

Heavy Electrical Complex (Pvt.) Ltd.



Background Information on Heavy Electrical Complex (Pvt.) Ltd

CONTENTS

- **INTRODUCTION**
- **HEC SIGNIFICANCE**
- **FACILITIES**
- **PERFORMANCE**
- **BUSINESS PLAN**
- **PROJECT SEEKING
CHINESE
COOPERATION**

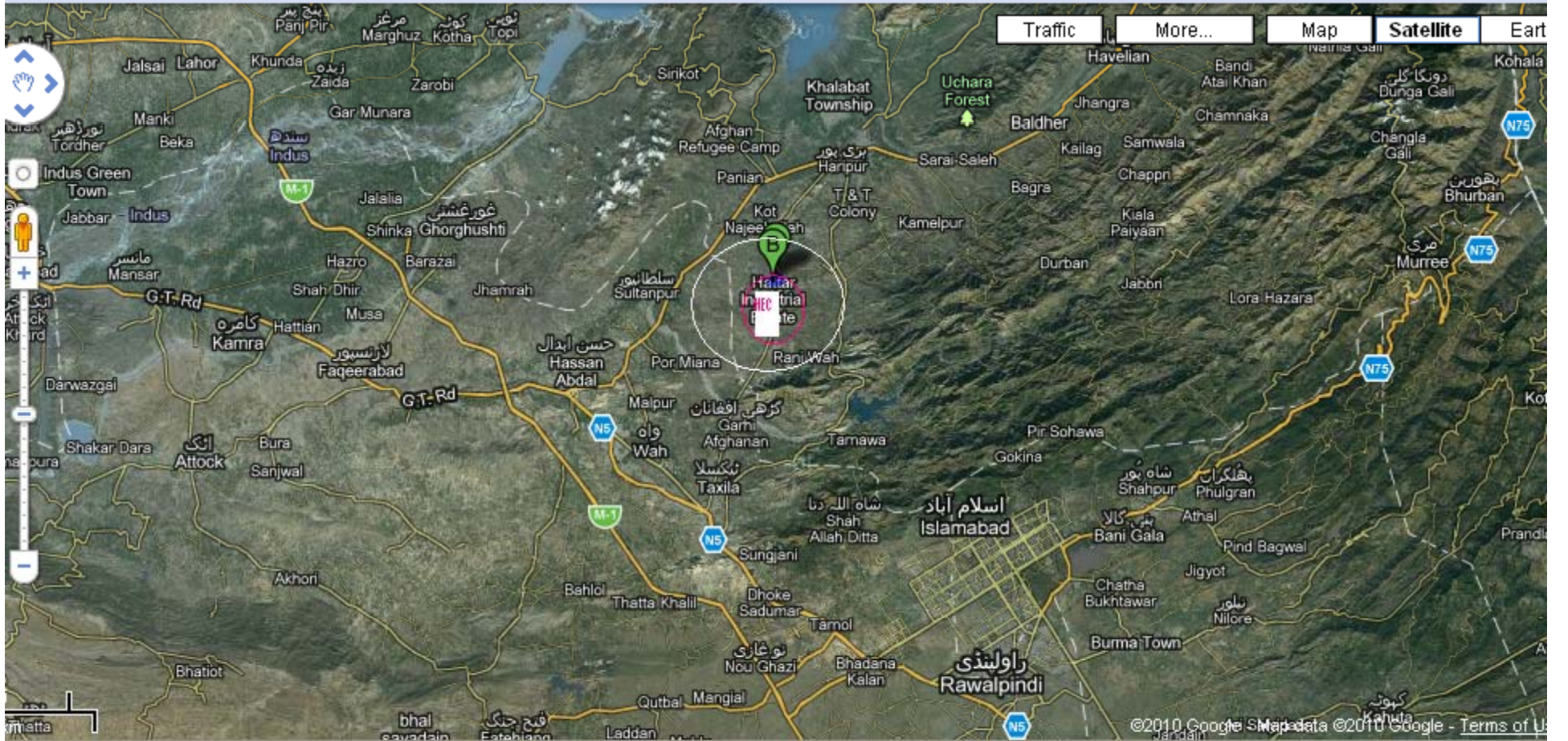
INTRODUCTION



Heavy Electrical Complex, Hattar Industrial Estate

Search Maps

Show search options



AREA PLAN

HEAVY ELECTRICAL COMPLEX

⊙	FACTORY AREA	17400 M = 43 ACRES
⊙	AREA RESERVE FOR COLONY	89000 M = 97 ACRES
⊙	AREA RESERVED FOR EXPANSION	80000 M = 89 ACRES
⊙	BROKEN LAND AREA	44500 M = 11 ACRES



AREA PLAN

LEGEND

—————	CONSTRUCTED BOUNDARY WALL
-----	LIMITS OF RES AREA NOT FENCED
—————	INTERNAL FENCING
—————	RAILWAY LINE
—————	ROAD

RECAREA

AREA IN ACRES

- A. Factory Area = 43
- B. Colony Area = 07
(Taken back by SDA)
- C. For expansion = 20
- D. Broken Land = 11

