Cariboo Pulp & Paper Company

General Information

- **Company Name : Cariboo Pulp & Paper Company**
- **Location : Quesnel, BC Canada**
- **Mill Area : approx. 2,729,000m^2**
- **Products**
  - **NBSK-ECF**
    - **Northern Bleached Softwood Kraft Pulp – ECF**
    - **It is called NBKP in some Asian area.**
- **Production**
  - **336,000ADt/y, Ave.950ADt/d**
  - **50% of products is sold to Asia by DMI**
  - **Other 50% is sold to Europe and USA etc. by West Fraser**
- **Mill Employees : 328 people (as of Dec. 2006)**
- **Starting Operation : November 1972**

Location

British Columbia

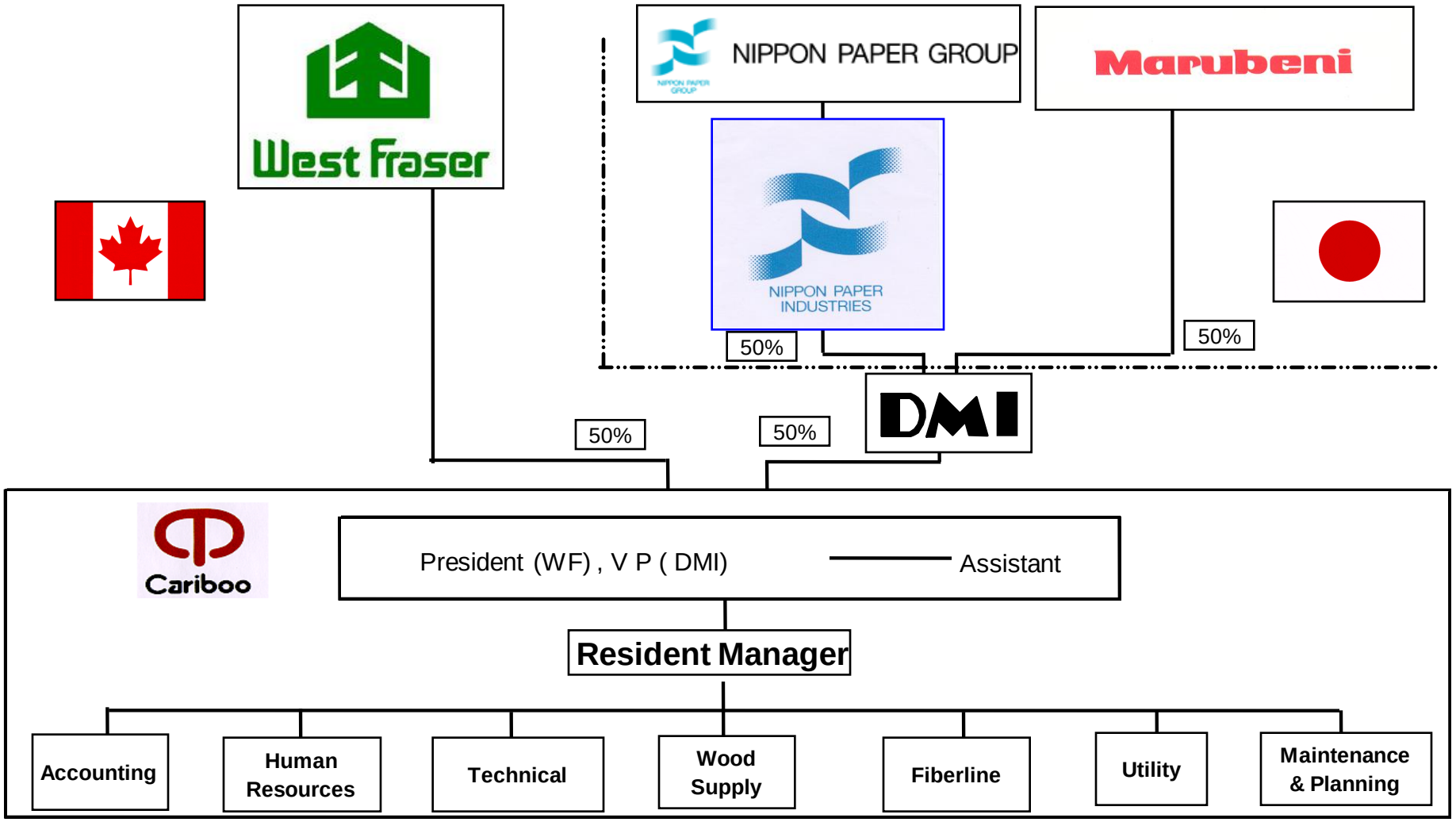
Canada

Quesnel

-North latitude
53degree
-East latitude
122degree30minutes
-Elevation
475m above sea level
-Population : 20,000

- Vancouver – Quesnel
  - BC Rail 610km
  - Highway 680km
- Prince George – Quesnel
  - BC Rail 120km
  - Highway 120km

