



9th Workshop for Energy Management Action Network for Industrial Efficiency
under the International Partnership for Energy Efficiency Cooperation

CMPC EnMS: EXPERIENCE & BEST PRACTICES

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CMPC Pulp

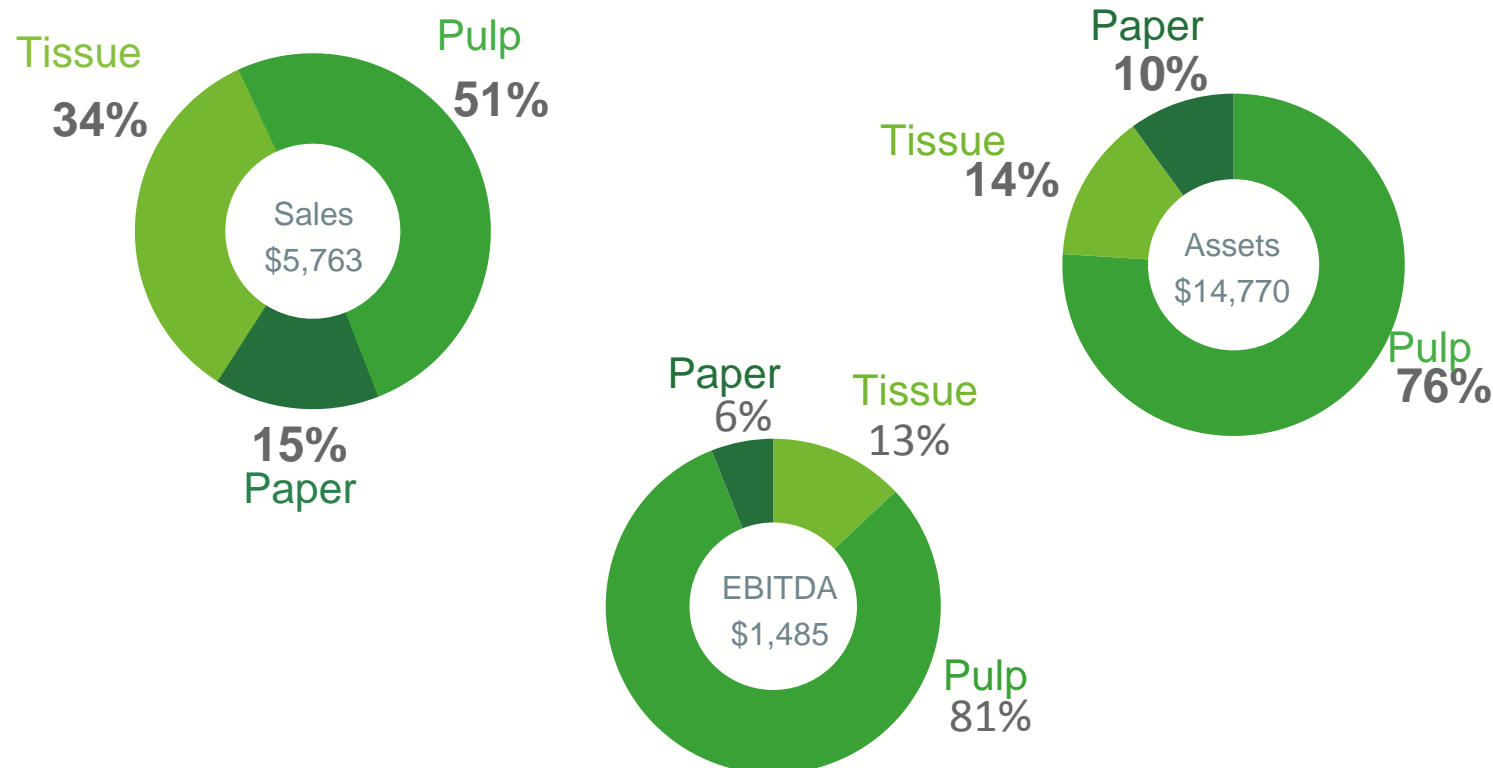
November 21st 2018



A Global Leader in P&P

CMPC is a P&P company, established in 1920, that produces solid wood products, pulp, paper and packaging products and tissue in Latin America.

