

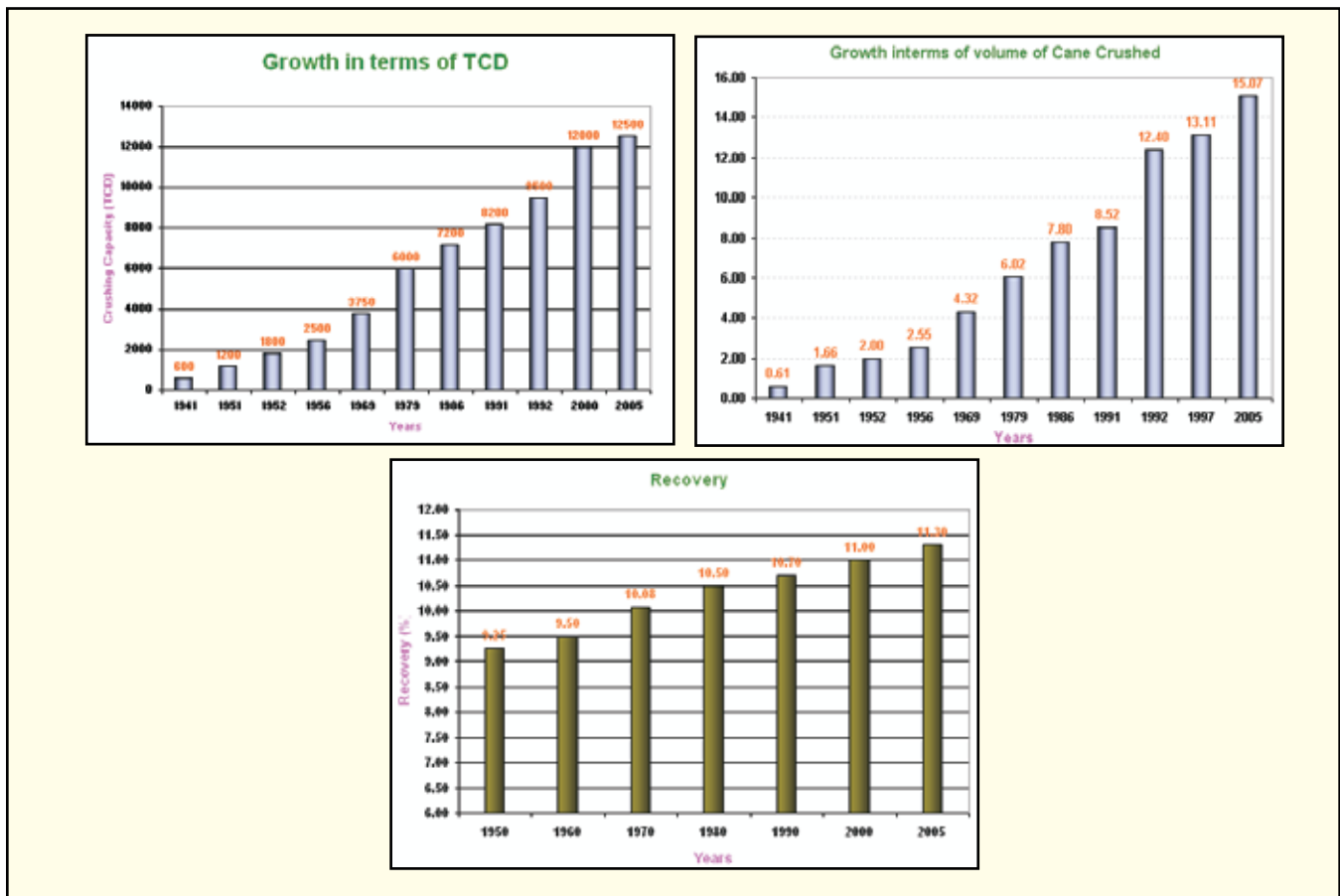
## KCP SUGAR AND INDUSTRIES CORPORATION LIMITED

Vuyyuru, Distt. Krishna (Andhra Pradesh)