Mill organization

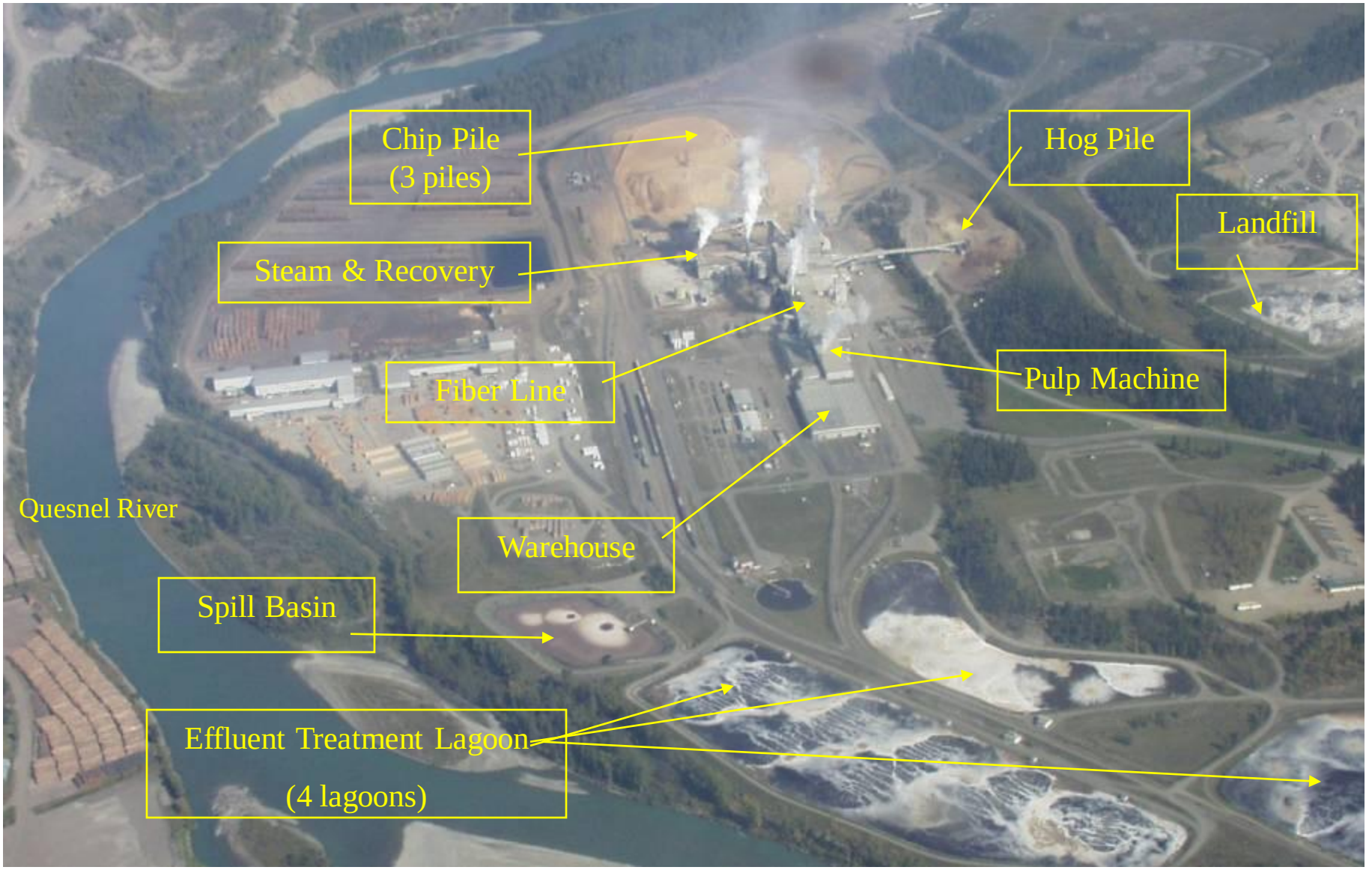


- **Cariboo Pulp is the biggest mill in Quesnel.**

History

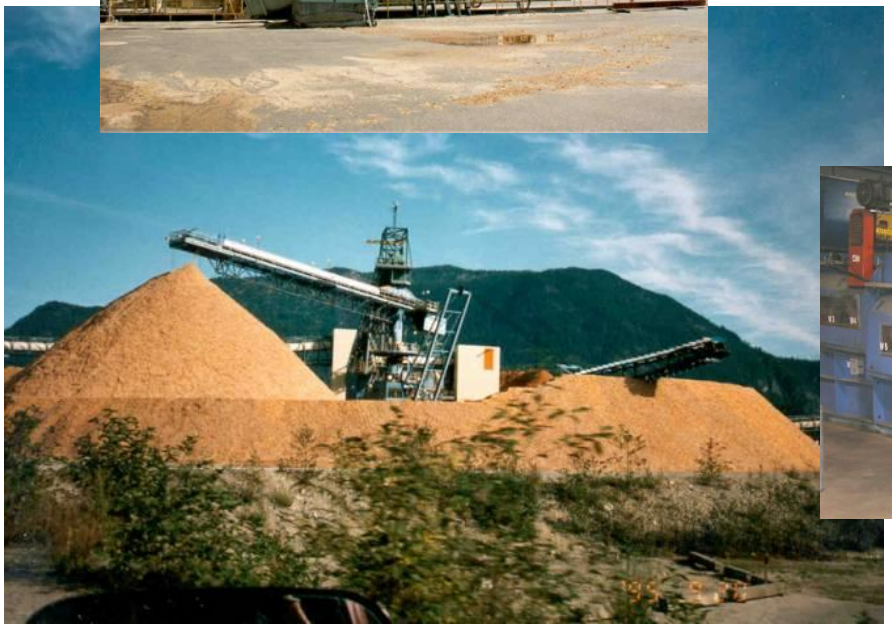
- **Dec. 1969** DMI and Weldwood of Canada (now West Fraser) established Cariboo Pulp & Paper Company
  - [Design Capacity] NBSK 680 ADt/d
- **Nov. 1972** Started Mill Operation
- **1988 - 89** Mill Optimization Project (Production increased 800 to 900 t/d)
  - Recovery boiler capacity was increased by 20%.
- **Oct. 1991** Environmental improvement project
  - Installed oxygen delignification system, Installed #2 Effluent Lagoon
- **Aug. 1992** Started ECF production
  - Increased ClO2 generator capacity 14 to 28t/d
- **Jan. 1993** ISO9001Certification
- **Apr. 1996** Installed New Chip Screen
- **Apr. 1997** Installed Tall Oil Plant
- **Nov. 1998** ISO14001Certification
- **Aug. 1999** Converted to Lo-Solids Cooking at Digester
- **Jan. 2000** 100% ECF production

Whole View


Chip Pile
(3 piles)
Hog Pile
Landfill
Steam & Recovery
Fiber Line
Pulp Machine
Quesnel River
Warehouse
Spill Basin
Effluent Treatment Lagoon
(4 lagoons)

