for Energy every year by comparing performance with National / International Benchmark and targeting for higher achievement.

The main objective is to operate most Cost Effective, Energy Efficient and Environment friendly Plant.

Continuous Improvement in Working and close monitoring through Energy Management System is carried out.

Energy audit and efficiency assessment is built-in Quality, Environment and TPM Policies.

Awareness of Energy Conservation of all levels is reflected in continuous reduction of conversion cost of the vehicles produced year to year.

Some of the activities are

- Technological upgradation - Usage of Flexible Machining Centers instead of Special Purpose Machines.
- Implementation of Streamline Manufacturing Systems. Re-organization of Machines/ Process as per Product Layout.
- Single Digit time in Minutes for Change of Dies/ Tool. Compactness in Working area
- Reduction in rejection less than 1000 PPM (Parts Per Million) and aiming for 'ZERO' PPM.
- Nurturing of 'Right First time Ok' culture.
- Increase in Productivity of the workmen.
- Improvement in Processes and working methods.
- Utilization of Idle time.
- Minimization of Losses by TPM.
- Introduction of Direct on Line of material and elimination of stores.

The Energy conservation team/cell holds posters competition on Energy & Water Conservation for all employees. This percolates the Energy saving aspects to workmen level. Awareness level of conservation of energy amongst employee is very high.

System Followed is :

- Through the systems of Kaizens,TPM Circle/Quality Circles & suggestions, Energy saving proposals are received.
- Economics & Technical Feasibility is studied by experts for above received proposals for implementation.
- Every department set objectives against environment management plan yearly to conserve Natural resources.
- Targets are set for Conservation of Natural resources.
- Posters are displayed at work places on awareness of conservation of Energy.
- Sharing of information through Intra-net among our other plants & horizontal deployment.



ENVIRONMENTAL POLICY

Bajaj Auto Ltd., manufacturer of two and three wheeler vehicles is committed to prevention of pollution, continual improvement of our environmental performance and compliance with all applicable environment legislation and regulation.

Towards this, we shall strive to :

Create a proactive environment management system that addresses all environmentally significant aspect related to our products and processes,

Minimise the generation of waste and conserve resources through better technology and practices, and

Promote environmental awareness amongst our employees and motivate them to fulfill our commitments.

We, at Bajaj Auto, pledge ourselves towards creating and preserving a cleaner environment.

Date :16-12-1998

Rahul Bajaj
Chairman & Managing Director



TPM POLICY

We at Bajaj Auto adopt "TOTAL PRODUCTIVE MAINTENANCE" as a means of creating a safe and participative work environment in which all employees target the elimination of losses in order to continuously enhance the capacity, flexibility, reliability and capability of its processes, leading to higher employee morale and greater organisational profitability.

Date : 11-03-2000

Rajiv Bajaj
Joint Managing Director



QUALITY POLICY

We at Bajaj Auto continue to firmly believe in providing the customer "VALUE FOR MONEY, FOR YEARS" through our products and services. This we shall maintain and improve.

In our decision making, quality, safety and service will be given as much consideration as productivity, cost and delivery.

Quality shall be built into every aspect of our work life and business operation. Quality improvement and customer satisfaction shall be the responsibility of every employee.

Date :19-01-1992

Rahul Bajaj
Chairman & Managing Director.

Bajaj Auto Limited : Environmental Policy , TPM Policy and Quality Policy



ENERGY CONSERVATION CELL

- Sr. Officer of the company is identified as incharge/co-ordinator for energy conservation objectives set by the company for past many yrs.
- We have designated Energy Manager for carrying out activities for efficient use of Energy and its conservation.
- To comply with energy consumption norms & standards set by bureau of energy efficiency & national productivity council.
- To take measures necessary to create awareness & disseminate information for efficient use of energy & its conservation.
- Organise training of personnel & specialists in the techniques for efficient use of energy & its conservation.
- To take preferential steps to use energy efficient equipments.