CMPC Figures ¹



4th
Global Market
Producer ²
Pulp

2nd
Producer in LatAm ³
Tissue

Competitive
BEKP & BSKP
Cash Cost

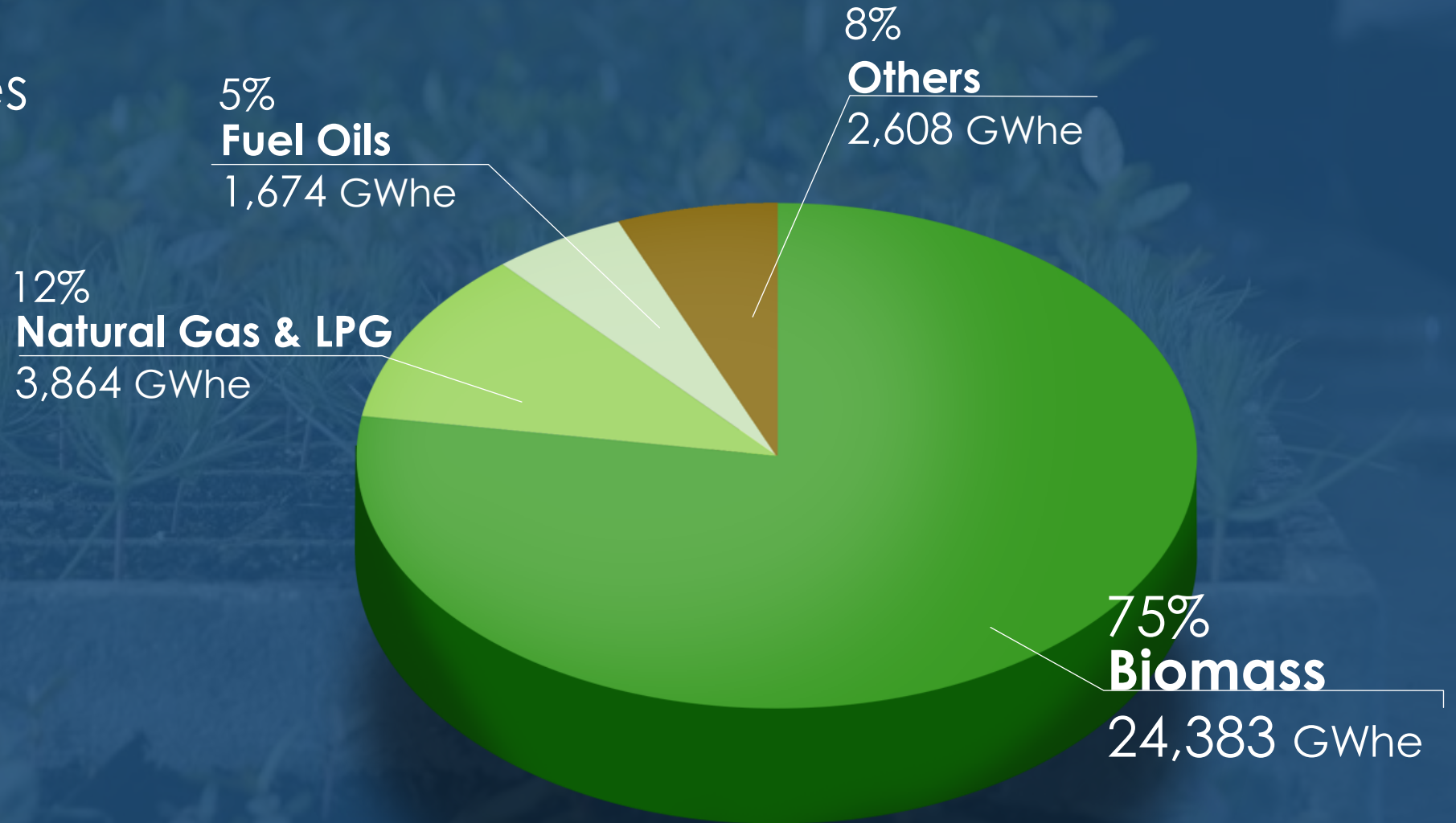
Investment
Grade
Company
Fitch: BBB (stable)
Moody's: Baa3 (stable)
S&P: BBB- (stable)

¹ Source: CMPC. Figures for the LTM as of June, 2018 (USD million)