Main Equipment - Fiberline

- Chip Yard
  - 3 Chip Piles
  - Maximum Strage : 100,000BDt



- Chip Screen

Bar Screen

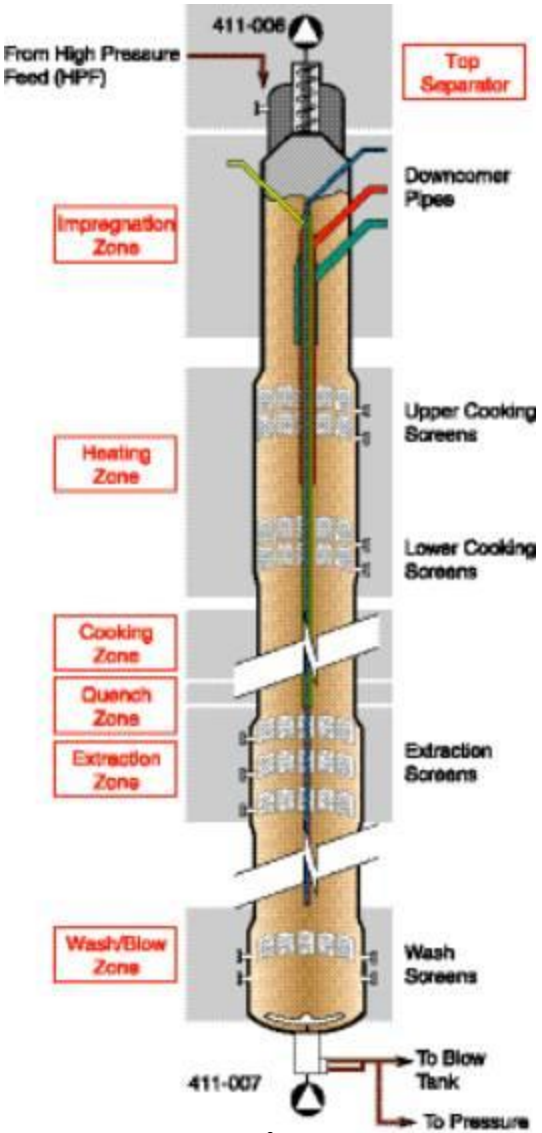
Liwell Screen

Main Equipment – Fiberline2

Digester

- Kamyr 1 vessel continuous digester
  - Height : 54.2m , Capacity : Approx.1400m^3
  - Cooking temperature : 165^{o}C
  - Blow k# : 22.5
  - Blow k# : Standard deviation : 1.2
  - Capability : 1,150UKPt/d

*1999 Implementation of Lo-Solids Cooking



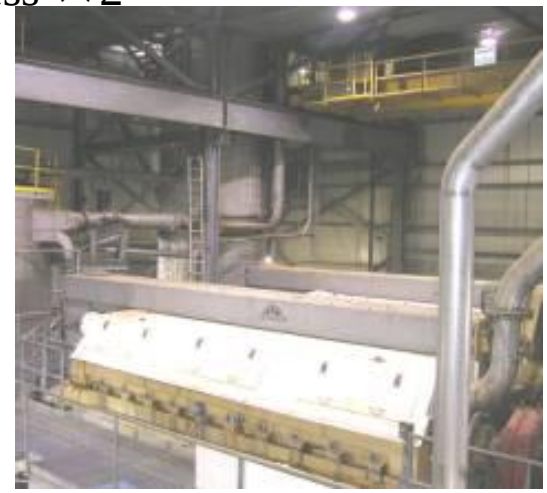
Digester

Main Equipment – Fiberline3

- **Screen**
  - **Knotter**
    - **Hole size : 10mmφ**
  - **Centrisorter Screen**
    - **Hole size : 1.5mmφ**
  - **Tale Screen**
    - **Sidehill Reject Screen**

Centrisorter screens

- **MCO_2**
  - SUNDS Medium consistency oxygen delignification
    - 1^{st} O_2Mixer
      : Komax Static MIxer
    - 2^{nd} O_2Mixer
      : SUNDS Hi-shear Mixer
    - Reactor
      - Capability : 1,200 UKPt/d
      - Capacity : 400m^3
    - Twin Roll Press ×2