BUILDING LAYOUT

Helipad

Main Workshops

Worker's Canteen

Hostel

Main Gate/Reception

Material Gate

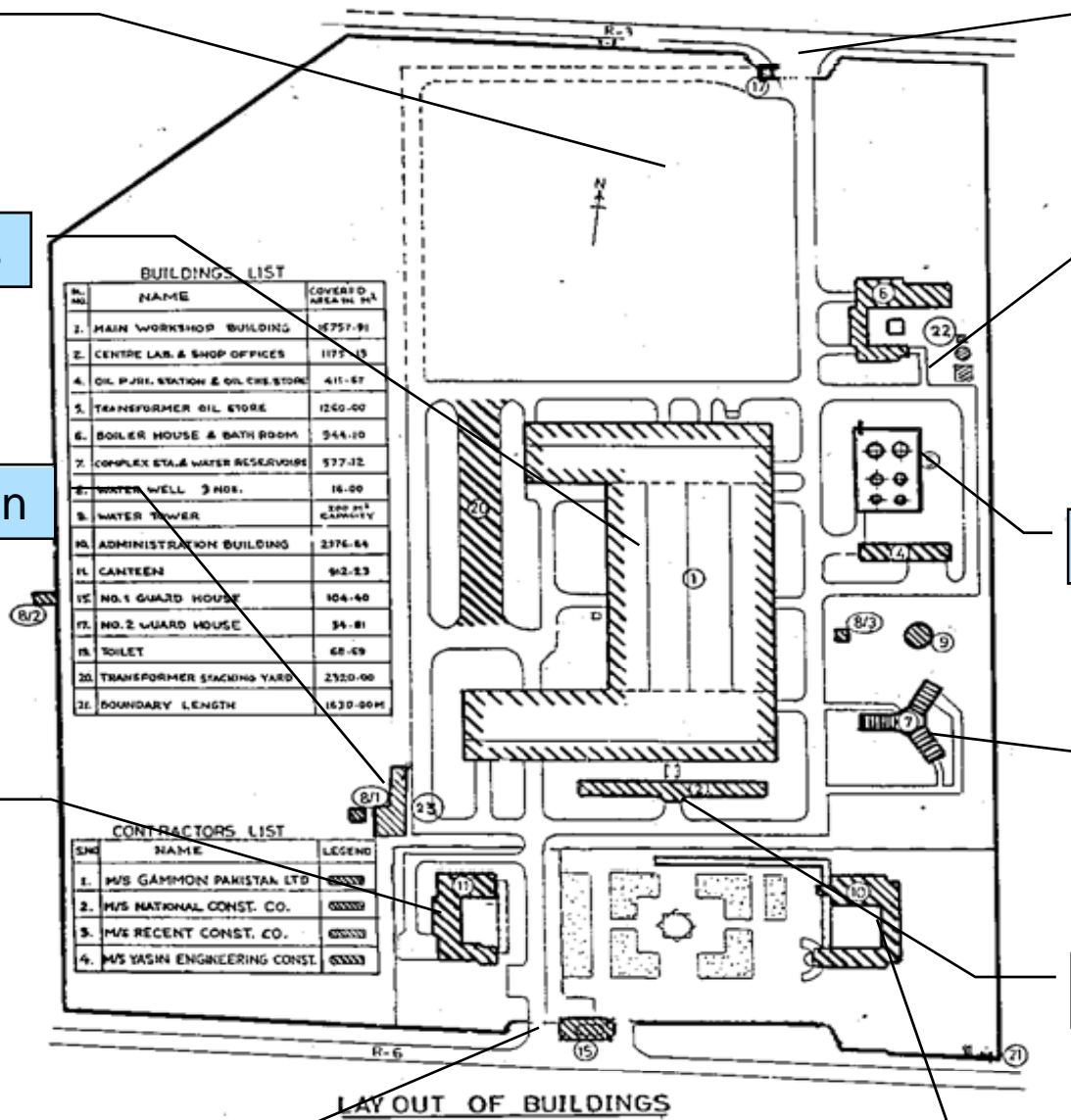
Boiler House

Oil Storage Tanks

Pump House

Workshop Offices

Administrative Offices



LAYOUT OF BUILDINGS
 AREA : 43 ACRE
 COVERED AREA : 25500 M² = 274.000 SQ. FT.

HISTORICAL BACKGROUND

Project Approved	February, 1986
PC-I Cost (Original)	Rs. 536.875 M (February 1986)
Sale Purchase agreement	June, 1987
Original Approved Completion	In 3 years (by February, 1989)
Commencement of Construction	February, 1990
1st Revised Project Cost	Rs. 900.285 M (April, 1992)
2nd Revised approved Project Cost	Rs. 1,158.241 M (June, 1997)
Project Completion	1997
Commercial Operations	1998
Production Capacity	148 No PTs (3,000 MVA)
Manpower required at Full Capacity	600 Nos
Total Area	81 Acres
Factory	43 Acres
Covered	6.278 Acres (25,000 Sq M)
Main Work Shops	15,758 Sq M
Ancillary Facilities	4,368 Sq M
Offices	2,377 Sq M
Others	2,945Sq M

PRODUCT MIX

➤ New Power Transformers

S#	Rating	Nos	MVA
1	31.5/40 MVA, 132/66/11.5 KV	3	120.0
2	31.5/40 MVA, 132/12/11 KV	8	320.0
3	20/26 MVA, 132/11.5 KV	59	1,534.0
4	10/13 MVA, 132/11.5 KV	59	767.0
5	6.3 MVA, 132/34.5 KV	5	31.5
6	10/13 MVA, 66/11.5 KV	10	130.0
7	6.3 MVA, 66/11.5 KV	4	25.2
Total		148	2,927.7