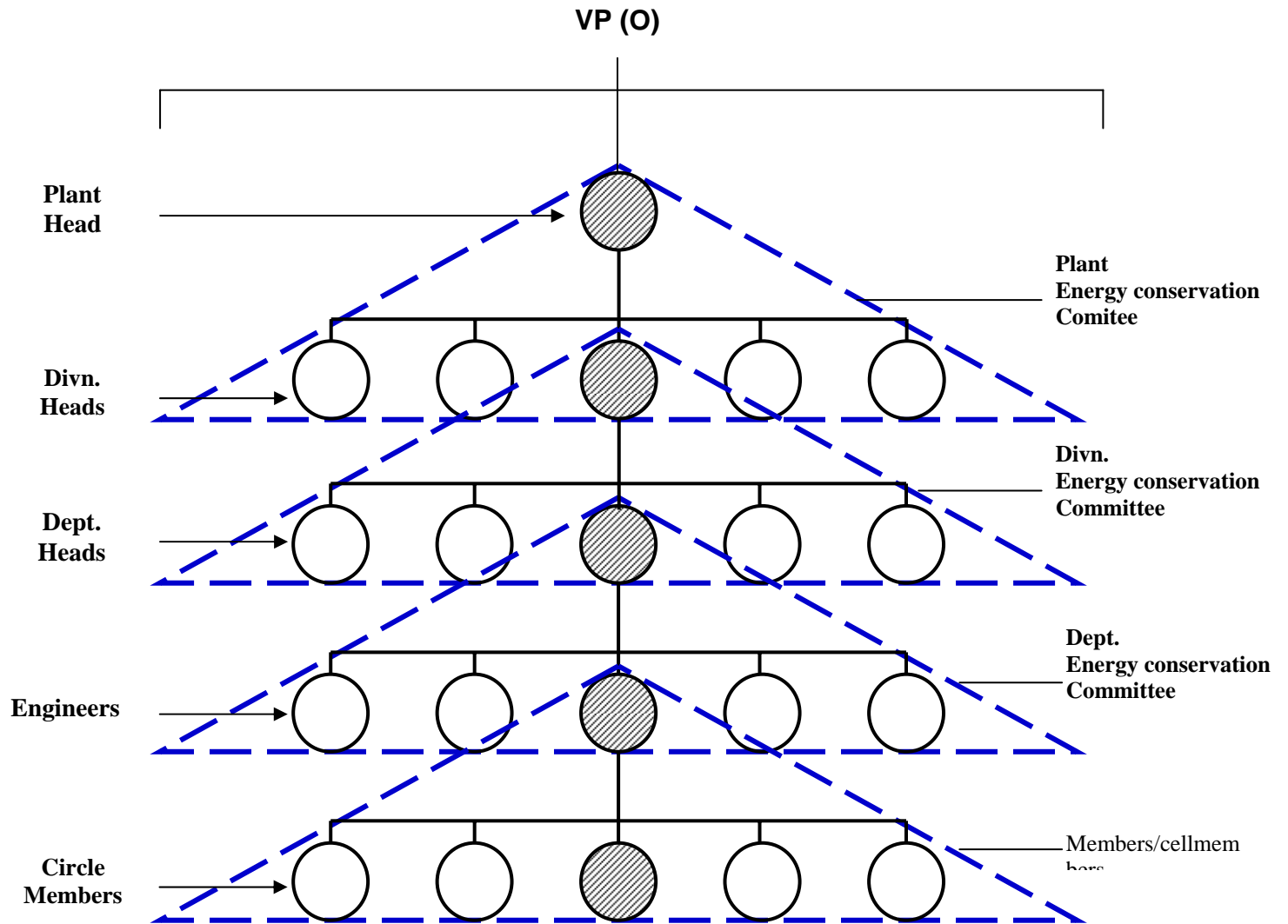
RESPONSIBILITIES & DUTIES OF ENERGY MANAGER

- 1 Prepare an annual activity plan & present to management concerning financially attractive investments to reduce energy costs .
- 2 Establish an energy conservation cell within the firm with management consent about the mandate & task of cell.
- 3 Initiate activities to improve monitoring & process control to reduce energy costs.
4. Analyze equipment performance with respect to energy efficiency.
- 5 Ensure proper functioning & calibration of instrumentation required to assess level of energy consumption directly or indirectly.
6. Prepare information material & conduct internal workshops about the topic for other staff.
7. Improve disaggregating of energy consumption data down to shop level or profit centre of a firm.
8. Establish a methodology how to accurately calculate the specific energy consumption of various products/ services or activity of firm.
9. Develop & manage training programme for energy efficiency at operating level.
10. Co-ordinate nomination of management personnel for External programmes
11. Create knowledge bank on sectoral , national & international development on energy efficiency technology & management system & information denomination.
12. Develop integral system of energy efficiency & environmental upgradation .
13. Wide internal & external networking .
14. Co-ordinate implementation of energy audit / efficiencyImprovement projects through external agencies.
15. Establish and/or participate in information exchange with other energy managers of the same sector through association.

