

NAME: MANOJ HARDWANI

CLASS: F.Y.BMS.

ROLL NO: 56

SUB: PRODUCTION MANAGEMENT

SUBMITTED TO: OJHA SIR

## **CERTIFICATE**

This is to certify that Mr. MANOJ HARDWANI Roll No.56 has satisfactorily carried out the project on topic “PRODUCTION MANAGEMENT OF INDUSTRIAL VISIT” for the II semester of F.Y.B.M.S. in the Academic Year 2007 – 2008.

**PROJECT MAKER**

**MANOJ HARDWANI**

**PROJECT GUIDE**

**PROF. JAISHANKAR OJHA**

### **ACKNOWLEDGEMENT**

Thanks to PROF. JAISHANKAR OJHA for giving me this golden opportunity and I take the opportunity of submitting this project to as per my deep regard to those who offered me their valuable assistance and guidance in this hour of need. Any work without proper guidance is incomplete and I am really thankful to PROF. JAISHANKAR OJHA for helping me during this project work and solve all of my quarries.

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## **INTRODUCTION**

Meanwhile, impressive inroads were being made into the packaged unit market. This serves as a model of close teamwork between marketing, manufacturing and product development. Sensing the need, Voltas was ready by 1967-68 with 5, 7 and 10-ton models for the summer months (previously only 7-tonners were available)

As if to underline its pre-eminence in the field, Voltas broke through into marine air conditioning, previously entrusted only to firms abroad. No looking back now. Voltas was ready and anxious to expand its manufactured range, taking maximum advantage of the technical collaboration with Carrier. Compressors, chillers and condensers were all steadily growing in capacity, strengthening Voltas' hand in executing projects indigenously.

By 1969-70, Voltas widened its market to include the nation's new chemical and pharma industries, as well as multi-storied buildings and hotels, and defence industries and projects. Ships, railways, cold storages and dairies joined the list by 1970-71. Each such sector was a learning experience,

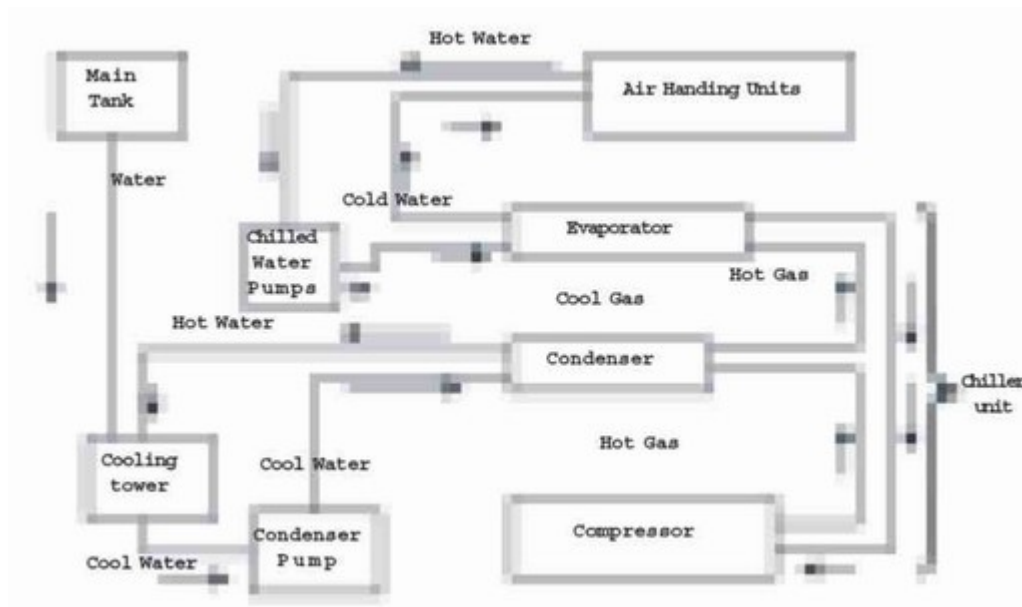
adding to Voltas' increasingly substantial and sophisticated knowledge base in multiple applications.