Note; All but shaded ones (SN 2,3,4) have been phased out by WAPDA

➤ Repair of Power Transformers

Voltage rating upto 500 KV and with capacity rating upto 250 MVA

- **Manufactured 226 new power transformers valuing Rs. 5,103 million**
- **Repaired 94 power transformers at a cost of Rs. 516 million only saving huge foreign exchange**
- **Helped reduce price of power transformers offered by foreign as well as local private manufacturers**
- **Development of an Industrially Backward Area**

POWER TRANSFORMER



31.5/40 MVA, 132/11.5 KV – Completely in-house designed, tested and qualified

POWER TRANSFORMER



RATING 10/13 MVA, 132/11.5 KV

HEC SIGNIFICANCE

HEAVY CAPITAL ELECTRICAL INDUSTRY

- ❑ **HEC IS ONE OF PAKISTAN'S HEAVY CAPITAL ELECTRICAL ENGINEERING MANUFACTURING INDUSTRY. IT HAS CAPACITY TO MANUFACTURE HOST OF ELECTRICAL PRODUCTS INCLUDING GRID STATION EQUIPMENT, HIGH MODULE TRANSFORMERS (220 KV AND 500 KV) AND GENERATOR, INSTRUMENT TRANSFORMERS**

DECADE TO ESTABLISH, DECADE TO LEARN

- ❑ **HEC TOOK A DECADE EACH TO ESTABLISH AND LEARN THE TECHNOLOGY. WHAT WAS ESTABLISHED SO PAINSTAKINGLY NOW NEEDS INJECTION OF LATEST TECHNOLOGY & CAPITAL.**

MEETING NATIONAL STRATEGIC POWER REQUIREMENT

- ❑ **HEC ESTABLISHED JOINTLY IN CONSULTATION WITH WAPDA AND KESC TO MEET ITS STRATEGIC REQUIREMENT. WAPDA PLANNING HUGE EXPANSION HENCE NEED FOR HEC TO EXIST IN PUBLIC SECTOR**

INTRODUCING TRANSFORMER REPAIRS

- ❑ **HEC INTRODUCED AND REPAIRED 94 WAPDA TRANSFORMERS THEREBY MEETING ITS DEMAND QUICKLY AT 1/4TH THE COST. LAST REPAIR BROUGHT 250 MW IN THE GRID IN DIFFICULT TIMES**

DISSEMINATING TECHNOLOGY

- ❑ **HEC DISSEMINATED TECHNOLOGY TO WAPDA / KESC AND PRIVATE SECTOR FOR MANUFACTURING AND REPAIR OF TRANSFORMERS.**

EMPLOYMENT GENERATION IN BACKWARD AREA

- ❑ **HEC PROVIDE TECHNICAL EMPLOYMENT TO YOUTH OF BACKWARD AREA OF KP. PRIVATE SECTOR MIGHT NOT BE ABLE TO OPERATE FROM SUCH A LOCATION**

REDUCING IMPORT

- ❑ **HEC HELPED SAVE MILLIONS OF USD BY REDUCING HEAVY MACHINERY (POWER TRANSFORMERS) IMPORT**

COST EFFECTIVE PRODUCTS TO WAPDA

- ❑ **HEC PROVIDE COST EFFECTIVE PRODUCTS TO WAPDA. IN ITS ABSENCE CARTEL MAY FORM AND COST WOULD MULTIPLY**

FACILITIES

➤ FABRICATION

- Hydraulic Bending Press 500 Tons
- Shearing Machine 12.5 mm
- Rolling Machine 6 mm
- Overhead Cranes 10 Ton & 5 Ton

➤ SLITTING LINE

- Loading Capacity 3 Tons
- Cutting 1000 mm

➤ CNC CORE LAMINATION LINE

- Loading Capacity 3 Tons
- Cutting Width 800 mm

➤ ASSEMBLY PLATFORM

- 2 Sets (4 Nos) loading Capacity 3 Tons

- **WINDING MACHINES (10 NOS)**
 - 6 Nos - Dia 600 to 1300 mm (Loading 5 Ton)
 - 4 Nos - Dia 400 mm (Loading Upto 3 Ton)
 - Overhead Crane 10 Ton

- **2000 TONS HYDRAULIC PRESS**
 - To laminate insulation sheets upto 60 mm Thick

- **VAPOUR PHASE DRYING PLANT**
 - Size = 9 X5 X 4 M
 - Vacuum Capacity 0.1 M Bar

- **OIL PURIFICATION PLANT**
 - Vacuum Pumps 3 Nos (2 Mobile)
 - Capacity 6000 Liters Per Hour

➤ TESTING AND QUALITY CONTROL EQUIPMENT

- o Oil Testing, Dielectric Strength Measuring Capacity Upto 80 KV
- o Transformer Turn Ratio Testing Machine (TTR)
- o C&DF (Capacitance & Dissipation Factor) Measuring Device
- o Winding Resistance Measuring Equipment
- o Temperature Rise Testing Equipment Upto 40 MVA
- o Power Frequency Testing Set Upto 300 KV
- o Induced Over Voltage Testing Equipment Upto 24 KV

