

Non Wood Pulping Technology



IPS Engineering



Company

IPS ENGINEERING operates as engineering and contractor for the set up of pulping units mainly based on **Naco Process** for non-wood raw material. The company capability in this field is assured by the availability of a proprietary technology package; this last including 11 processes and being backed by a long lasting industrial experience.

Advantages

- ✓ The pulping plant based on Naco process will be versatile and environmentally friendly and if it is integrated with paper-making, you can produce different high quality products. Sulphur and chlorine free
- ✓ Minimum environmental impact (air and water).
- ✓ Bleaching up to 80-82 ISO.
- ✓ Compared to conventional processes, the water consumption is low.
- ✓ Minimum investment cost thanks to short sequences in bleaching, simplified recovery and compactness of the installation
- ✓ Low maintenance cost.



Multi purpose pulping plant



TCF - ECF Product



Pulping Process Technology

Pulps produced in different ways have different properties, which make them suited to particular products. Most pulp is produced for the purpose of subsequent manufacture of paper or paperboard. Some is destined for other uses such as thick fiberboards or products manufactured from dissolved cellulose. Bearing in mind that there is no single right or wrong proposal for process but only reasonable and manageable proposals.

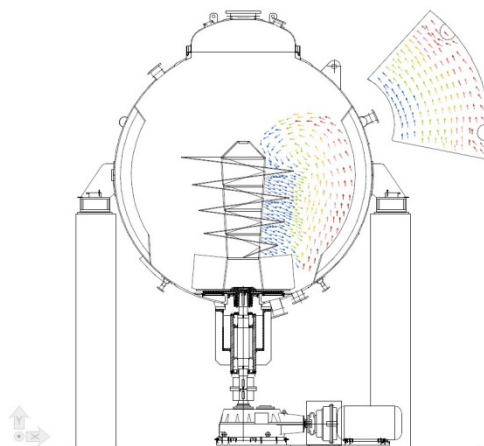
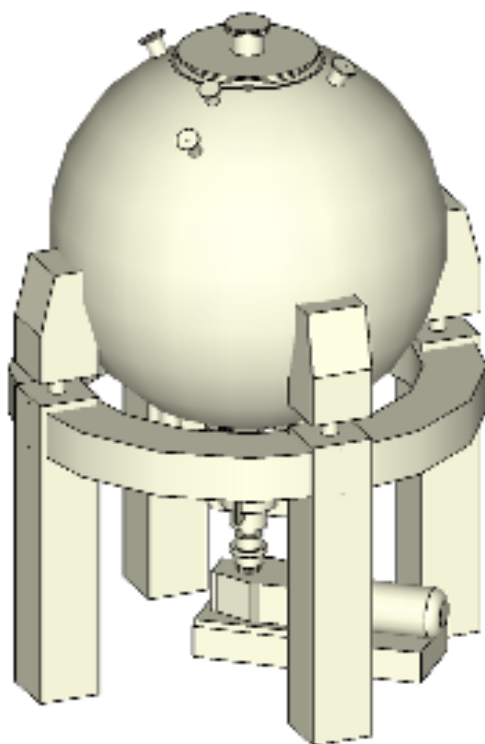
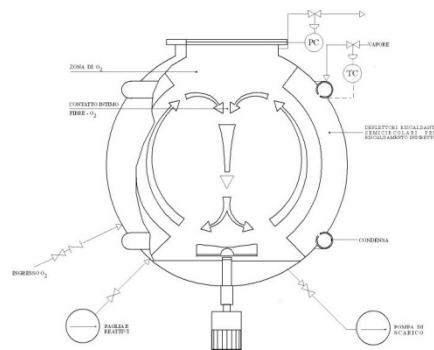
The following table shows various application of the process Naco

Field	Raw Material	Process	Final Product
AGRO RESIDUES	Wheat Straw Rice Straw	TCF (80 – 82) NACO + PpOs Or	Printing, writing Food packaging etc...
	Cotton stalks	ECF (80 – 82) NACO + H-H	
ANNUAL PLANTS	Kenaf Sorghum Hemp Elephant grass (Myscactus)	TCF (80 – 82) NACO + PpOs	Printing, writing Tissue packaging
INDUSTRIAL RESIDUES	Bagasse	TCF (80 – 82) NACO + PpOs Or ECF (80 – 82) NACO + H-H	Printing, writing Tissue packaging
	Cotton linters	TCF bleached pulp (85 – 92) NACO	Banknotes Security Artistic
	Jeans rejects	(No bleaching)	Hand made
KAPPA REDUCTION	Kraft pulp Unbleached soft wood Unbleached hard wood	Unbleached pulp Kappa 5 – 7 NACO + O extended delignification	ECF and TCF pulp short bleaching sequence
WASTE PAPER	OCC and kraft waste	NACO + PpOs Secondary fibre Bleached pulp	Printing, writing packaging
	Office waste Beverage carton Deinked pulp		
HARDWOOD	Mixed eucalyptus	TCF 70 – 75% yield (70 – 72%) NACO + P	Printing, writing Tissue packaging
	Poplar Aspen Cotton wood		