1971-72 saw another prize project: the air conditioning and refrigeration of the first Indian-made frigate, the INS Nilgiri; with orders for five more following. Voltas also air conditioned five ships built at the Visakhapatnam yards. Here were laid the foundations of the on-the-job project experience which was to bear fruit in the Queen Mary II years later.

Move forward one year, and we now have more additions to the list - telephone exchanges, power houses, chemical laboratories, embassies, the earth satellite station at Dehra Dun and the Bhabha Atomic Research Centre at Trombay. A special showcase for Voltas' ingenuity and technological expertise was the mobile aircraft cooler for Air-India's Jumbo in 1972-73, using the company's own jumbo-sized compressor. Along a completely different track, Voltas was working with National Dairy Development Board to design milk-vending machines for Operation Flood, and to refrigerate their Mother Dairies.

It was almost as if in every sector of national advance, Voltas was there, doing its bit.

## **PRODUCTION FUNCTION AND CYCLE**



## **COMFORT AIR CONDITIONING**

### **Key characteristics of comfort air conditioning**

- internal heat loads
- definite fresh air changes
- broad temperature range of choice and control, which can be varied according to seasonal changes in ambient temperature and occupancy

For critical air conditioning applications, Voltas utilises a range of vapour compression products i.e. packaged units, ductable splits, reciprocating chillers, screw chillers, scroll chillers, semi-hermetic chillers and vapour absorption machines



## **COIL MANUFACTURING**

Coils are made from aluminum fins and copper tubes are made in-house using:

1. Fin press and hair-pin benders
2. Vertical and horizontal expanders
3. Automatic coil brazing machine

This results in coils of the highest quality, with various options such as louvered fins, slit fins, sine wave / corrugation.

## **Vapour absorption machine manufacturing:**

Voltas' manufacturing set-up has modern fabrication facilities with Tungsten Inert Gas (TIG) welding, enabling production of high-quality welds which can meet stringent leak testing of the order of 0.00001 Atm CC/sec



➤ **Collaborations**

**Voltas' manufacturing capabilities focus on the products of collaborations with world leaders in air conditioning and refrigeration:**

- 1. Screw chiller packages from Dunham Bush, U.S.A. / Malaysia**
- 2. Vapor absorption machines, both steam-fired and direct-fired from Hitachi Limited, Japan.**
- 3. Shell & tube-type condenser / chiller from Standard Refrigeration Company, U.S.A.**

**The technology transfer, indigenization of various components and vendor development are carried out by in-house engineers trained abroad at the works of various collaborators.**

**The core strength of Voltas manufacturing is its ability to produce precision and complex components in-house by using state-of-the-art of machines and manufacturing processes.**

**The various machines installed include:**

- 1. CNC horizontal machining centres**
- 2. CNC turning centre**
- 3. Fanuc tape drills**

## **Types of products**



**Voltas' operations have been organized into four independent business-specific clusters, each with its own facilities for market coverage and service to customers.**

### **1. Electro-Mechanical Projects & Services**

- **Electrical, Mechanical, HVAC & Refrigeration Solutions**
- **Electrical, Mechanical & HVAC Solutions (International)**
- **Water Management & Treatment**

### **2. Engineering products & Services**

- **Textile Machinery**
- **Mining & Construction Equipment**
- **Machine Tools**
- **Materials Handling Solutions**