2000 TONS HYDRAULIC PRESS



HIGH SPEED COMPUTERIZED LINE FOR SILICON SHEET CORE LAMINATIONS



HORIZONTAL WINDING MACHINES



VAPOR PHASE DRYING PLANT



PERFORMANCE

SALES ANALYSIS; upto 10/2010

**40 MVA
20 Nos
Rs. 678 Million**

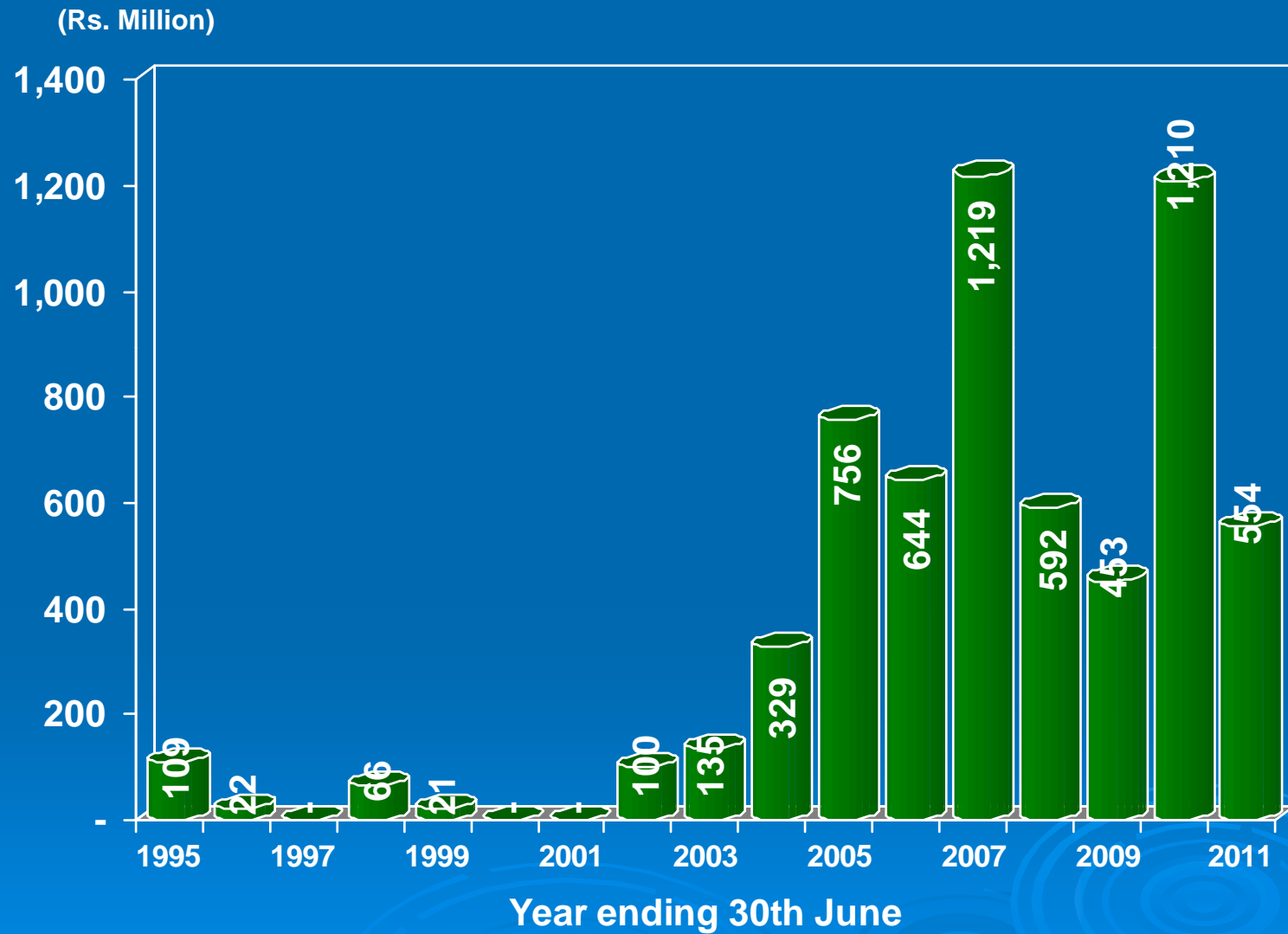
**20/26 MVA
148 Nos
Rs. 3,361 Million**

**10/13 MVA
58 Nos
Rs. 1,064 Million**

**REPAIR /
REHABILITATION
94 Nos
Rs. 516 Million**

Total 320 Power Transformers - Rs. 5,619 Million

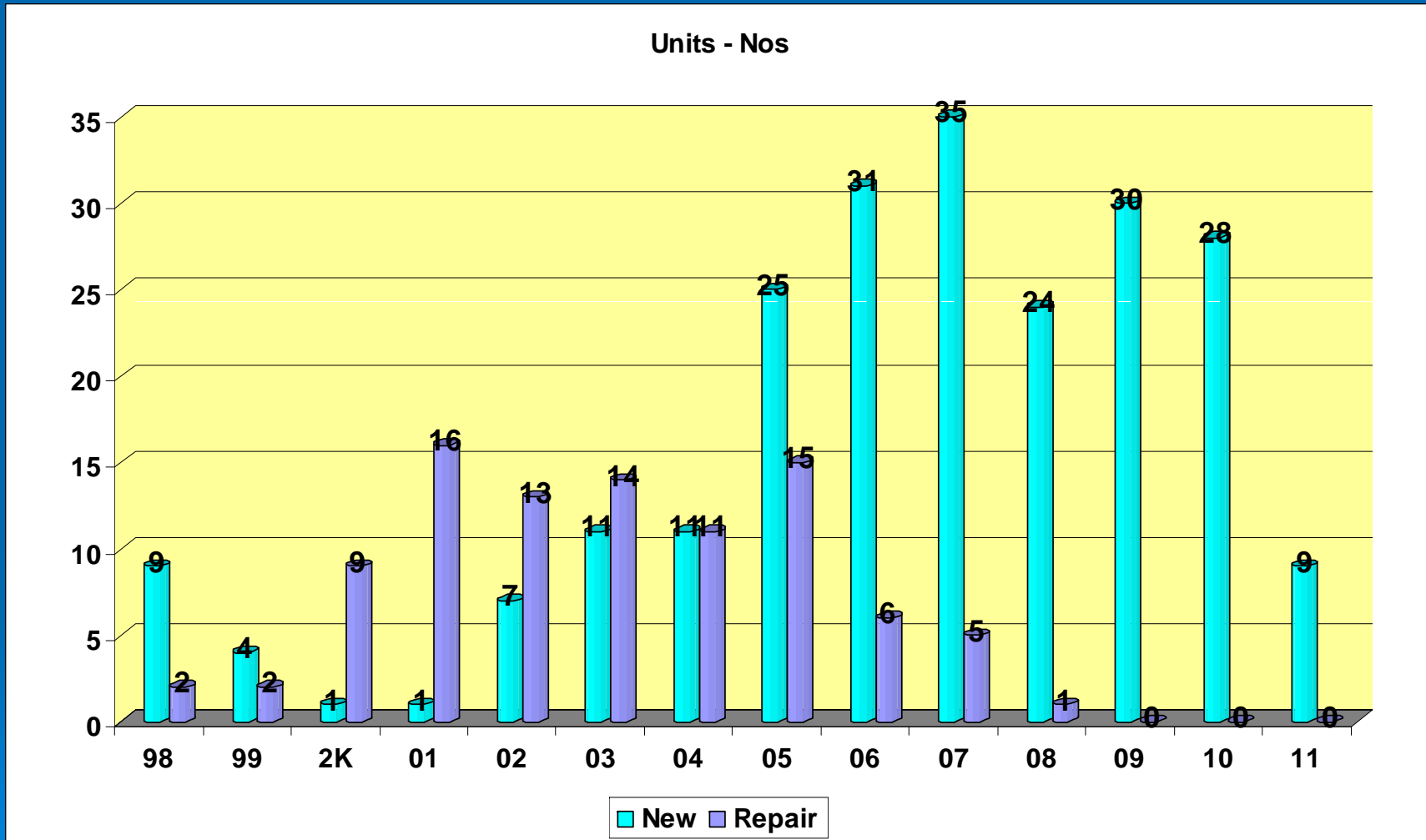
YEAR – WISE ORDERS SECURED (NEW PTs)