### Unit Profile

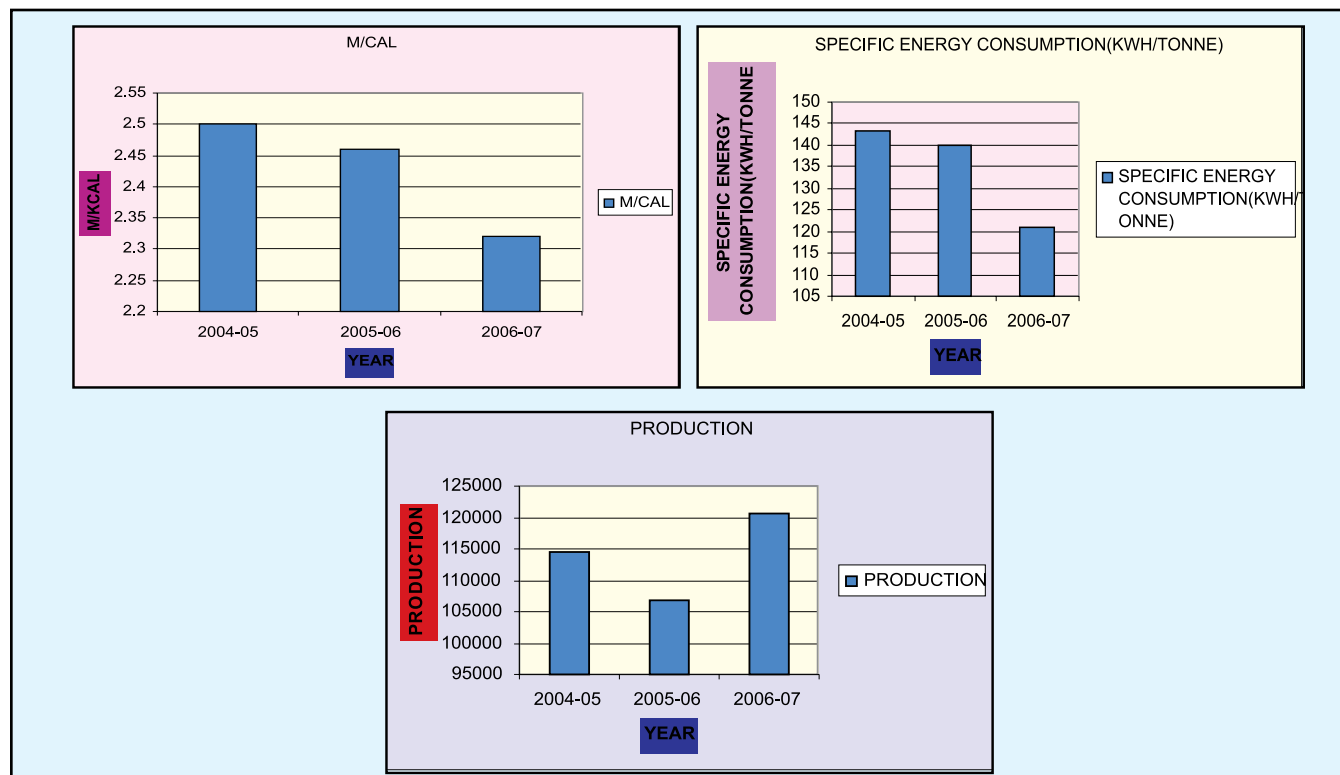
K.C.P Sugars is one of the oldest sugar factories of India. The unit is one of the largest producers of sugar in India, manufacturing nearly 1.7 million tonnes of sugar from cane. With the recent liberalization of sugar industry and the increase in demand of sugar, the unit is poised for tremendous growth.

KCP Sugar and Industries is a public limited company which is having a capacity of 7500 TCD. The raw material is sugarcane and the final product is sugar and power exporting to grid. The bye product, bagasse obtained after crushing the sugarcane is used as fuel for the boilers. We have captive power generation of 15 MW capacity. The exhaust obtained from the power turbines is used for boiling the sugar juice to produce sugar and excess exhaust 10 to 15% is being condensed in condenser.