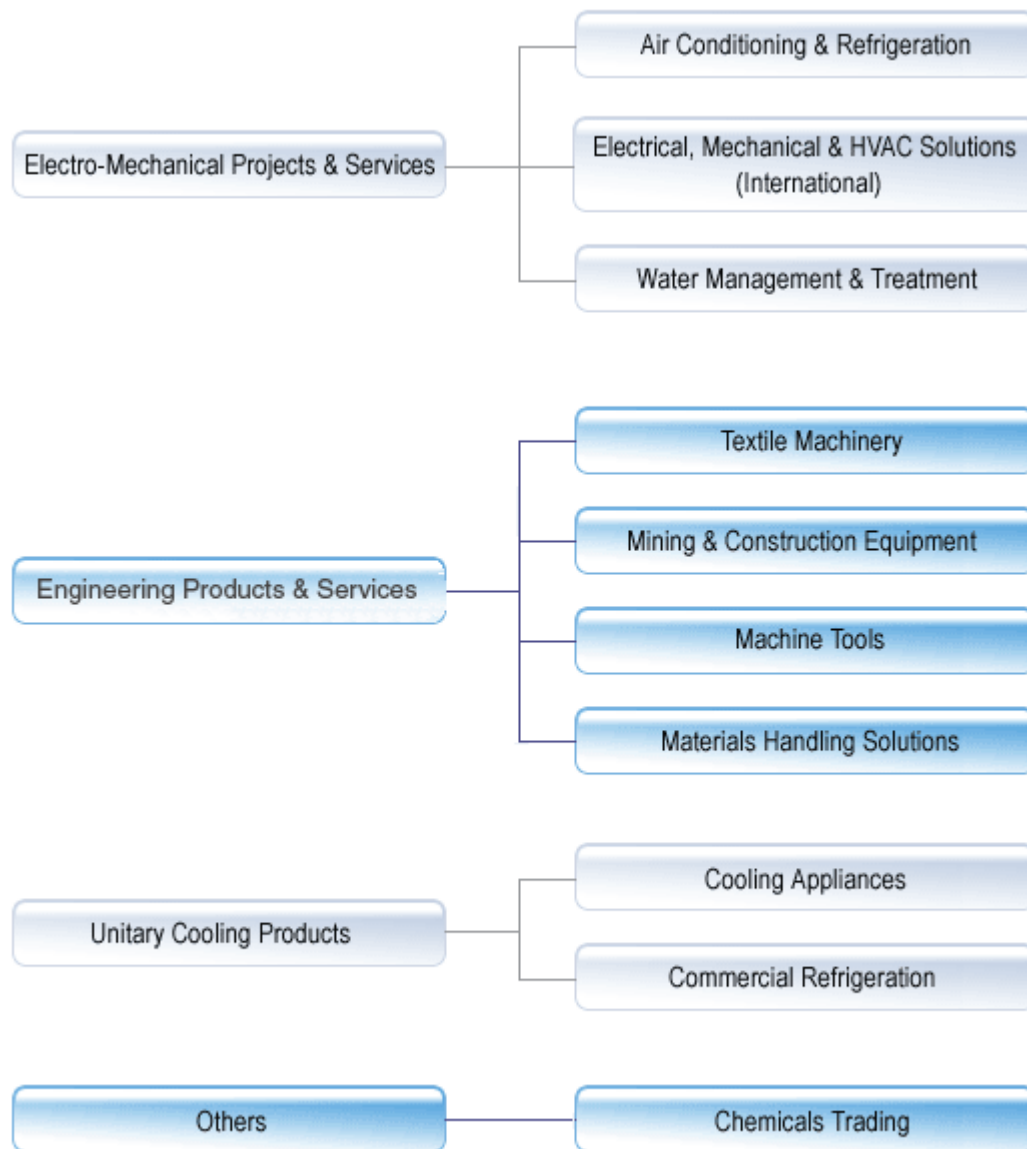
### **3. Unitary Cooling Products for Comfort & Commercial Use**

- **Cooling Appliances**

- **Commercial Refrigeration**
- 

#### 4. **Others**

- **Chemicals Trading**



## TYPES OF AC's

### WINDOW AC's



#### Features

- Three-speed cooling
- Fresh air switch
- Regulator
- Sweep

### Vertis

MRP

Rs.17,000/-



#### Features

- PCF (Persimmon Catechin Filter) technology

### Vertis Premium

MRP

Rs.18,000/-

- Dual control
- Three-dimensional air intake grill



#### Features

- 2 Star level EER rated product

### Vertis Plus

MRP

Rs.13,300/-

- Higher energy efficient state-of-the-art rotary compressor
- Blue hydrophilic-coated evaporator fins