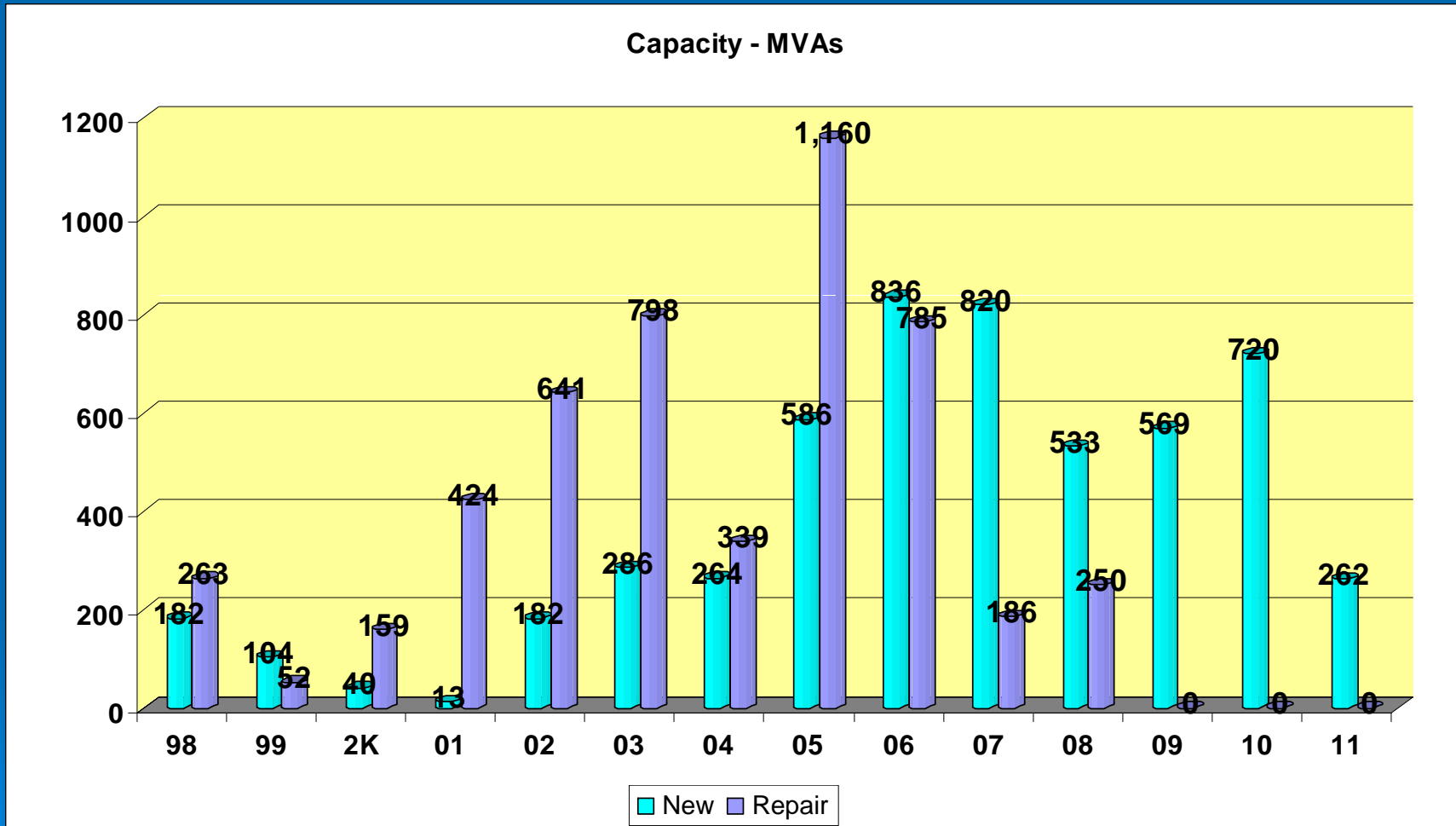
PERFORMANCE – AT A GLANCE, PHYSICAL

Years	98	99	2K	01	02	03	04	05	06	07	08	09	10	11 (10/10)
Units - Nos														
New	9	4	1	1	7	11	11	25	31	35	24	30	28	26
Repair	2	2	9	16	13	14	11	15	6	5	1	0	0	0
Total	11	6	10	17	20	25	22	40	37	40	25	30	28	26
Capacity - MVA														
New	182	104	40	13	182	286	264	586	836	820	533	569	720	654
Repair	263	52	159	424	641	798	339	1,160	785	186	250	-	-	-