DUTIES :

- 1 Report to bee & state level designated agency once a year. The information with regard to the energy consumed & action taken in the recommendation of the accredited energy auditor as per BEE format.
- 2 Establish an improved data recording, collection & analysis system to keep track of energy consumption.
- 3 Provide support to accredited energy audit firm retained by the company for the conduct of energy audit.
- 4 Provide information to BEE as demanded in the act, &and with respect to the tasks given by a mandate, and the job description.
- 5 Prepare a scheme for efficient use of energy & its conservation & implement such scheme keeping in view of the economic stability of the investment in such firm &manner as may be provided in the regulations of the energy conservation act.

MONITORING THE PROGRESS OF ACTIVITIES.



Project Write-up:

Project :

Pumps are identified as a basic unit for improvement / verification for Energy Conservation. All pumps are looked at for following aspects :

1. Impeller size reduction
2. Combining activities of pumps
3. Removal of not required pumps
4. Modification in coolant tanks & circuits
5. Modification in hydraulic circuits
6. Usage of timers/ control circuits.
7. Reduced HP .

Background and Methodology :

Over-rated pumps/ Circuits are installed by manufactures of machines.

The various pumps installed on machines and process equipment study was carried out to Take actual load versus connected load as well as machine layouts.

Data of actual loads and lay-outs was collected. After analysing, plan was formulated for

- ✓ Impeller trimming for avoiding throttled valve circuits.
- ✓ Start Delta Star circuit provision instead of Star delta for higher HP Motors.
- ✓ Variable Frequency Drives (VFD) for centralised coolant system.
- ✓ Combination of coolant pumps by modification of piping of machines in cells.
- ✓ Low rated motors installed for pumps.
- ✓ Modification of hydraulic circuits for combination of pumps.
- ✓ Use of unloading valve in hydraulic circuits resulting in total/ partial removal of oil chiller unit or low capacity oil chiller units.

The above process was horizontally deployed in various area. This has lead to tap good amount of energy saving in plant.

Energy Reduction :

Methodology	Implemented at	Saving Kwh/ Month
Usage of timers/ control circuits.	ABB Robot cooling unit linked with m/c	195
	Coolant circulation modified for sunday	1293
	Coolant pump on linked with hyd pump	1126
	w859 250 T Hyd press oil cooling pump control	101
	Sub-Total	2715
Removal of not required pumps	Phosphate gland cooling pump of	2050
	Conversion of thermax pumps removed	2145
	Sub-Total	4195
Impleller size reduction	ED bath circulation pump impeller chgd	2500
	Sub-Total	2500
Modification in coolant tanks & circuits	Combined spray water rinse stages with one pump	8237
	For w7598 techno aid m/c coolant gun	80
	Combination of coolant tank FIGE	1540
	Piping Modified for W7684	212
	w 7780,7781,7785, 7773,7774,5209,5o42,5044,	1330
	FBD Cover Thakoor drill tap 2 m/cs Combination of pumps.	104
	w7077 drill tap spm piping modified	145
	Removed 5 nos. coolant pumps by piping	910
	Removed coolant pump from mazak m/c by	435
	w6252 Washing m/c piping modified	2000
	13m/cs Coolant pump removed	1820
	W6241 coolant tank removed & combined with other m/c	1540
	Booster pump of solar water heating	2016
	Sub-Total	20369
	Modification in hydraulic circuits	Modification in hyd ckt on xlo spm w-6306
Sub-Total		325
Reduced HP .	Coolant pump motor of lower HP installed.	1350
	W5739 2HP pump replaced by 0.25 hp	565
	PTCED air washer pump & water circuit motors- Lower HP	1000
	Booster pump of elptg replaced 10 hp by 2hp pump	2808
	Booster pump of w office replaced 10hp by 2hp	312
	Sub-Total	6035
	Grand-Total	36139

Total yearly lacs Kwh (36139 x 12)