## **SPLIT AC's**

### **Features**



- Star level EER rated product
- Energy efficient state-of-the-art rotary compressor

## **Vertis Split AC**

MRP

Rs.24,500/-

- LCD remote with intelligent functions
- Digital display on indoor unit
- Turbo Mode

### **Features**



- 2 Star level EER rated product
- LCD remote with intelligent functions

## **Vertis Premium Split AC**

MRP

Rs.16,500/-

- Energy efficient state-of-the-art rotary compressor
- Blue hydrophilic evaporator aluminium fins
- Auto-restart function



### **Features**

- 3 & 2 Star level EER rated products

## **Vertis Plus Split AC**

MRP

Rs.16,500/-

- Nightglow buttons on remote
- Light functions to ON/OFF

indoor display

- Active carbon filter

- 5 Step swing

## **PRODUCTION PLANNING**

**Voltas is the pioneer in cooling appliances in India. In fact, the Voltas name is often synonymous with air conditioners. Over the past four decades, over a million customers have put their trust and confidence in the Voltas range of air conditioners, a feat unmatched in Indian markets.**

**Few in this field can match Voltas' range of breakthroughs and firsts:**

**In 1954, Voltas manufactured India's first indigenous room air conditioners.**

**In 1969, Voltas set up India's first integrated AC plant**

**In 1982, Voltas introduced innovative split air conditioners.**

**In 1987, Voltas pioneered a mini water cooler, catering to offices, small shops and small scale units**

**In 1993, Voltas introduced the tall elegant Slimline**

**In 1998, Voltas introduced the first microprocessor-based package units**

**In 2002, Voltas launched India's first sub-Rs 10,000 room AC**

**The company is constantly extending its range, sharpening its professionalism, and intensifying the personal touch - resulting in strong consumer loyalty for its products.**

**A range of window, split and Sensicool air conditioners is manufactured for the institutional and retail segments. The range includes Vectra, the economy problem, and Vertis DX, the premium brand, positioned as 'AC with IQ', the value-for-money bestselling model, offering international quality at a very affordable price. All these are manufactured in a joint venture between Voltas and Fedders International of US.**

**Voltas also markets a range of commercial refrigerators under the 'Coldcel' brand name, as well the 'Quench' range of water coolers and dispensers.**

**For all its ranges, Voltas has a service package that supports them. It offers a lifeline service through its nationwide network of service centres. Well-trained engineers, technicians and a fully computerized network response system support each other. Additiionally, Voltas enjoys the whole-hearted support of a 270-strong dealer base and 700 retailers, whose goodwill and trust have been earned over four decades.**



### **PRODUCT AND PROCESS DESIGN**



Not for nothing is air conditioning the first thing that comes to most people's minds when Voltas is mentioned. For almost as long as one can



**remember, Voltas has been the most visible, prominent and trusted brand of room air conditioners in India. The brand that started it all.**

**But there's so much more than the consumer brand, however victorious it's lately been in a very competitive market.**

**It's not an exaggeration to claim that Voltas carried the major responsibility in pioneering and maturing the entire industry in India, in both its consumer and institutional forms, in both products and projects.**

**To put it differently:**

- **Voltas defined and developed the market**
- **pioneered techniques for serving it**
- **built up skill sets and knowledge bases in appropriate technologies**
- **developed relationships with principals and overseas leaders**
- **designed and innovated products**
- **developed expertise in just about every kind of project, every air-conditioning application**
- **accumulated a matchless storehouse of experience in the most challenging air conditioning tasks**
- **developed the very same competency that's been proving itself so successfully in large and demanding overseas electro-mechanical projects, especially in Heating, Ventilation & Air Conditioning (HVAC)**

- created a large cadre of seasoned engineers and project managers available to the industry

### **A VOLTAS PRODUCT**



### **PLANT LOCATION**

Voltas has a modern centralized parts warehouse near Mumbai, from which the parts are shipped to overseas distributors/clients, besides catering to the local market. All products are supported with service parts for a minimum period of 10 years.