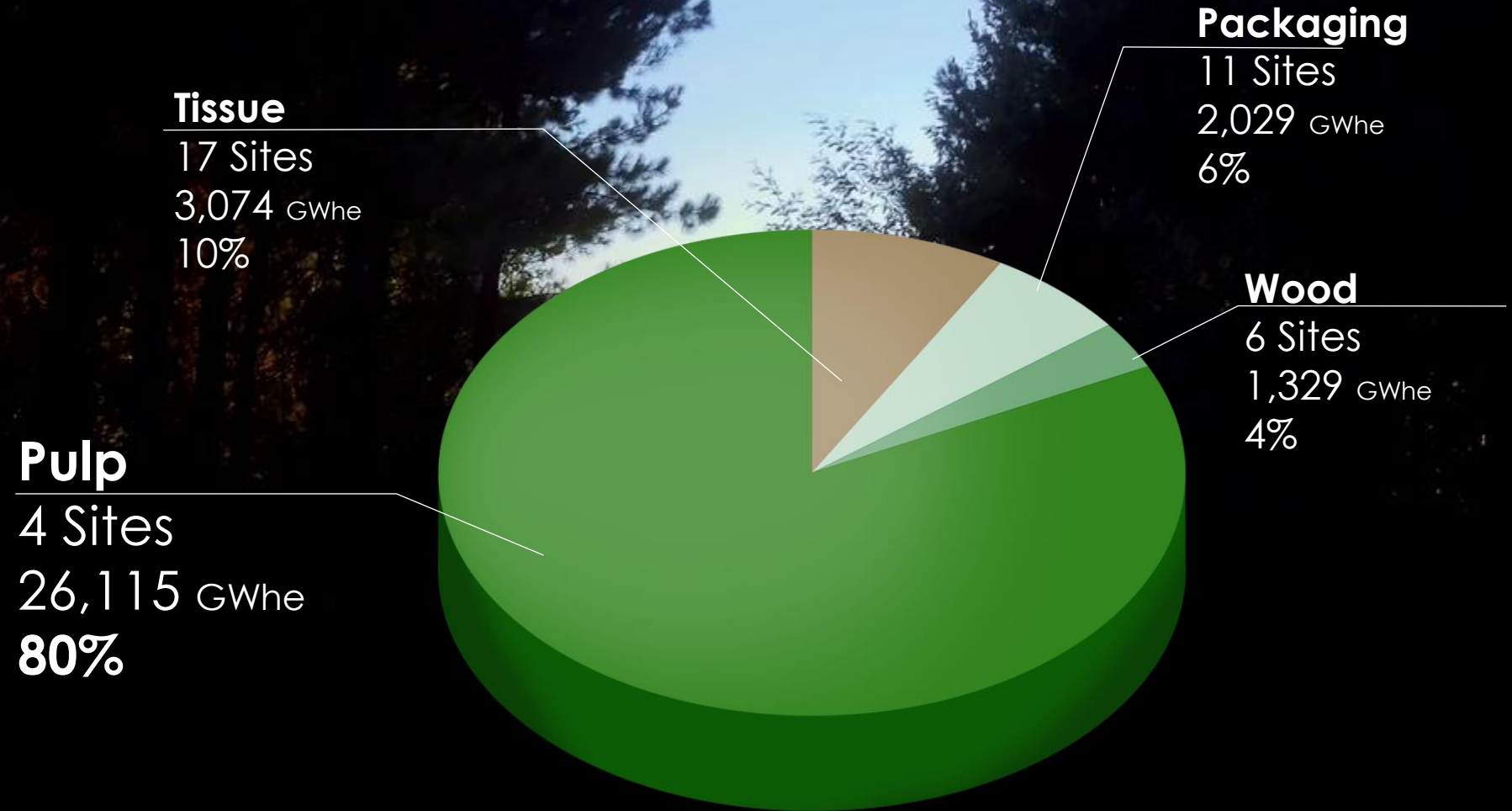
^{2,3} Source: Hawkins Wright, RISI


CMPC ENERGY INPUTS

32,500 GWhe
38 Industrial Sites
8 Countries



CMPC ENERGY INPUTS PER BUSINESS





At CMPC we want to be more
efficient and competitive in
the markets we participate,
thus securing the sustainability
of our processes and activities

ENERGY MANAGEMENT SYSTEM IMPLEMENTATION AT CMPC

2013: PHASE I PULP
(3 SITES)

2016: PHASE II TISSUE, WOOD & PACKAGING
(25 SITES)