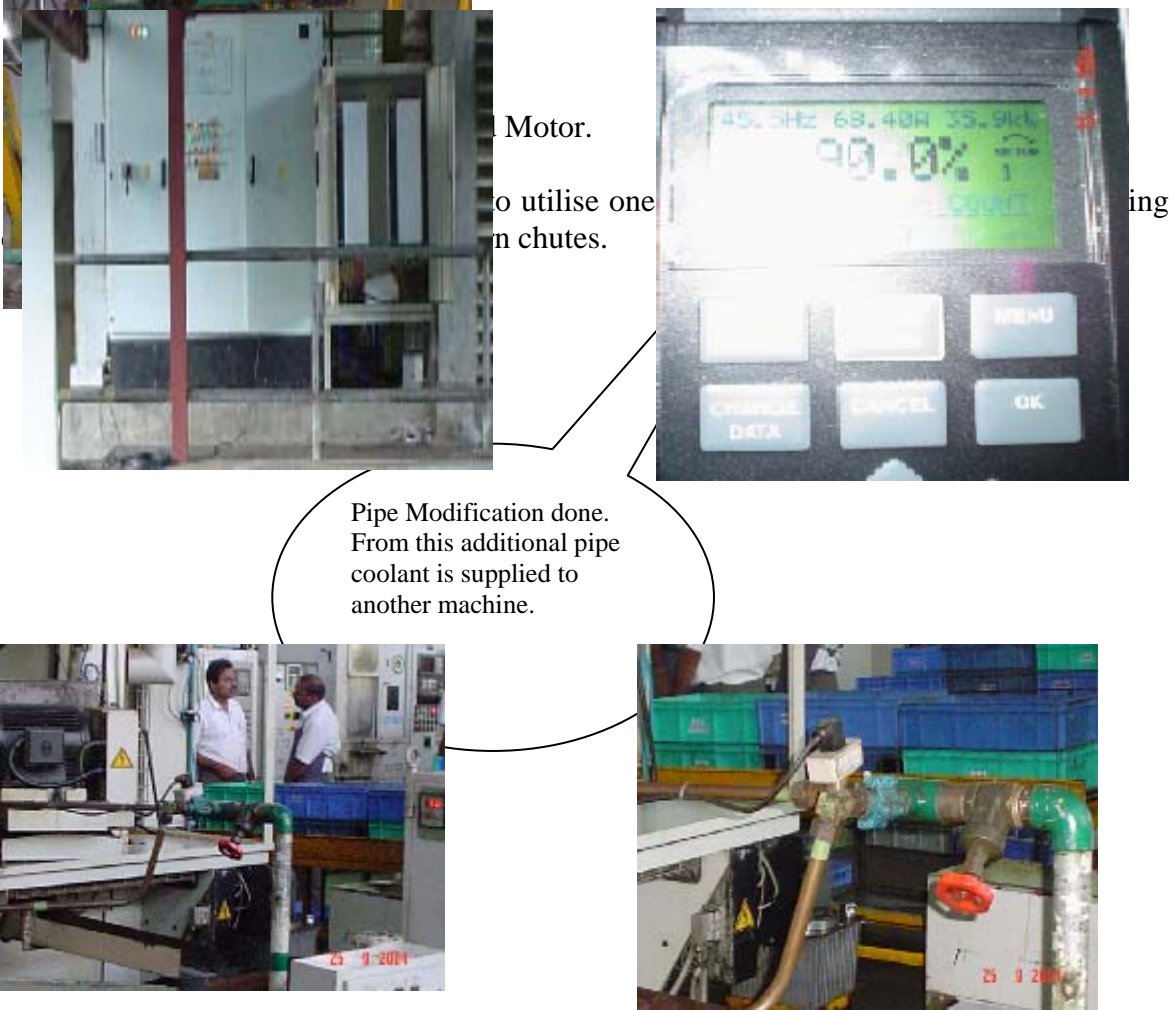
4.34

Total yearly saving in Rs.

15.52 lacs

Lower Rated Motors : In Paint Shop-Motor Cycle Division installed pumps were oversize and delivery valve were in throttle condition. Now motor of low rated installed. Fig.1 shows both- previous and current condition. HP of motor before replacing was of 25 HP, now it is 15 HP. This is horizontally deployed wherever high rating motors were installed considering the process requirements.