Total	445	156	199	437	823	1,084	603	1,746	1,621	1,006	783	569	720	654
Sale Value - Rs. Million														
New	83	46	20	8	87	144	146	328	556	931	671	797	965	887
Repair	30	7	26	64	107	63	32	46	32	24	79	-	-	-
Total	113	53	46	72	193	206	178	374	588	955	750	797	965	887

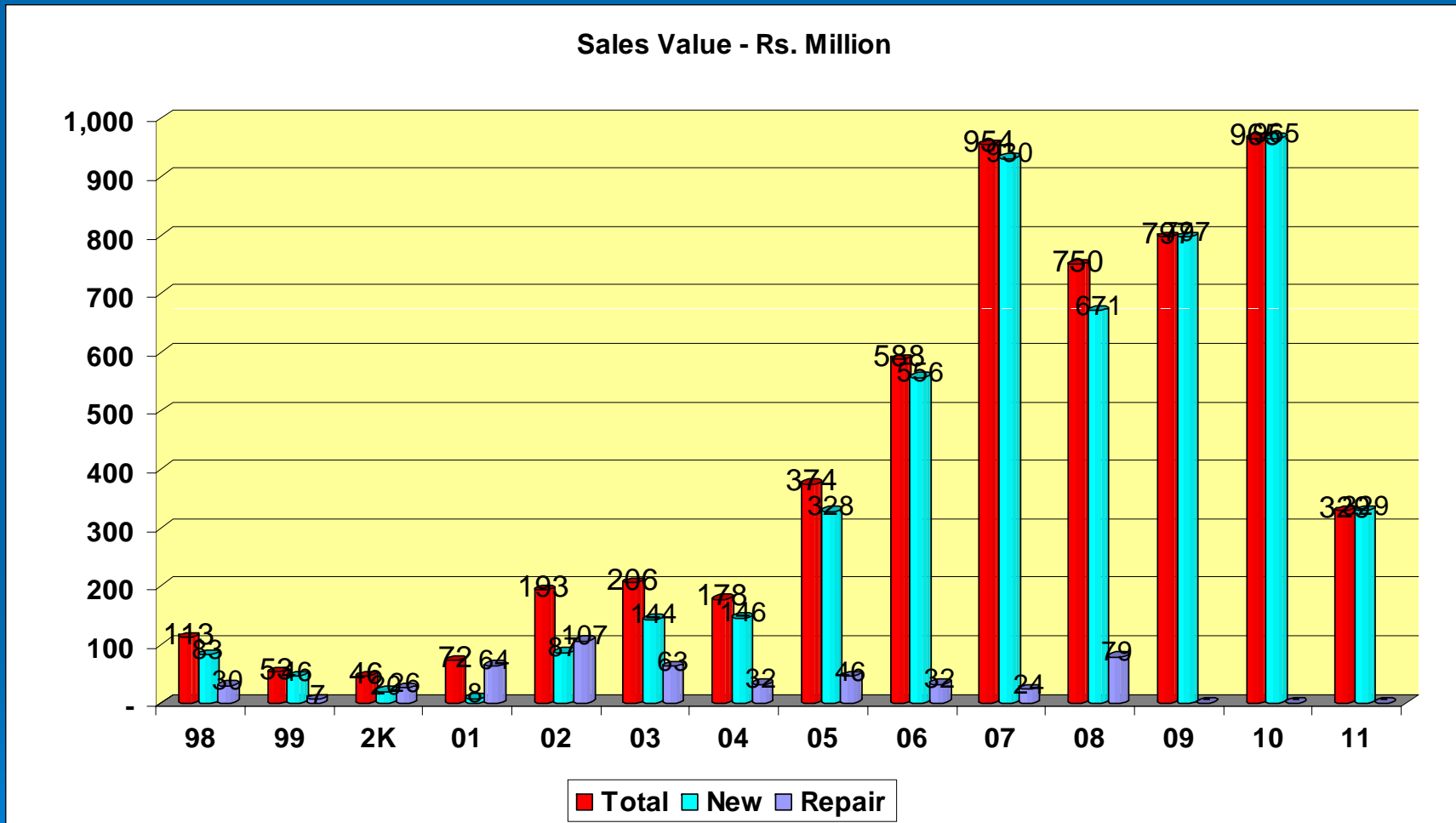
PERFORMANCE - PHYSICAL



PERFORMANCE - PHYSICAL



PERFORMANCE - PHYSICAL



MANPOWER TREND

(NOS)