CURRENT STATUS

IMPLEMENTATION PROCESS

Stage 1

ISO 50001 Gap
Analysis & Action
Plan

8 SITES

Stage 2

EnMS Model
Design

4 SITES

Stage 3

EnMS
Implementation

10 SITES

Stage 4

EnMS Internal
Audit

2 SITES

Stage 5

ISO 50.001
Certification

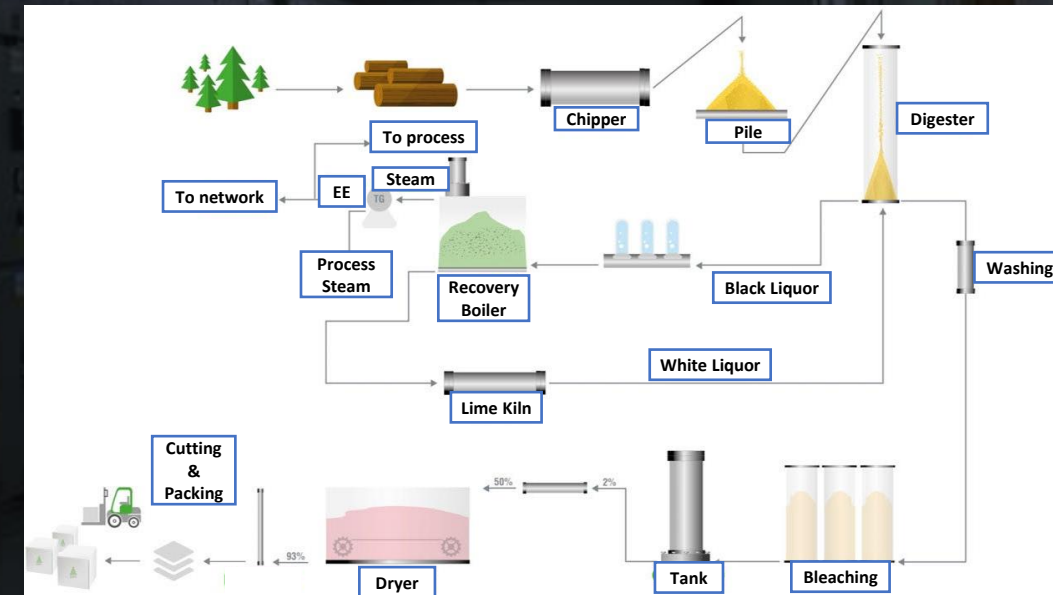
4 SITES

PHASE I PULP

SCOPE OF THE SYSTEM

CMPC started working in the beginning of **2013** in the EnMS implementation process of the **3 Mills** of Pulp in Chile and obtained the certification **ISO 50001** in October 2014

Pulp Mill	Production [Ton/year]	Product
Laja	360.000 70.000	Bleached Softwood Kraft Pulp, Unbleached Kraft Pulp Sack Kraft Paper
Pacifico	500.000	Bleached Softwood Kraft Pulp
Santa Fe	1.490.000	Bleached Eucalyptus Kraft Pulp



Annual
Energy
Consumption

17,324
GWhe



P H A S E I P U L P

2 0 / 2 0 P L A N

After defining the EnMS base lines, a goal of reducing 20% the consumption of external energy sources per unit of produced pulp was established for the year 2020.

Focus of developed projects

- 🌱 Biomass quality improvements, electricity savings (motors y lighting), steam savings and residual heat recoveries.
- 🌱 Fuel use improvements and energy monitoring systems upgrades.
- 🌱 New technologies for the use of: black liquor, fuel oil, biomass and insulation improvements.

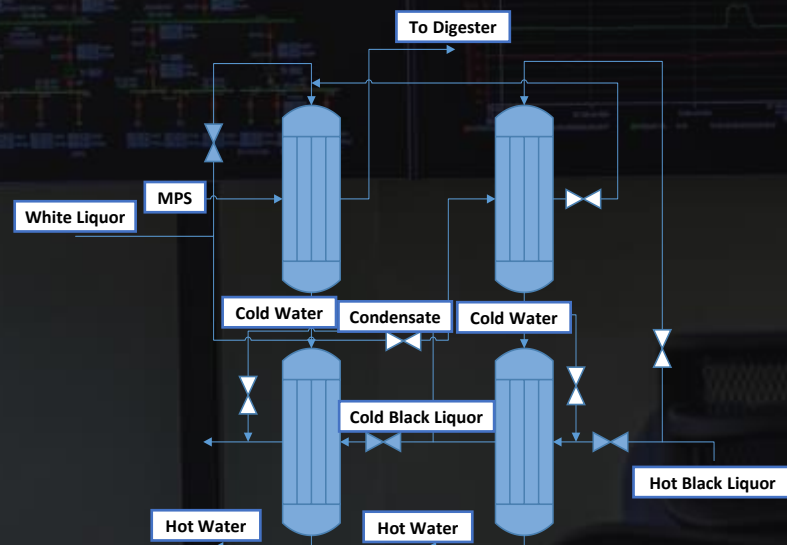
Until 2016, 32 energy efficiency projects were developed in relation to the EnMS , with a total investment of 12,6MM USD and an energy saving impact of over 137 GWh.