Main Equipment – Fiberline4

- Bleaching
  - 2 Modified Mathieson ClO_2 Generators
    - Capability : 28 ClO_2 t/d
  - 5 Stage Bleach Plant – Canron Washers
    - ECF Bleaching
    - Bleaching sequence : D_0-EOP-D_1-EP-D_2
      - D: Chlorine Dioxide
      - E: Alkali Extraction
      - O: Oxygen , P: Peroxide
      - ECF: Elemental Chlorine Free
    - Capability : 1,100BKPt/d
    - Typical Brightness

      EOP : 50-55 ISO%
      D1 : 77-81 ISO%
      EP : 82-84 ISO%
      D2 : 88+ ISO%

Bleaching Washers

Cleaners

Main Equipment – Fiberline5

- Pulp Machine
  - Beloitt Wet End
  - Ross Dryer

    -Width 5,700mm 7sheets Max speed 170m/min

    -Sheet 895g/m^2 Bale weight 250kg

Pulp Machine

Main Equipment – Fiberline6

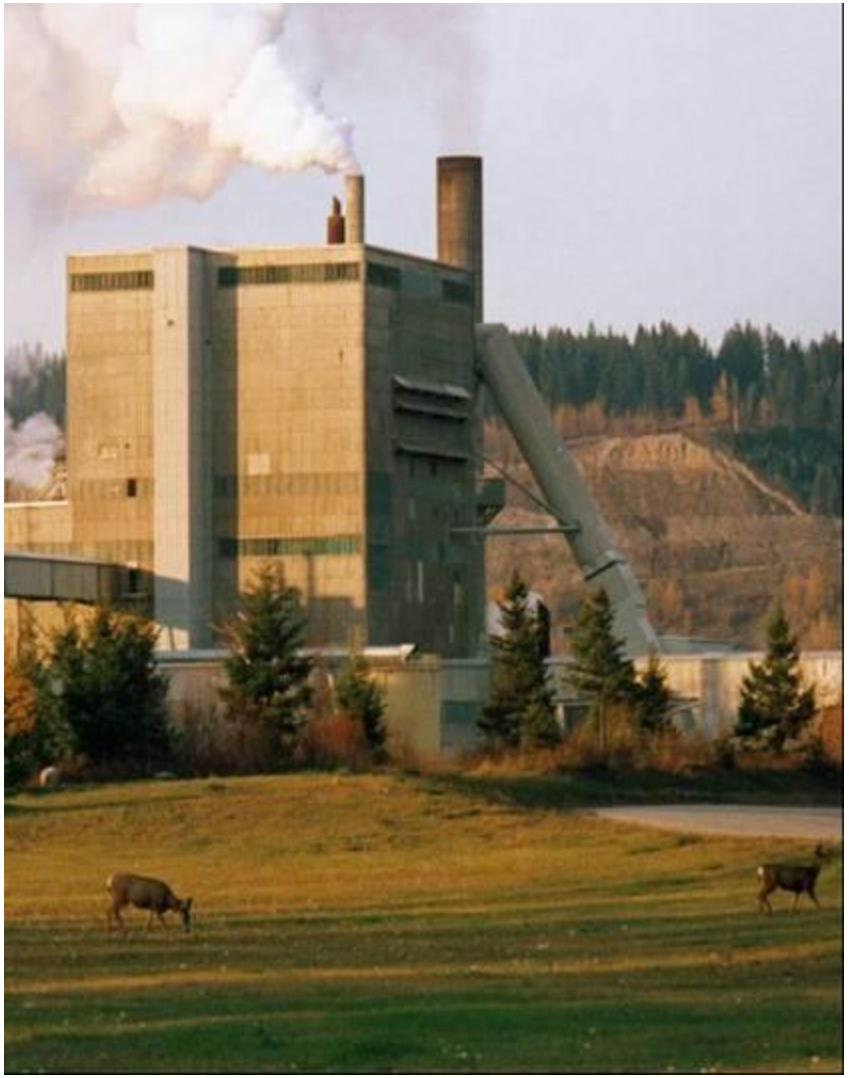
- Baling Line

- Warehouse

Main Equipment - Utility

- **Evaporator**
  - **Unitech Evaporator**
    -5 effects & 1 concentrator
- **Recovery Boiler**
  - **Babcock & Wilcox (Main)**
    Götaverken (Bottom furnace)
    Recovery Boiler
    - **Combustion 1,900 solid t/d**
    - **Steam production 270t/h**
- **Power Boiler**
  - **Foster Wheeler**
    Power Boiler