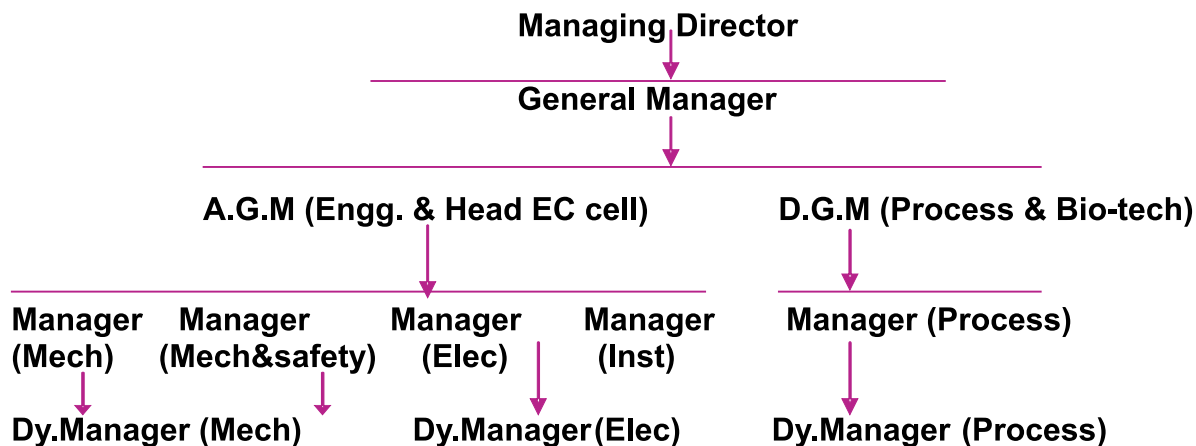


## Energy Consumption

	Unit	2004-05	2005-06	2006-07
Annual production	MT	114444.2	106732.0	120558.1
Total Energy Consumption	kWh (Lakhs)	173.41	149.459	145.95
Total bagasse produced	Tons	2,91,619	3,18,212.6	3,78,696
Total bagasse saved	Tons	54876	59059.77	11269.061
Steam Consumption	Mkcal/T	0.0025	0.00246	0.00232



## Energy Conservation Cell



### Functions of EC cell:

- 1) Implementing steps to reduce the power consumption and saving energy.
- 2) Analyzing the energy consumption every year.
- 3) Planning for usage of waste heat.
- 4) Plans to increase saving of fuel.

### Energy Conservation Achievements

KCP has implemented many energy conservation steps, which are highlighted below for 2006-07 season:

#### Modification in Hydraulic pump of GRPF Hydraulic Drive

The existing Hydraulic pump of GRPF Hydraulic Drive is capable of running GRPF Unit at 11 rpm. But the actual requirement of speed to drive the unit is in between 8 to 8.5 rpm. Hence we modified the pump to run the GRPF at 8.5 rpm. By doing this, the unit got the following advantages

1. Power consumption is reduced to 30 HP.
2. Heat generation, wear and tear and noise reduced.
3. Overall efficiency of the system improved.

Power consumption reduction = 86,000 kWh/ year



#### Modification of existing 36m<sup>3</sup>/sec capacity ID fan to 45m<sup>3</sup>/sec

At present, the unit has 36 m<sup>3</sup>/sec capacity of ID fans (2 nos. for each boiler) which are not sufficient when the boilers are loaded to 100 TPH capacity. Due to this reason the unit is unable to maintain the steam pressure, and hence percentage of unburnt carbon in ash is increasing resulting in poor combustion efficiency. During 2006 off-season to prevent the above problems, unit has increased the capacity of one fan in each boiler to 45m<sup>3</sup>/sec approximately with SS impellers and 85% efficiency as against 65% of existing fan. These new fans are running satisfactorily and also it is observed that there is a considerable power saving as given below

Money Savings/year = Rs 7,77,000/-.



### Installation of VFD for CEP Pump:

Unit has installed VFD for one of the condensate extraction pump on cogeneration turbine. This has improved the operational consistency as well as power saving Of 24,480 kWh

Money Savings/year = Rs 67,500/-



### FOURTH ROLLER AND STATIC COLLAR

Unit has installed fourth rollers and static collars on milling tandems to reduce moisture % bagasse, to increase crushing capacity and also to improve milling efficiency. The reduction in moisture percentage bagasse improved combustion efficiency.

Due to this the moisture % bagasse has been reduced by 1% i.e which saves 4800 tons of bagasse and efficiency of boiler has improved.

Money Savings/year = Rs.35 lakhs



### DEVC + QUAD Combination

In view of steam economy, unit has made connections to evaporator set to run as DEVC +QUAD in addition to the other combinations, which is more effective than other combinations. In DEVC+Quad entire pan boiling is being done by the vapour generated from the IInd effect evaporator, where as other combination it is on Ist effect evaporater body. Steam saved in DEVC+Quad is as given below.