YEARS/ CATEGORY	98	99	2K	01	02	03	04	05	06	07	08	09	10	11 (10/10)
Management	4	3	3	3	3	2	4	2	2	2	2	1	1	1
Executives	33	30	28	24	27	38	50	61	57	60	43	38	35	38
Staff/Supervisors	5	4	4	4	4	4	5	5	10	10	9	9	2	2
Daily Wagers	110	79	38	170	210	232	239	306	307	282	265	204	218	215
Total	152	116	73	201	244	276	298	374	376	354	319	252	256	256
SALES - Rs. Million	113	53	46	72	193	206	178	374	588	954	750	797	965	329
SALES/Person - Rs.000	741	456	627	360	793	747	597	1,001	1,563	2,696	2,350	3,163	3,770	1,286

ORDERS POSITION

In Hand

(Rs. In Million)

Customer / Description	Qty	Unit Rate	Value
1. PESCO 20/26 MVA	7	34.5	248.0
2. HESCO 20/26 MVA	7	36.0	252.0
10/13 MVA	4	28.8	115.2
3. PESCO 20/26 MVA	5	36.9	184.5
Total	23		799.7

In Pipeline

1. HESCO 10/13 MVA	5	30.8	154.0
2. FESCO 20/26 MAVA	3	38.0	114.0
3. PESCO 20/26 MVA	5	38.500	192.5
Total	13		460.5

BUSINESS PLAN

OBJECTIVE

TO BUILD HEC COMPETENCIES FOR:

MANUFACTURING OF GENERATOR (STEP-UP) TRANSFORMERS OF RATING 220 KV AND 132 KV AND HIGH MODULE POWER TRANSFORMERS OF RATING 160/250 MVA, 220 KV THROUGH UP-GRADATION OF MANUFACTURING AND TESTING FACILITIES AT HEC

CAPITAL COST OF DEVELOPMENTAL PLAN (PC-I)

DESCRIPTION	RS. MILLION
MANUFACTURING OF GENERATOR STEP-UP TRANSFORMERS OF RATING 220 KV AND 132 KV AND HIGH MODULE POWER TRANSFORMERS OF RATING 160/250 MVA, 220 KV	927.400
UP-GRADATION OF TESTING FACILITIES	120.000
TOTAL	1,047.400

MANUFACTURING OF GENERATOR STEP-UP TRANSFORMERS OF RATING 220 KV AND 132 KV AND HIGH MODULE POWER TRANSFORMERS OF RATING 160/250 MVA, 220 KV

DESCRIPTION	RS. MILLION
TESTING FACILITIES	
❑ MOTOR GENERATOR SET (TEMPERATURE RISE TEST)	124.000
❑ INDUCED OVER TEST TRANSFORMER	80.000
❑ OTHER EQUIPMENT	51.329
DESIGN UP-GRADATION	12.000
TECHNOLOGY	
❑ GENERATOR TRANSFORMERS	130.000
❑ POWER TRANSFORMERS	115.000
ENHANCEMENT OF FACILITIES	
ASSEMBLY SHOP (2000 SQM) WITH 50/5 TON CRANE	200.000
OVERHEAD CRANE OF 100/10 TON CAPACITY	150.000
OTHERS	50.940
VEHICLES, FURNITURE AND OFFICE EQUIPMENT	4.060
OPERATING AND MANPOWER TRAINING EXPENCES	10.071
TOTAL	927.400

UP-GRADATION OF TESTING FACILITIES

DESCRIPTION	RS. MILLION
IMPULSE VOLTAGE GENERATOR	107.03
PARTIAL DISCHARGE EQUIPMENT	12.97
TOTAL	120.00

BUSINESS PROSPECTS

NTDC DEVELOPMENT PLAN

1/3

NTDC DEVELOPMENT PLAN STEP-UP (GENERATING) POWER TRANSFORMERS

RATING	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	TOTAL
90 MVA	-	6	12	9	9	18	10	12	9	23	108
110 MVA	-	-	6	10	15	18	9	15	12	-	85
120 MVA	-	-	-	3	-	9	27	24	9	-	72
135 MVA	-	3	-	-	10	-	-	-	18	12	43
SUB TOTAL	-	9	18	22	34	45	46	51	48	35	308

NTDC DEVELOPMENT PLAN STEP-DOWN POWER TRANSFORMERS

160 MVA	7	-	3	3	3	3	3	3	3	3	44
250 MVA	5	8	9	9	9	9	9	9	9	9	110
SUB TOTAL	12	8	12	12	12	12	12	12	12	12	154
TOTAL	24	34	60	68	92	114	1116	126	120	94	924

HEC SHARE IN NUMBERS OF POWER TRANSFORMERS

2/3

HEC SHARE STEP-UP (GENERATING) POWER TRANSFORMERS

RATING	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	TOTAL
90 MVA	-	2	4	5	5	6	3	4	3	8	40
110 MVA	-	-	3	3	5	6	3	5	4	-	29
120 MVA	-	-	-	1	-	3	9	8	3	-	24
135 MVA	-	-	1	-	3	-	-	-	6	4	14
SUB TOTAL	-	2	8	9	13	15	15	17	16	12	107