    -Hog fuel / gas/ Tall oil
    -Steam production 218t/h

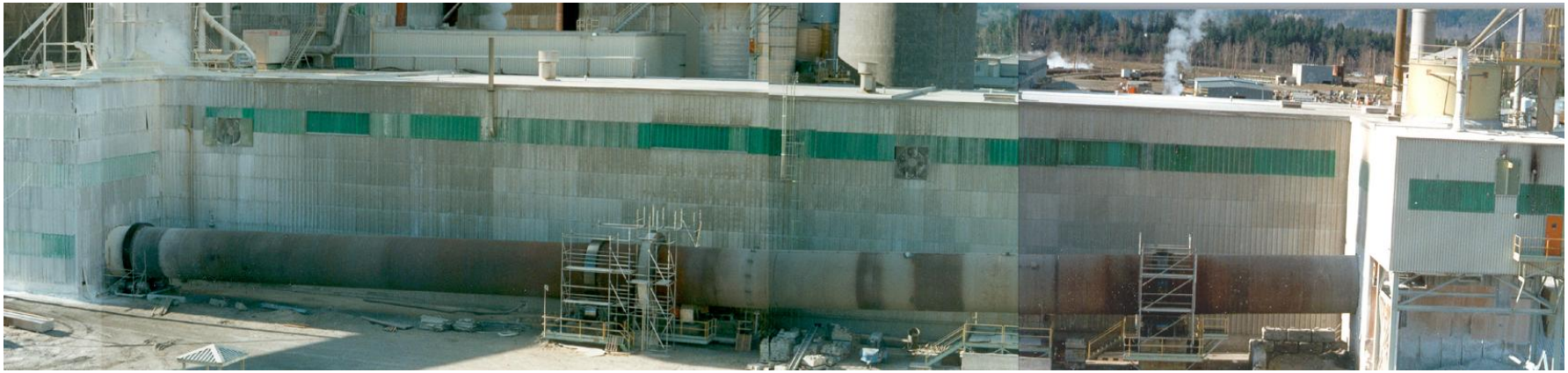


Recovery Boiler & Power Boiler

Main Equipment – Utility2

- **Causticizing, Lime Kiln**
  - **Eimco, F. L. Smidth**

-White liquor production 4,360m^3/d
- Lime production 270t/d

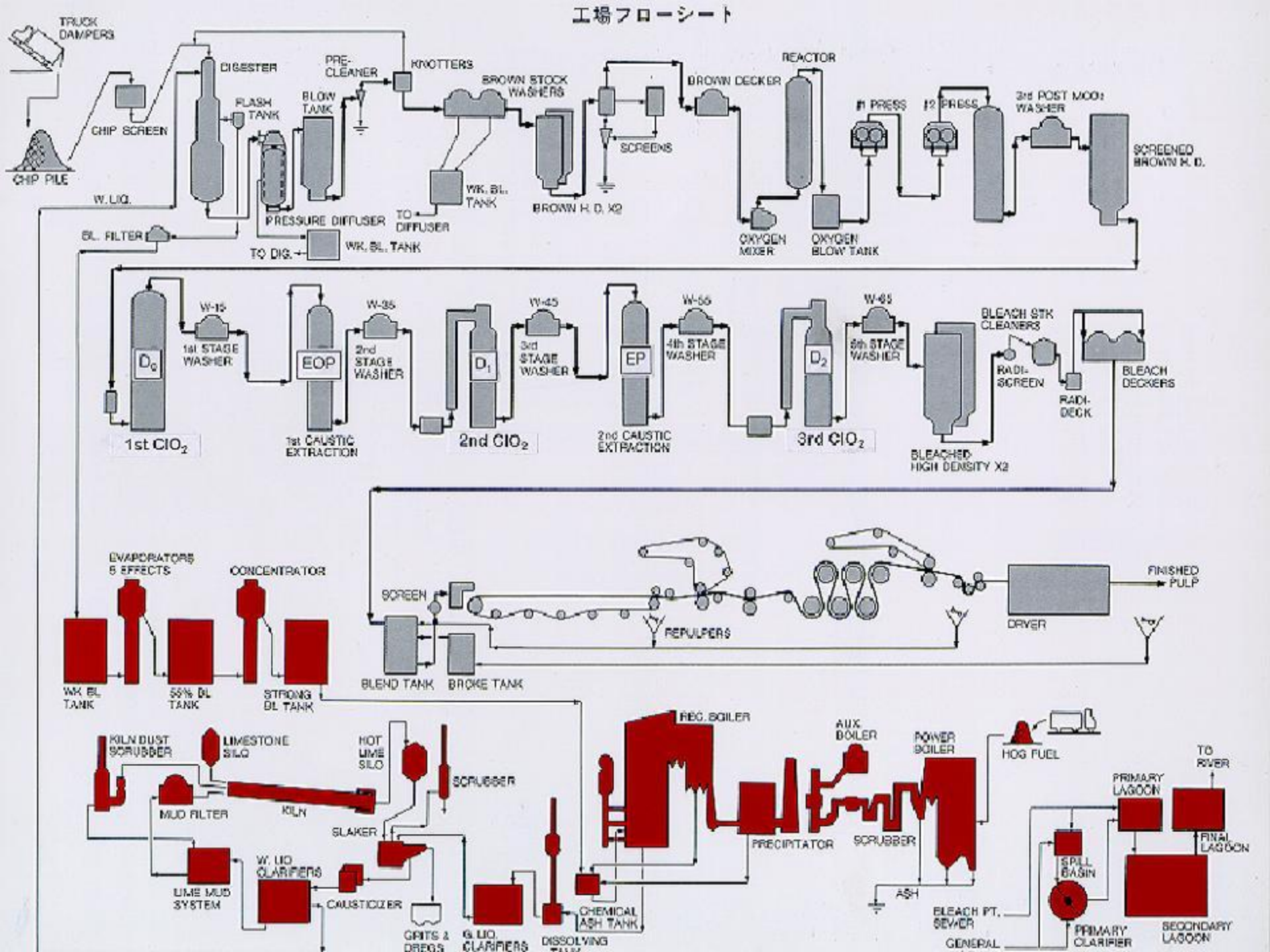


Lime Kiln

- **Turbine Generator**

-Toshiba 32,000 kW (Upgraded to Turbo Care Rotor & Blade)
-Power self-sufficiency 80%

工場フローシート


TRUCK DUMPERS
CHIP PILE
CHIP SCREEN
DIGESTER
FLASH TANK
BLOW TANK
PRE-CLEANER
KNOTTERS
BROWN STOCK WASHERS
WK. BL. TANK
TO DIFFUSER
PRESSURE DIFFUSER
TO DIG.
WK. BL. TANK
BROWN H. D. X2
SCREENS
BROWN DECKER
REACTOR
OXYGEN MIXER
OXYGEN BLOW TANK
#1 PRESS
#2 PRESS
3rd POST WOOL WASHER
SCREENED BROWN H. D.
W. LIQ.
BL. FILTER
D_0