Naco Process

The main idea behind the NACO Process is to apply an alkali-oxygen delignification to a low Kappa number in a sodium carbonate solution, with certain amounts of sodium hydroxide as the activating and make-up chemical. However, since the raw material must be submitted to mechanical action, it became also necessary to design and develop a new reactor called the pressurized continuous **Turbo-Pulper**.

The Turbopulper is a spherical reactor working under pressure, it is equipped with an indirect heating system, it is provided with a rotor/propeller which creates strong turbulence necessary for mass transfer between liquid, solid and gas phase.



Main function:

- *The necessary mass transfer for intimate fibre oxygen contact.*
- *Selective treatment of the fibers.*
- *Indirect heating of the chemical suspension.*

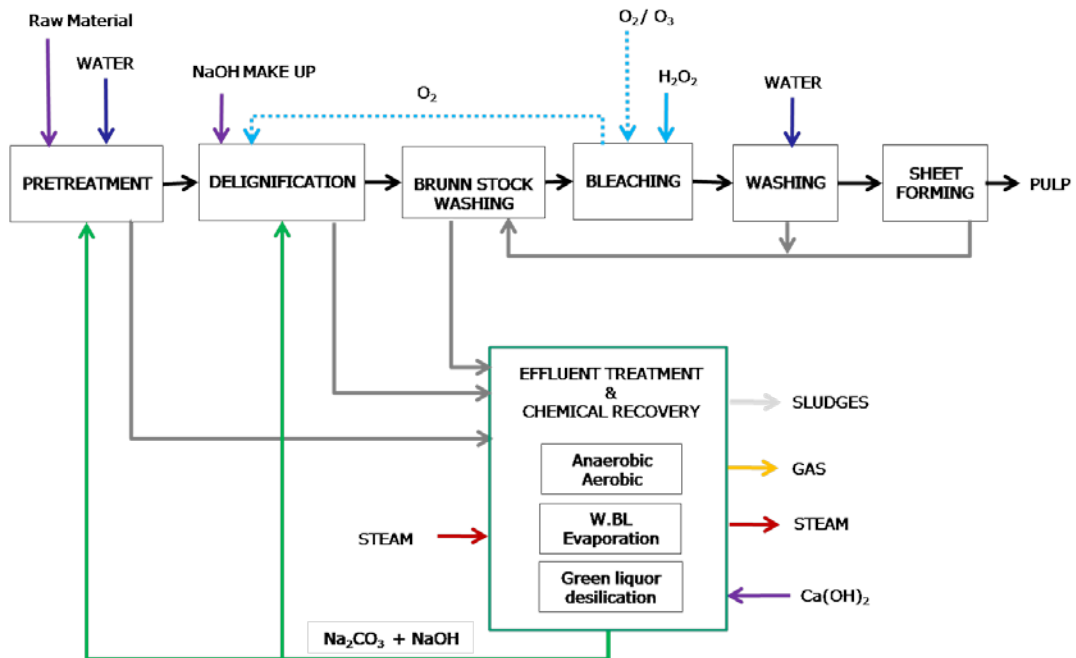
The Process Proved Advantages

The significance of the NACO (Na_2CO_3) Know how is enhanced by unique peculiarities, such as:

- The highest compatibility with the most updated requirements to protect the environment, virtually in all countries of the world;
- **Sulphur and chlorine free technology.**
- **Water, Air and caustic (make-up) will be the only chemicals required.**
- No recausticizing, consequently no problem in lime kiln operation and/or in sludge's disposal.
- Minimum environmental impact (air and water).
- Low investment for complete green field plant
- Low maintenance costs
- The possibility of granting the viable set up of small size plants, consequently offering the chance for autonomous pulping production also where the funding potential is limited.



Pulping Process Block Diagram



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