Cane crushed = 1221209 tons

Saving in steam% = 2.75%

Quantity of steam saved =  $2.75 \times 1221209 / 100$   
= 33583.24 tons

1 ton of bagasse generated 2.04 tons of steam

Bagasse saved =  $33583.24 / 2.04$   
= 16462.37 tons

Bagasse rate/ton Rs. 730/-

Money Savings/year = 120.17 lakhs.



### CONDENSATE HEATERS:

Unit is following raw juice heating in two stages. Earlier, Raw juice – I heating was done by IIIrd body evaporator and Raw juice – II by IIrd body evaporator. To extract heat from the condensate water generated from the vacuum pans and evaporator set, connection had been made to heat Raw juice – I by hot condensate and Raw juice – II heating by IIIrd body of evaporator, which is giving good results, the economy figures are as given below. The hot condensate water with reduced temperature is being used for mill imbibitions as this temperature is ideal for this purpose.

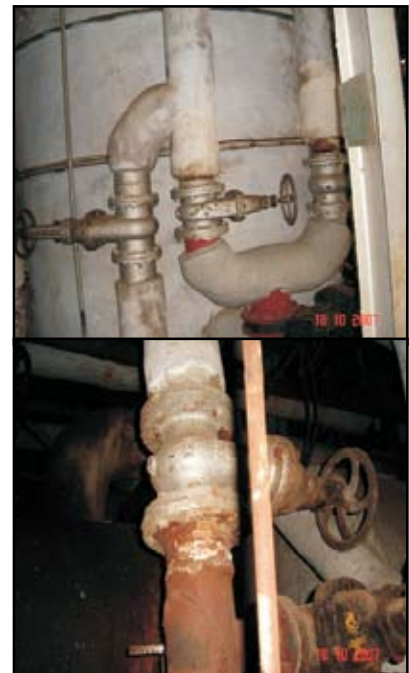
Cane crushed	= 1221209 tons
Saving in steam%	= 1.25%
Quantity of steam saved	= $1.20 \times 1221209 / 100$ = 14654.50 tons
1 ton of bagasse generated	2.04 tons of steam
Bagasse saved	= $14654.50 / 2.04$ = 7183.58 tons
Money Savings/year	= Rs.52.44 lakhs



### BATCH PAN BODY WASHING BY FIRST EFFECTIVE VAPOUR

Body washing for batch vacuum pans is compulsory before starting the massecuite strike. In general it is being followed by exhaust steam because of high pressure and temperature. The 1st effect evaporator body vapour pressure & temperature in DEVC+Quad combination are higher than other combinations. Hence, we had replaced the exhaust with 1st effect vapour, the results obtained are on positive side.

Cane crushed	= 1221209 tons
Saving in steam%	= 0.04%
Quantity of steam saved	= $0.04 \times 1221209 / 100$ = 488.48 tons
1 ton of bagasse generated	2.04 tons of steam
Bagasse saved	= $488.48 / 2.04$ = 239.45 tons
Money Savings/year	= 1.74 lakhs.



### PERIODICAL BOILING OF CONTINUOUS VACUUM PAN BY CLEAR JUICE

A-Massecuite continuous vacuum pans are required hot water boiling for every fortnight to dissolve sugar lumps formed in side the pan. Due to low brix this boiled water requires additional steam to get vaporization in evaporator bodies. To save this additional steam unit is carrying this with clear juice at 16 brix instead of hot water.

Saving in steam% = 0.02%

Money Savings/year = Rs. 0.87 lakhs.



### Environment and Safety

KCP has a very good record in implementing safety and environmental norms and got many awards in safety and environmental aspects.

#### Water effluent :

The unit is committed for minimum discharge effluent by adopting suitable methods not to generate effluents .The improvement was always there year by year and trying to achieve zero discharge.

#### Air:

To control the air pollution the company has installed efficient the venturi type wet scrubbers and meeting the norms prescribed by A.P pollution board.

#### Solid waste:

The solid waste in the sugar unit is mainly wet ash and dry ash realized from the boilers and the same is being disposed by mechanical device and maintaining environmental safety. The ash is used at brick manufacturing

### Safety

The company is committed for the safety of personnel working with. The following safety devices had been installed during the past three years.

1. To control the fire hazardous the company has installed automatic fire hydrant system in the bagasse storage yard and cogen plant by spending a huge amount of around Rs. 30 lakhs.
2. Automatic smoke detection is installed in the computer system building to give alarm in case of fire accident due to sort circuit or any other means.