W-15
1st STAGE WASHER
EOP
W-35
2nd STAGE WASHER
D_1
W-45
3rd STAGE WASHER
EP
W-55
4th STAGE WASHER
D_2
W-65
5th STAGE WASHER
BLEACH STK CLEANERS
RADI-SCREEN
RADI-DECK
BLEACH DECKERS
BLEACHED HIGH DENSITY X2
1st ClO_2
1st CAUSTIC EXTRACTION
2nd ClO_2
2nd CAUSTIC EXTRACTION
3rd ClO_2
EVAPORATORS 5 EFFECTS
CONCENTRATOR
WK BL TANK
55% BL TANK
STRONG BL TANK
SCREEN
REPULPERS
DRYER
FINISHED PULP
BLEND TANK
BROKE TANK
KILN DUST SCRUBBER
LIMESTONE SILO
HOT LIME SILO
SCRUBBER
MUD FILTER
KILN
SLAKER
LIME MUD SYSTEM
W. LIQ. CLARIFIERS
CAUSTICIZER
GRITS & DREGS
G. LIQ. CLARIFIERS
DISSOLVING TANK
CHEMICAL ASH TANK
REC. BOILER
PRECIPITATOR
AUX. BOILER
POWER BOILER
SCRUBBER
ASH
HOG FUEL
TO RIVER
PRIMARY LAGOON
FINAL LAGOON
SPILL BASIN
PRIMARY CLARIFIER
SECONDARY LAGOON
BLEACH PT. SEWER
GENERAL