Pacifico's project "Steam use reduction via White Liquor preheating with heat recovered from the Black Liquor outlet" received the prize for best energy efficiency project within the Gold Seal price, given by the Chilean Ministry of Energy

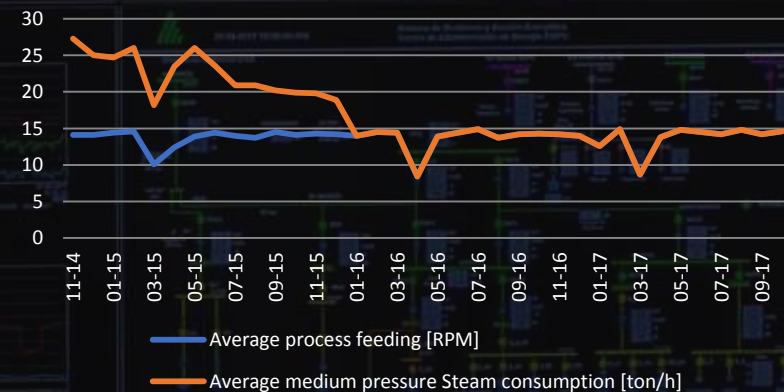


This project provided the following benefits:

- Medium pressure steam (MPS) use reduction
- Cold water use reduction
- Availability of MPS to generate electricity