In the domestic market, our products are backed up with efficient after-sales service through a network of 11 branches, and a number of offices at

strategic locations all over India. Plant is located at Dadra and Haveli Nagar in Silvassa. Reg: office 277/4, School falia, Dadra, Damni Road Dadra 396 191 Union Territory of Dadra and Nagar Haveli.

### **MATERIAL HANDLING**

There are different departments for handling different materials and there is one head for each department they are looking after the raw material and see that over raw material is not purchased and over out come of the finished products should not be their. They are importing raw material from china and then make the finished goods. The packaging is done after the quality checking and different air-conditioners are stored at departments for e.g. window air-conditioners are stored at one place and split air-conditioners are placed at other place.

### **SCHEDULING**

The schedule and the time of VOLTAS COMPANY is as defined in following process:-

1. There are three shifts per day.
2. 8-hour per shift.
3. During winter season, if the demand of AC's is not there then there are two shifts to be held.

4. Due to high demand of AC's during summer season, there are overtime shifts to be held.

**ABOUT AAKASH UNIVERSAL LTD.**



## **INTRODUCTION**

The entire territory comprising of 72 groups villages were administered by the colonial rule from 1770 to 1954 until its liberation on 2nd august'1954. After its liberation the administration was carried on by selected village panchayat members known as free dadra & nagar haveli administration. It was on august 11 th 1961 when free dadra & nagar haveli was integrated in the Indian union as union territory and was succeeded by formal statutory

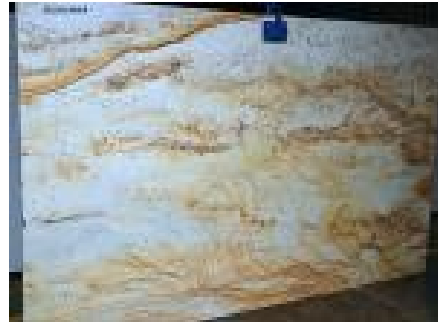
administration headed by an administrator since then it remains as a centrally administrated area under the ministry of home affairs.

All the 72 Village Of The Dadra & Nagar Haveli Including Silvassa And The Census Town Forms A Single District And A Single Taluka Union Territory. These Villages Are Divided Into 11 Patelads For Revenue Purpose And Each Patelad Has A Village Panchayat Consisting Of Elected Members. There Is A District Panchayat Which Has Been Delegated Certain Powers And Duties Under village Panchayat Rules. The Union Territory Has No Legislature. One Seat Of Look Sobha Has been allotted to the union territory.H.E. Shri O.P.Kelkar is the Present Administrator who is assisted by the Collector and the other Heads of department in day to day administration.

### **CLIMATE**

The Climate Is Moderate And Generally Healthy In The Central Zone But Not During Summer. The Rainy Season Is Normally From JUNE TO SEPTEMBER. It Receives An Annual Rainfall Between 2000 To 2500 Mm.During 1988 The Rainfall Of 2307.73 M. M. Was Reported Up to September,1998.

## **TYPES OF AAKASH GRANITES**



**GOLDEN RIVER**



**COAST GREEN**



**COLONIAL CREAM**



**COLOMBO GOLD**



**GOLDEN EXOTICA**



**GOLDEN JUPRANA**



## **CONCLUSION**

From this project I conclude that it was a great experience for me. I have understood many things especially when I was in the factories. I have learn that practical life totally different from our studies and it is more difficult to handle or manage any factory than we think and we learnt that how to manage with time and resource in the management games and the hotel was great the management and hospitability of the hotel was indescribable.

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