Presentation to the PAPTAC Steam and Steam Power Comity

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Presentation Objectives

- Kruger Brompton mill historic
- Mill description
- Presentation of the biomass cogeneration project
- Summary
1) Brompton mill history

- Construction by Brompton Pulp of a mechanical pulp mill in 1903
- Beginning of Kruger inc. in 1904
- Closure of the mill following a flooding in 1948
- First mill of the Kruger group in 1950
Brompton mill history

- Boilers conversion from coal to bunker C in 1960
- Installation of a third paper machine in 1963
- Two small coal boilers converted to biomas in 1979 (1.5 M$)
- Installation of a primary water treatment in 1984 (1 M$)
- Installation of a 45 MW electric boiler in 1984 (2 M$)
Brompton mill history

- New thermomechanical pulp plant in 1987 (78 M$)
- Boiler number 2 converted to natural gas and bunker C in 1991 (1 M$)
- New deinking pulp plant of 150 tma/day in 1992 (40 M$) followed by many capacity increases (30 M$),
Brompton mill history

- Secondary treatment for the effluent 1995 (15 M$)
- 9.9 MW hydroelectric plant in 1996 (12 M$)
- 26 MW cogeneration plant in 2007 (80 M$)
2) **Brompton mill**

- 700 t/day thermomechanical pulp plant
- 600 t/day deinking pulp plant
- 3 newsprint paper machines producing 855 t/day
- 4 sequential batch reactors (SBR) for the secondary treatment
- 9.9 MW Hydroelectric dam
- 26 MW biomass cogeneration plant
Brompton mill 2006
Brompton mill

- ISO9001:2000 certified Quality management system
- ISO14001:2004 certified Environmental management system
3. Cogeneration project

- Project objectives
- Combustibles
- Project main characteristics
- Impact study
- Project schedule
- Boiler erection
Project objectives

- 16 to 19 MW of electricity production
- Maintain the mill competitiveness
- Modernise the steam production equipments:
  - Boiler and flue gas treatment
Project objectives (cont.)

- Improve the environmental performance of the mill:
  - Elimination of the bunker C consumption
  - Reduction of the greenhouse gas production
  - Paper sludge valorisation

- Contribute to the provincial efforts to valorise 60% of the province valorisable residues before the end of 2008
  - Construction and demolition residues are burned rather than landfilled
Combustibles

- Paper mill sludge: 40%
- Bark: 30%
- Const. & demol. residues: 2%
- Natural gas: 27.5%
- Used oil from the mill: 0.5%
Boiler general arrangement

1. Schéma général de la chaudière
2. Dosage de biomasse
AEE-VR fluidised bed boiler
Flue gas flow

3a Cheminement des gaz / chaudière

FIGURE 3A - CHEMINEMENT DES GAZ À TRAVERS LA CHAUDIÈRE
AEE-VR fluidised bed boiler
Boiler first pass

3b Schéma du foyer (1ᵉ passe)
Fluidised bed

3c Lit fluidisé

FIGURE 3C - SCHEMA DU LIT FLUIDISÉ

Buses d'air (1450 points d'injection)

Sable
Biomasse

En marche
À l'arrêt

Trémies

Recirculation des gaz
AEE-VR fluidised bed
Sand recirculation

4a Recirculation du lit fluidisé

Figure 4a - Système de recirculation du lit fluidisé
Superheaters

3e Surchauffeurs

Diagram showing the layout of the 3e Surchauffeurs.
Economiser

3f Économiseurs

FIGURE 3F - SCHEMA DES ÉCONOMISEURS
Water and steam flow

3g Cheminement eau / vapeur
Baghouses

5a Filtres à sacs (épuration des gaz)
Ash system

6 Cendres
AEE fluidised bed boiler
Fincantieri-GE Turbogenerator

- Maximum capacity d= 26 MW with 100% condensation
- Electricity production production at 13,800 volts

- Inlet steam at 8600 kPa, 485 C
- Uncontrolled extraction at 1000 kPa
- Controlled extraction at 275 kPa

- Steam turbine at 5200 rpm and alternator at 1800 rpm
- Water cooled alternator
Other suppliers

- Boiler erection by EDB
- Baghouses by Wheelabrator (Siemens)
- Condensor by Holtec
- Biomass feeding systems by B.I.D and AEE-VR
- Water treatment by Eco-Tec
- Dearator by Ecodyne
- Cooling towers by Marley
- Feedwater pumps by KSB
- Process pumps by Sulzer
4. Impact study

Main concerns:

• Noise
• Odor
• Dust
• Traffic and speed
5. Project schedule

Schedule

• Construction:
  - Excavation: July 2005
  - Boiler erection: March 2006 – December 2006

• Operation:
  - Boiler: Natural gas: December 15th, 2006
  - Biomass: January 22th, 2007
  - Turbogenerator: March 25th, 2007

• Electricity to Hydro-Quebec: July 1st, 2007

Project cost: $80,000,000
6. Boiler erection
6. Boiler erection
Sustainable development project

1) Greenhouse gases emission reduction (83,000 tons of CO2 eq./year equivalent to 18,000 cars)
2) Reduce sludge, construction & demolition residues landfill (1200 metric tons/day)
3) Reduce bunker C consumption by more than 30,000,000 litres/year (200,000 barrels/year)
4) Job creation in the recovery, treatment and transportation of the combustibles
5) Green electricity production
Questions
Comments
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