Fig 1



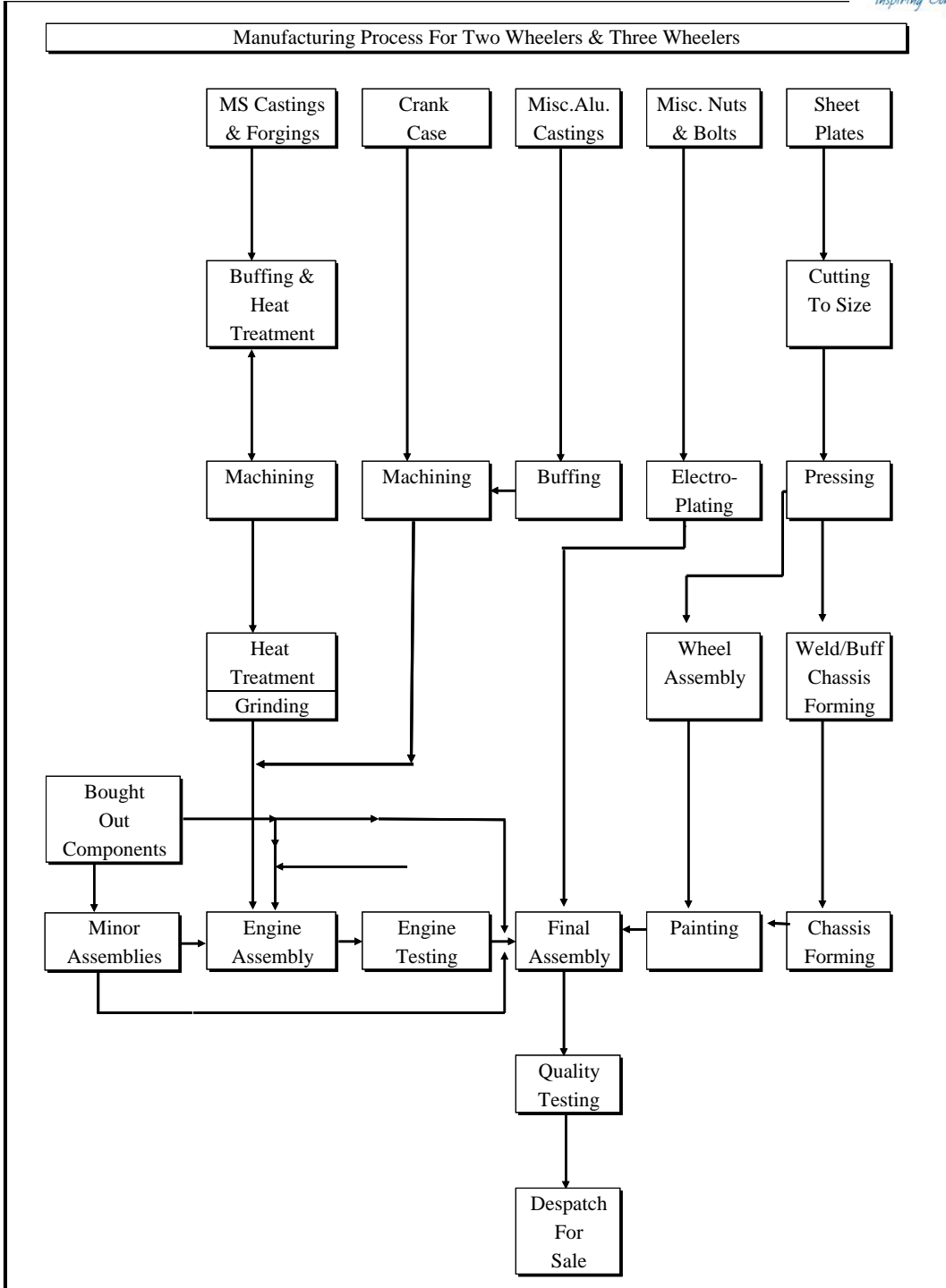
Project in Implementation Examples

VFD Installed for Centralised Coolant System (Aluminium Shop- Motor Cycle Division)

Fig.4 shows VFD Panels Installed. Fig 5. Shows the actual KW, current drawn, frequency. Earlier 55 KW motor was drawing 105 amp. After installation of VFD and setting of Frequency for 45.5 Hz. Now the current drawn is 68.4 amp.