Steam use reduction

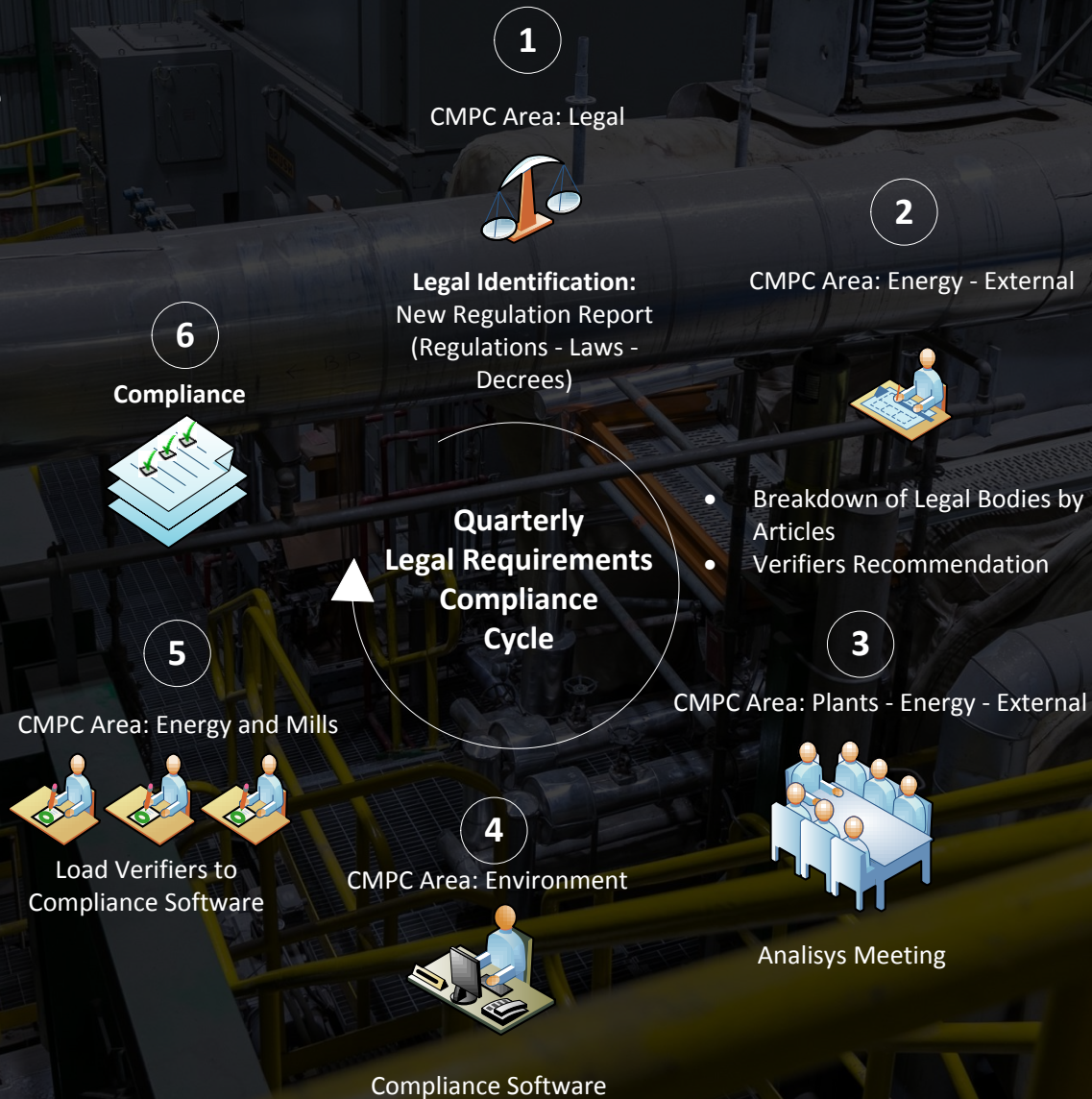


Results

Thermal Energy Savings	53.1 GWh _t /year
Electricity Generation	17.3 GWh _e /year
Economic Benefit	1.1 MM USD/year

LEGAL REQUIREMENTS CYCLE

+ Annual
Compliance
Audit



ADVANCED TOOLS



Cloud

Data

EMS

Management Level

Energy Manager

Control
Level

SCADA, DCS, PLC

Field Level

Measurement Consumption in Process

Devices and Sensors

Advanced Tools
Pulp Mills





deZemBoard

▼



Dashboard deZem

▼

Lista de Módulos

deZemVis



Visualización y análisis ad-hoc de datos energéticos y medioambientales

deZemReport



Configuración de Reportes de datos energéticos y medioambientales

deZemAd




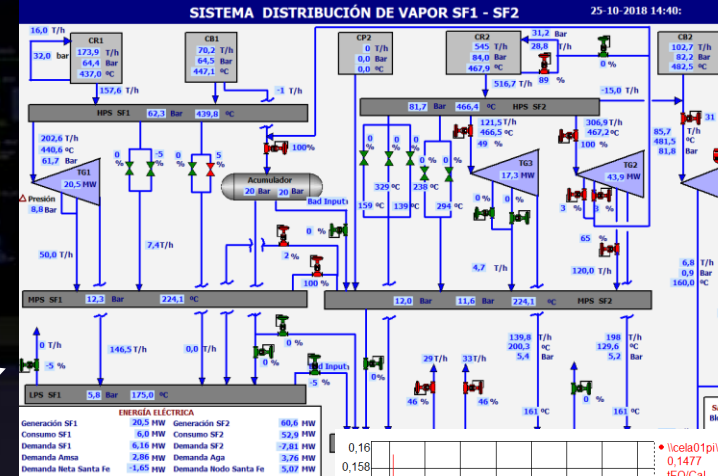
Administración de Alarmas, Mediciones, Metadatos y Usuarios del sistema de Energy Controlling

deZemCap



App para lectura manual y subida de Valores Medidos

SISTEMA DISTRIBUCIÓN DE VAPOR SF1 - SF2



R E S U L T S

CMPC has achieved a **22% of improvement** of its energy performance of its 3 certified Pulp Mills in 3 years

ENERGY COSTS SAVINGS

40,2
MM USD

BETWEEN 2014 & 2017

TOTAL INVESTMENTS

12,6
MM USD

IN PROJECTS, TRAININGS &
MANTEINANCE OF THE EnMS

TOTAL ENERGY SAVED

5.000
GWhe

BETWEEN 2014 & 2017



Organizational

- Continuous and explicit Management support, ensuring resources
- Dedicated Energy Management Leader with support in every business
- Clear Energy Policy with ambitious goals
- Energy teams definition at the beginning of each implementation process
- Consideration for local cultures and legislations
- i-Cel

Resources

- **best** CMPC Operating Model
- Integration with existing management systems (ISO standards, Lean, TPM)
- Procedure standardization if possible
- Energy monitoring tools as early as possible
- Minimum competencies establishment, trainings and awareness
- External implementation consultancy support

