



# DADI INSTITUTE OF ENGINEERING & TECHNOLOGY

(Approved by A.I.C.T.E., New Delhi & Affiliated to JNTUK, Kakinada)

**A NAAC Accredited Institute**

An ISO 9001:2008; ISO 14001:2004 & OHSAS 18001:2007 Certified Institution  
NH-5, Anakapalle – 531002, Visakhapatnam, A.P.

Mobile: +91 9963981111, Website: [www.diet.edu.in](http://www.diet.edu.in), E-mail: [info@diet.edu.in](mailto:info@diet.edu.in)

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Date: 28-08-2017  
Anakapalle

To

The Principal,

Dadi Institute of Engineering & Technology

Anakapalle, Visakhapatnam.

Sub: Request Approval for Industrial Visit to BHEL-Reg

Respected Sir,

Department of MBA is interested in Industrial Visit to BHEL. In this regard, we request you to give approval to Visit on 7<sup>th</sup> October, 2017.

Thank You Sir,

Yours faithfully,

HOD MBA

**HEAD**  
Dept. of Management Studies  
Dadi Institute of Engg & Technology  
ANAKAPALLE - 531002



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## Circular

This is to inform to all the students that Department of MBA is going for Industrial visit to BHEL on 7/10/2017. All the students are instructed to come in uniform only.

**HOD, MBA**

**HEAD**  
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Dadi Institute of Engg & Technology  
ANAKAPALLE - 531 002



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### A REPORT ON

## **B.H.E.L. HPVP Unit - Manufacturer of gas fired heaters, steam condensers & heat exchanger in Visakhapatnam, Andhra Pradesh.**

On Receiving the letter of permission from B.H.E.L. HPVP Unit. The students of II MBA (35) with one faculty member Mr .A.kirankumar went on an industrial visit to the BHEL on 07-10-2017 located at, Akkireddipalemopp, Visakha diary, Visakhapatnam. We reached the terminal by 10.30 am Mr.Venakatachellamayya(Fitter)received us and gave a brief introduction about the BHEL operations and policies with a presentation.

B.H.E.L. HPVP Unit - Manufacturer of gas fired heaters, steam condensers & heat exchanger. BHEL supplied quality process plant equipments, turnkey Cryogenic, Combustion, Oil & Gasturnkey Cryogenic and services tailor made to the specific requirements of the Customers and to their satisfaction. BHEL has come a long way since its inception in 1971 to a current turnover of about **US\$26 millions** with an eye on **US\$50million** in the near future.

This is one company which houses excellent engineering skills.

Asia's biggest fabrication facility, uncompromising quality control, dedicated, erection and commissioning team under one roof, a combination resulting in India's self-reliance.

BHEL HPVP acquired various National and International quality accreditations such as ASME, LLOYDS etc.



Fig 1: BHEL Entrance

**BHEL HPVP** with **ISO 9001** accreditation is the leading **EPC Company** in South East Asian region serving following sectors They explained the facilities provided by BHEL in different areas such as





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### Navigational Features

Refineries Petrochemicals Oil & Gas Steel & Metallurgy Power Nuclear Defense Paper & Pulp

Pharmaceuticals

Cryogenics

Process Plant & Equipment

Boiler Plant & Equipment

Systems

### Plant location overview



Fig 2: Plant Location Overview

BHEL HPVP factory at Visakhapatnam has a shop floor area of over **56000 sq.mt.** with capacity to handle unit.

loads upto **241 mt.** An array of machinery is at work on the shop floor providing facilities for material preparation, heat treatment, machining and welding comparable to world standards. BHEL HPVP with its vast manufacturing capabilities, can manufacture process equipment of almost any size. .



Fig 3: Machinery at BHEL

**Extended facilities at sea front (Lova Gardens):** BHEL HPVP established additional fabrication facilities at Lova gardens in Visakhapatnam sea front for fabrication and assembly of over dimensional consignments.



