

**HEAT AND POWER PRODUCTION
PROJECTS IN THE CUBAN SUGAR
CANE AGROINDUSTRY 2004 – 2008**

**BRIEF CHARACTERIZATION OF
CUBAN SUGAR CANE
AGROINDUSTRY
TODAY**

SUGAR MILL : 84
TOTAL INSTALLED CAPACITY : 338 Mtem/day
DAYS OF HARVEST : 150 day
POWER CAPACITY : 643 MW
BY – PRODUCTS PRODUCTION:

ALCOHOL, TORULA YEAST, PULP AND PAPER, DEXTRAN, PARTICLE AND FIBER BOARD, GLUCOSE - FRUCTOSE,

BIOGAS FROM:

ALCOHOL STILLAGE: 16000 NM³ / day

FILTER MUD & SUGAR PRODUCTION EFFLUENT: 1500 NM³ / day

CANE TRASH AT THE CLEANING STATION

Trash available : 6 – 8 % of the cane flow



ENERGETIC CANE

Yield : 60 – 80 tc/ha-a

**Biomasa content (50%
moisture): 63 – 65 %**



ENERGETIC CHARACTERISTIC OF THE SUGAR PRODUCTION

**←100% of the heat demand is satisfy
(2500 Kcal/Kg Raw Sugar)**

**←100% of the electricity demand is satisfy
(30 kW.h /tcm)**

**(Fuel: 100% of bagasse available and 5% of
trash available at the cleaning stations)**

CHALLENGE

MAIN TARGETS FROM HEAT AND ELECTRICITY POINT OF VIEW

SHORT TERMS

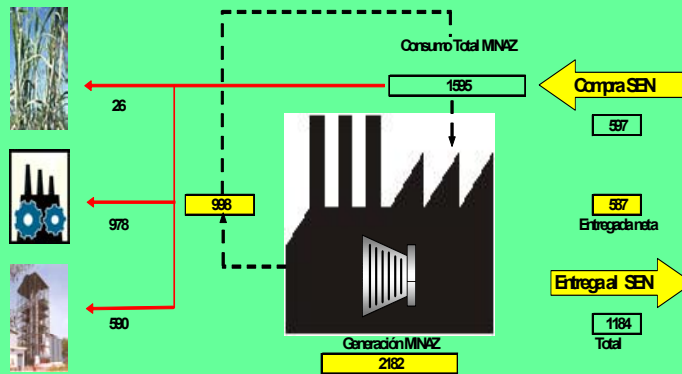
**ELECTRICITY COGENERACION = DEMAND
OF THE SECTOR**

MEDIUM TERMS

**ELECTRICITY COGENERACION > DEMAND
OF THE SECTOR**

ELECTRICITY BALANCE OF THE SECTOR

YEAR 2008



LINE OF DEVELOPMENT

- To decrease the steam consumption to \leq a 320 Kg/tcm;
- To increase the efficiency of the steam boiler to 85-87 %);
- Cogeneration 7000 hr / year in new installation with conventional technology and advance as biomass gasification and pyrolysis.

Projects in the pipeline 2004 - 2008

➤ Sugar Cane Biomass Power Plant

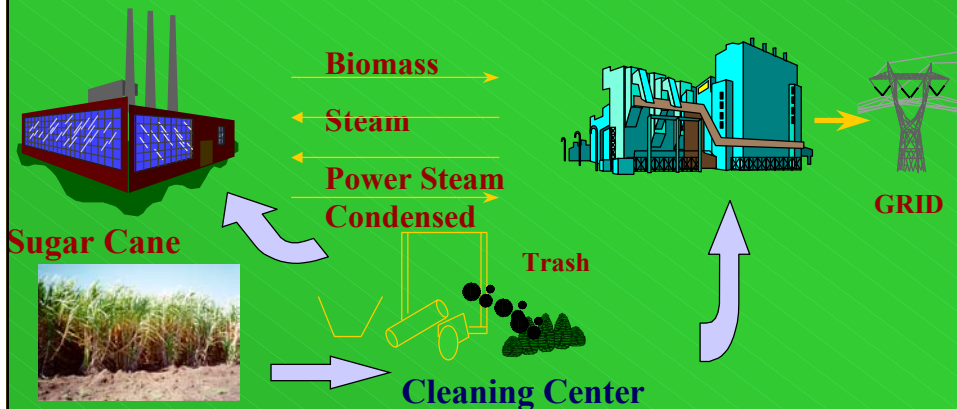
- *POWER PLANT ADJACENT TO EXISTING SUGAR MILL SUPPLYING HEAT AND POWER FOR PRODUCTION OF SUGAR AND BY - PRODUCTS AND POER TO THE GRID DURING 7000 h CONSUMING BAGASSE, TRASH AND ENERGETIC CANE BIOMASS*

- *Projects:*

- *Hector Molina 35 MW*
- *Melanio Hernández 24 MW*

Sugar Cane Biomass Power Plant

- Steady Operation
- 380 Kg steam /tcm
- Steam pressure 60 -80 atm
- Extraction-Condense
- Operation 7000 hrs/year



Projects in the pipeline 2004 - 2008

- **INCREASING INSTALLED POWER CAPACITY OF EXISTING SUGAR MILL WITH A NEW TURBOGENERATOR WORKING 7000 h / YEAR, CONSUMING SURPLUSS BAGASSE AND TRASH**

| <i>Projects</i> | <i>Capacity MW</i> | <i>Year</i> |
|--------------------------------|--------------------|-------------|
| <i>Mario Muñoz</i> | 9 | 2006 |
| <i>30 Noviembre</i> | 9 | 2006; |
| <i>Batalla de las Guásimas</i> | 9 | 200; |
| <i>Grito de Yara</i> | 9 | 200; |
| <i>Majibacoa</i> | 9 | 200 ; |
| <i>Argentina</i> | 5 | 200; |
| <i>Colombia</i> | 7 | 200; |
| <i>Agramonte</i> | 7 | 200; |
| <i>Céspedes</i> | 6 | 200; |