HEC SHARE STEP-DOWN POWER TRANSFORMERS

160 MVA	-	1	2	1	2	1	2	1	2	1	13
250 MVA	-	-	2	3	4	4	5	4	6	8	36
SUB TOTAL	-	1	4	4	6	5	7	5	8	9	49
TOTAL	-	3	12	13	19	20	22	22	24	21	156

MARKET DEMAND AND HEC'S SHARE – 2009-14

MARKET DEMAND 2009-14

WAPDA (DISCOS)	KV	MVA	UNITS	MVAS
	132	13	85	1105
	132	26	245	6370
	132	40	125	5000
	220	160	40	6400
	220	250	10	2500
	TOTAL		505	21375

HEC MARKET SHARE / PROJECTIONS - 2009-14

WAPDA (DISCOS)	KV	MVA	09-10	10-11	11-12	12-13	13-14	TOTAL
	132	13	2	6	9	10	5	32
	132	26	28	26	26	30	11	121
	132	40	7	11	15	15	7	55
	220	160	-	2	3	4	5	14
	220	250	-	-	1	1	2	4
	TOTAL		37	45	54	60	30	226

FINANCIAL STATEMENT

DESCRIPTION	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20
SALES	365.67	1844.24	2134.43	3413.34	3731.05	4496.16	4716.97	5611.78	4924.29
PROFIT / LOSS	(16.82)	(5.53)	85.38	180.91	272.37	373.18	485.85	690.25	654.93

**PROJECT SEEKING
CHINESE COOPERATION**

PROJECT SEEKING CHINESE COOPERATION 1/6

Title	Manufacturing of Generator Step-up Transformers rating 220 KV & 132 and High Module Power Transformers (PTs) of rating 160/250 MVA, 220 KVA
Executing Agency	Heavy Electrical Complex
Sponsoring Agency	Ministry of Industries & Production / State Engineering Corporation

PROJECT SEEKING CHINESE COOPERATION 2/6

HEC Existing Scenario

Year of Establishment	1997
Location	Hattar Industrial Estate, Haripur
Area	Total 81 Acres (Factory 43 Acres)
Work Force	255 Nos.
Annual Production	30-40 Nos. of 10/13, 20/26 & 40 MVA PTs
Design Capacity	148 Nos. (6.3 MVA to 40 MVA);
Technology Source	Chinese Transformer Manufacturer
Local Competitors	Siemens, PEL
Market Share	37%
Major Customers	PEPCO/DISCOs, KESC and others
Annual Sales turn over	Around Rs. 1.0 Billion
Total Assets	Rs. 1.774 Billion
Share Capital	Rs. 1.5 Billion
Strengths	Comprehensive, Integrated and Largest Power Transformer Manufacturing Facility in the Country Ample land/shop space available for expansion State-of-the-art and distinctive facilities Highly qualified and trained manpower Quality culture

PROJECT SEEKING CHINESE COOPERATION 3/6

Project Justification

- Government plans to establish a number of power projects resulting in ample pending demand in home market.
- Implementation of Power plans would require large number of high module PTs.
- Due to phasing out of five PTs out of existing seven, HEC direly needs to diversify
- Local market swiftly shifting to high module PTs of above 40 MVA.
- Pakistan is presently dependant upon Import of these PTs.
- HEC plans to manufacture Generator Transformers and High Module power transformers of 220 KV and 500 KV.
- HEC possesses adequate infrastructure and expertise of 10 years to quickly diversify with minimum Investment.
- HEC has location advantage for Afghanistan construction and re-construction market.

PROJECT SEEKING CHINESE COOPERATION 4/6

Cost of Project	Rs. 927 million (USD 11 Million)
Total Demand for next 05 years	137 Nos. with break-up as under:
	750 MVA, 500/220 kV: 07 Nos.
	600 MVA, 500/220 kV: 03 Nos.
	250 MVA, 220/132 kV: 80 Nos.
	160 MVA, 220/132 kV: 47 Nos.

Besides above tremendous export opportunities exist in Middle East, Afghanistan and SAARC region.

Vast refurbishing of PTs market in the gulf region

Projected Sales	Around Rs. 5 Billion (US\$ 55 million) by year 2015
Major Key player (Public & Private)	HEC, Siemens Pak, Pak Elektron Ltd.
Expected Share of HEC in the market	Around 33%

PROJECT SEEKING CHINESE COOPERATION 5/6

Project Benefits

- Ample business opportunities due to vast and fast growing home market.
- Chinese partner can develop a local production base in Pakistan
- Relatively cheaper cost of local manufacturing.
- Quick access to foreign market of Afghanistan, Middle Eastern & Gulf counties, ECO & SAARC region.
- Attractive Government patronage for foreign Investors.
- Policy support for enhancing indigenous manufacturing.
- Both the parties under this JV arrangement can secure regular Business.
- Additional electrical products can also be introduced as generator and motors.
- Dividend / Royalties.

PROJECT SEEKING CHINESE COOPERATION 6/6

JV Options

- Chinese may consider extending financial and projecting support under a joint venture arrangement with provision of technology and up-gradation of existing facilities to undertake manufacturing of Generator Transformers of 220 KV & 132 KV and high module power transformers of 220 KV, 500 KV ranges.
- Mode of collaboration can be equity participation, share in management and any other option in the interest of both the parties

The End