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**Transport:** Being located at Visakhapatnam, has excellent transport facilities for transporting large size vessels.

HPVP undertakes site fabrication and erection in case of extra large equipments which cannot be transported.

**Rail :** BHEL HPVP is located by the side of the main railway track (i.e. Howrah to Chennai) and can transport heavy equipments. Transported upto 241 mt. equipments by 16 axle special wagons.

**Road :** BHEL HPVP, situated adjacent to national highway No:5, transported equipments weighing upto 150 mt.

### **Manufacturing:**

Rolling: Cold: rolling-60mm thick.

Hot::rolling- 170 mm max. thick

**Flame Profile Cutting :** 1500 mm to 3000 mm size plates of thickness 3 mm to 300 mm can be cut on profile cutting machine.

**Edge Preparation :** Welding edge preparation up to 18,000 mm long X 4,000 mm wide upto 50 mm; thick plasma cutting machines for cutting stainless steel plates upto 80 mm thickness.

**Press Shop :** Hydraulic presses upto a maximum capacity of 1600 t used for pressing of dished ends, petals of storage spheres and various other parts.

Maximum diameter : 5000 mm.

Maximum thickness that can be handled in single stroke : 80 mm.

Maximum thickness that can be handled in stages : 120 mm.

**Heat Treatment :** An Annealing furnace of size 5030 mm and 36580 mm internal length is available

which can attain temp. of 1100° C. bogie capacity of 120 mt.

There is another large size Heat Treatment Furnace of size 7400 mm X 7250 mm cross section and

17000 mm internal length is available. The maximum capacity of charge is 200 Tons.

The furnace can attain a maximum temperature of 800°C. the fuel used is LPG / HSD.



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## **SPECIAL PURPOSE MACHINES**

### **Wrapping machine :**

This machine is intended for fabricating multilayer shells. These layers are kept on previously rolled liner and pulled by means of flexible metallic flat wire ropes.

The full circumference of each layer is made up of 2 or 3 segments of 6 mm plate and these are kept in position, tightened and L - seams are welded with automatic welding head provided on the machine.

This machine is intended for fabricating multilayer shells. These layers are kept on previously rolled liner and pulled by means of flexible metallic flat wire ropes.

The full circumference of each layer is made up of 2 or 3 segments of 6 mm plate and these are kept in position, tightened and L - seams are welded with automatic welding head provided on the machine.

The shell ring is supported on a shaft. This machine is capable of making shell sections of :

max. dia	5200 mm
max. length	12000 mm
min. dia	600 mm

## **Visit observations in various departments R&D**

### **History:**

According to the guidelines of government of India, in 1980's BHEL starts work on the areas of Indegenous flights, aircrafts namely

#### **➤ Environmental control systems (ECS)**

Environment control system(ECS) : study on atmosphere on surroundings in aircrafts, pilot on planes.

Later in 2000's: Mark-I, satge1 and Mark -II stage2 was put into effort on this ECS In BHEL, HPVP plant we observed in R&D: 12 types of Heat exchangers machines was manufactured.



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**Purpose:** control the heat, control atmosphere in the aircrafts, pilot comfort and surroundings of pilot.

**Usage:** mainly used aircrafts fly about 50000 mts and defence aircrafts.

**Value:** 1 crore and 1.2 crores

**Material:** Aluminium-3003, stainless steel

**Assembling-**

### **HEART-CORE**

It is a sandwich box arrangement four faces and top and bottom and it is made up of mixture of aluminium and stainless steel plates and thin panels and keep support of rods and bolts on every step and every corners of the heart. This arrangement of plates entrance and exit of heat.



Fig 4: Students communicating with Employees at BHEL





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### **Brazing:**

#### **FURNISHING/ FINISHING**

In brazing process assembled item was furnished by vacuum process of furnacing.