Quality

- Cariboo NBSK Quality System – ISO 9001-2000 Certified
- Characteristics

  Low dirt, High Brightness, High Tear, Low deviation
- Bale Characteristics （Typical）
  - Bale Size
    - 83×86×39cm
  - Weight
    - 250kg/bale
- Fiber (Typical)
  - LWAFL 2.44mm
  - Coarseness 0.157mg/100m

KPMG

Certificate of Registration

This is to confirm that KPMG Performance Registrar Inc. has registered the Quality Management System of

Cariboo Pulp & Paper Company

North Star Road, Quesnel, British Columbia V2J 3J6

to the Quality Management System Standard

ISO 9001:2000

The Quality Management System is applicable to

Design and manufacture of bleached kraft pulp.

This registration is given subject to the terms and conditions governing the use of this certificate as described in the agreement between KPMG Performance Registrar Inc. and the holder thereof. Registration does not assure the effectiveness of the Quality Management System or the products or services produced by it.
* Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization.

Standards Council of Canada Accredited Registrar
Conseil canadien des normes Registrars accredit

ISO 9001 REGISTERED KPMG

Registration Number: 2152
Issue Date: November 7, 2001
Revision Date: November 28, 2002
Expiry Date: November 6, 2004

Michael L. Alexander
President
KPMG Performance Registrar Inc.
Vancouver, B.C., Canada V7Y 1K3

Environment

- **Cariboo Environmental System – ISO 14001 Certified**
- **Effluent Treatment**
  Primary Clarification, Secondary Biological Treatment (7 days)
  City and CRD Sewage, Spill Collection-Containment
- **Air Treatment**
  NCG Gas Incineration, Scrubbers
  Precipitators – recovery boiler,
  Condensate Steam Stripping

KPMG

Certificate of Registration

This is to confirm that KPMG Quality Registrar Inc. has registered the Environmental Management System of

Cariboo Pulp & Paper Company

North Star Road, Quesnel, British Columbia V2J 3J6

to the Environmental Management System Standard

ISO 14001:1996

The Environmental Management System applies to the following scope

Design and manufacture of bleached kraft pulp.

This registration is given subject to the terms and conditions governing the use of this certificate as described in the agreement between KPMG Quality Registrar Inc. and the holder thereof. Registration does not assess the effectiveness of the Environmental Management System or continued compliance with relevant environmental legislation and regulations.

ISO 14001 REGISTERED KPMG

Registration Number: 2152
Issue Date: November 7, 2001
Expiry Date: November 6, 2004

Mark J. O'Sullivan
President
KPMG Quality Registrar Inc.
Toronto, Ontario, Canada M5L 1B2

Environment-2

			Unit	Permit	CPP Current
Effluent					
	Effluent Flow		m^3/day	118,200	94,917
	BOD		kg/day	7,250	1,961
	TSS		kg/day	10,900	3,328
	pH			6.5-8.5	7.9
	AOX		kg/ADt	0.60	0.27
	Dioxin/Furan		ppq	15/50	0/0
	Toxicity			100%pass	100%pass
Air					
	Particulate Emission	Recovery Boiler	kg/hr	80.3	39.0
		Power Boiler	mg/m^3	230	134
		Kiln	mg/m^3	230	145
	TRS Emission-Conbined Total		kg/day	205	115.9
	TRS - Recovery Boiler STI		mg/m^3	8.3	2.3


DMI