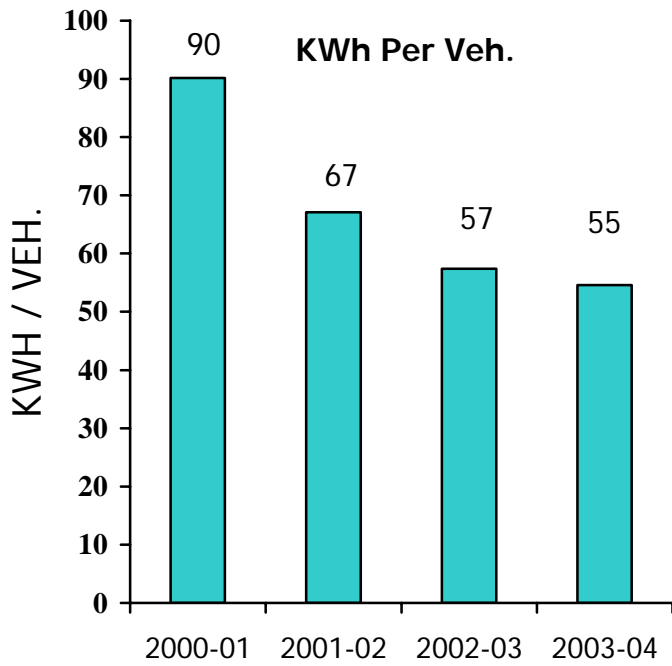
Fig. 4

Fig.5

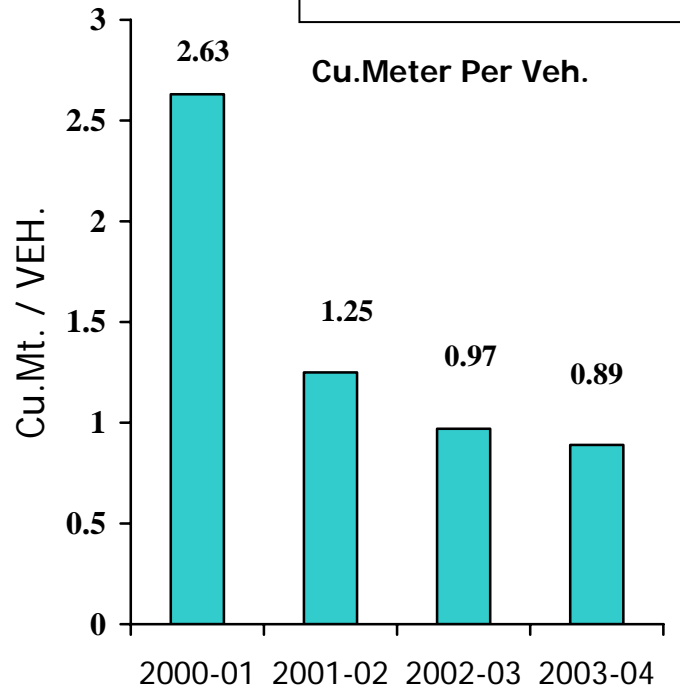


Specific Consumption of Electrical Energy, Water, LPG and LDO per equivalent of vehicle.

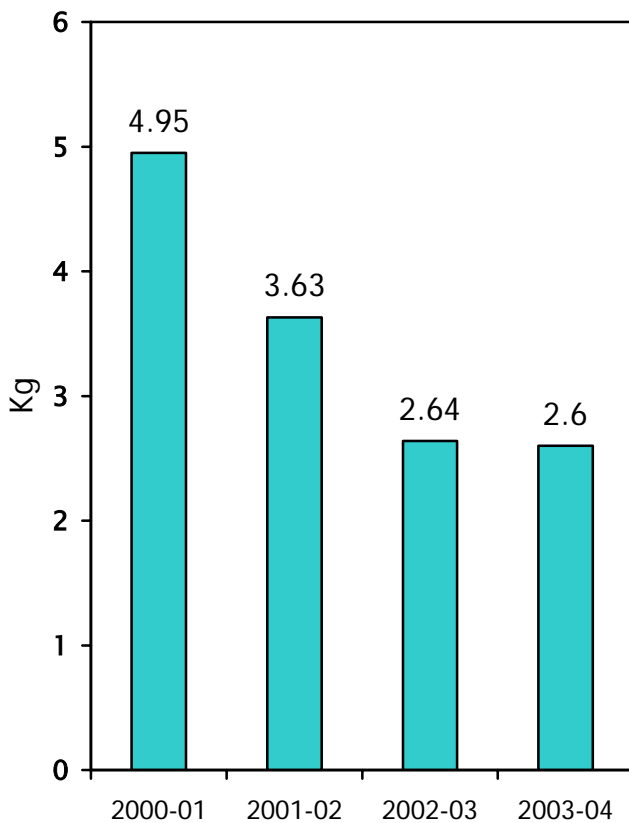
Electrical Consumption



Water Consumption



**LPG Consumption
Kg./ Veh**



**LDO Consumption
Lit/ Veh.**