Here, the process gone through two steps:

Step:1 Assembled core was pass through Aluminum vaccum at 60kw power

Step:2afetr step1,it moves Stainless steel vaccum at 120kw

Melting point Aluminium is 600' c

Melting point of stainless steel >1000' c



Fig 5:Students at Brazing furnace





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### **Checking:**

brazing it was checked in a vacuum of altitude of 50000 mts as per requirement of customer.

**Customer: ADA ,BANGLORE**

### **WELDING:**

In Welding department , at a time 5 heavy plates & vessels are welded and attached .

### **PRODUCTION & OPERATIONS:**

Machines used are MACHINE SPINDLES

1. Horizontal turning boring machines(HTB)
2. Vertical turning boring machines(VTB)



Fig 6: Students observing at the production



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## **QUALITY:**

In quality department, every material manufactured are passes through different quality tests:

1. Hydraulic test
2. Water test
3. Air test
4. Pressure test



Fig 7: Students observing the machinery

## **MAINTANANCE**

Cranes used for lifting & transfer of heavy materials

Cranes are: hind crane by hindusthan motors ltd at the capacity of 60,000 kg and AUX 10,000 kgs & provide drinking water at every place nearer to work.



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Fig 8: Students gathering inside BHEL

At the end of the visit Mr. Venakatachellamayya (Fitter) explained about the working process of BHEL and explained students about the public sector undertakings so that they can grab opportunities in PSU's. He demonstrated students regarding career and development in MBA with respect to HR, Production & operations, Finance, Quality etc.,

### **Learning Outcomes from the visit:**

The visit generally consists of lectures about the company, the site being visited and a range of topics specific to learning outcomes.

1. Recognize the process units where respective processes are carried out at departments such as R&D, Production & operation, manufacturing process, Quality..etc
2. Information regarding manufacturing of heat exchangers and their use in various sectors.
3. Identify input and output for the Heat exchangers, condensers and Heavy boiling plants..
4. Experience the importance of working safety.





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6. Understand the concept of core parts of Heat exchanging machines.
7. Understand how does the product of BHEL used in Defence, Air crafts.
8. Students get more awareness in pragmatic manner.
9. For students pursuing professional education (Marketing/Finance/Operations/Supply Chain etc.), industrial visits help them gain hands-on experience of how industry operations are executed.
10. Industry visits bridge the gap between theoretical training and practical learning in a real-life environment.
11. Industry visits provide opportunity for active/interactive learning experiences in-class as well outside the classroom environment.
12. With industry visits, students are able to better identify their prospective areas of work in the overall organizational function.
13. Industry visits help enhance interpersonal skills and communication techniques.
14. Students become more aware of industry practices and regulations during industry visits.
15. Industry visits broaden the outlook of students with exposure to different workforces from different industries.





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### List of Students:

Sl.No	Name Of The Student
1	A.Pavani
2	A.Sri Priyanka
3	B.Meena Sowjanya
4	B. Yamini
5	B. V.S Phani Krishna
6	B.A Madhu Kiran
7	D.Vamsi Sai Kishore
8	G.Nagamani
9	J.Jyothi Kiranmayi
10	K.M Naidu
11	K.Jyothsna
12	K.Aswani
13	K.Jagadeeswar Rao
14	M.Neelima
15	Md. Arshi Azmi
16	Md.Nazmin Aara
17	N.Nagavalli
18	P.Parasuram
19	P.Satya Narayana
20	P.Durga Devi
21	P.Lavanya
22	M.Sushma
23	V.Naga Prasad
24	Y.S.V Sai Chaitanya
25	K.Teja
26	M.Jagadish
27	G.Vara Lakshmi
28	V.Sravani
29	A.Sirisha
30	V.Mounica
31	K.Krishna Veni
32	D.Manikanta
33	P.Swathi
34	A.Pavani
35	A.Sri Priyanka



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**Feed back:**

1. How was your experience at BHEL?

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2. What kind of visit do you expect in Future?

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3. Was this Industrial visit useful?

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