Monitoring the paper mill operations, production quality and KPI's in real time

Maciej Koszur, PMP
Project Manager
Mondi Świecie S.A.

01.10.2009

Empowering Business in Real Time.

- Nearly 50 Years History

2008

1992
Restructuring

1997
Privatisation
FraMondi 60%

1967
Dissolving
Pulp Plant

1971
Kraft
Pulp
Plant

1976
NSCC
Plant

1997 - 2003
New Strategy
Implementation

1970 - 1976
Start Up of 5 PMs

ZCiP Celuloza

1960

1991
Transformation Into
Joined Stock Company

FRANTSCHACH
ŚWIECIE
Member of Mondi Europe

2004
Mondi Packaging
Paper Świecie

mondi packaging
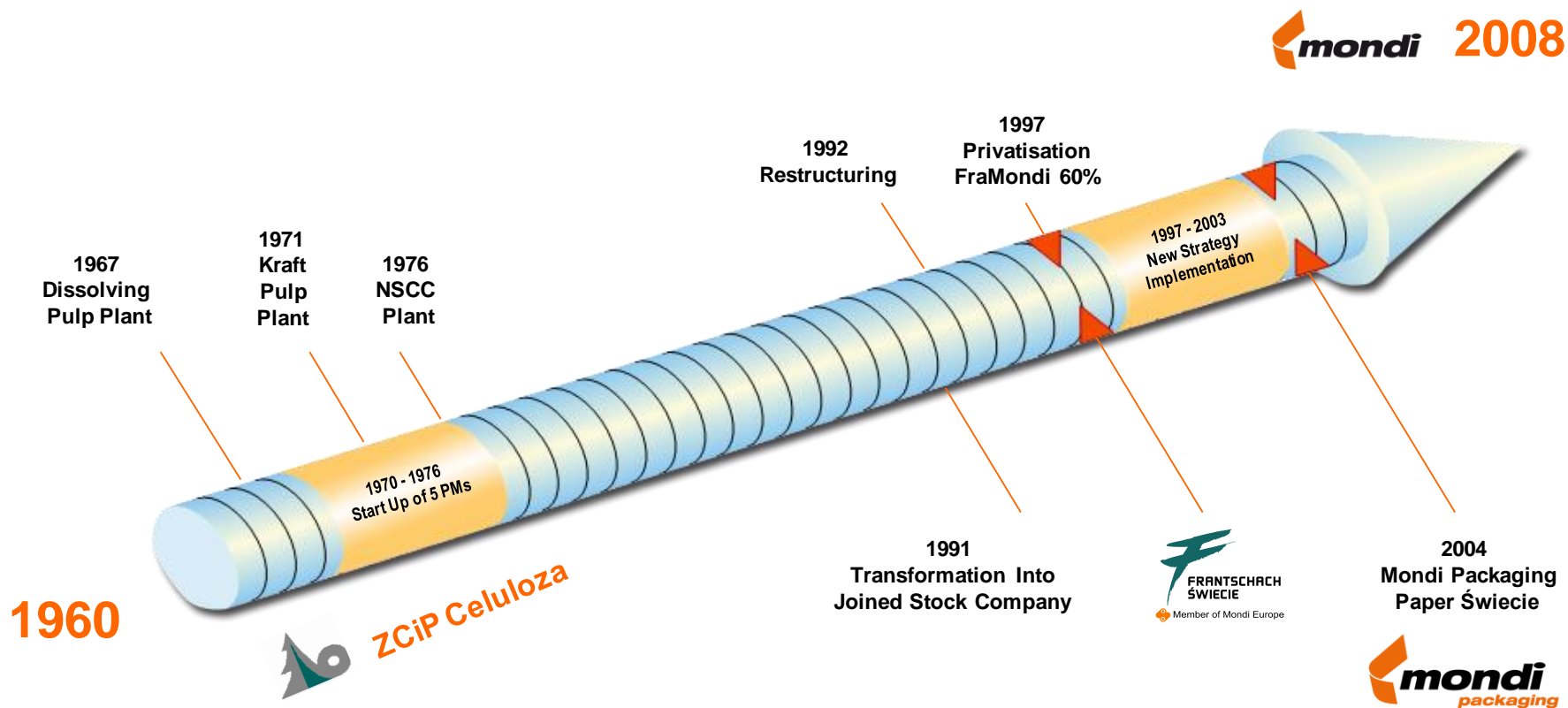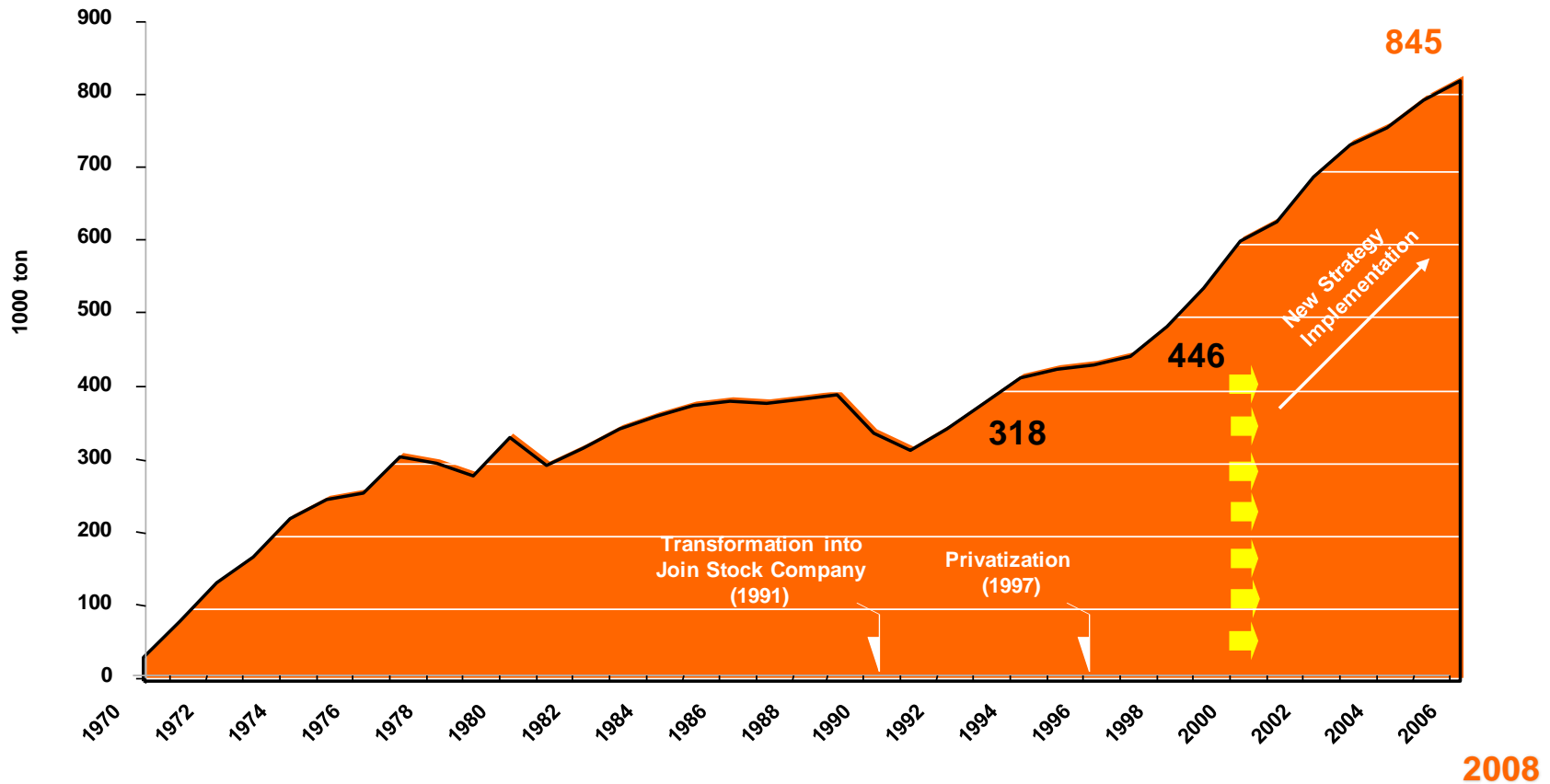
- Key figures published on Warsaw Stock Exchange 2008
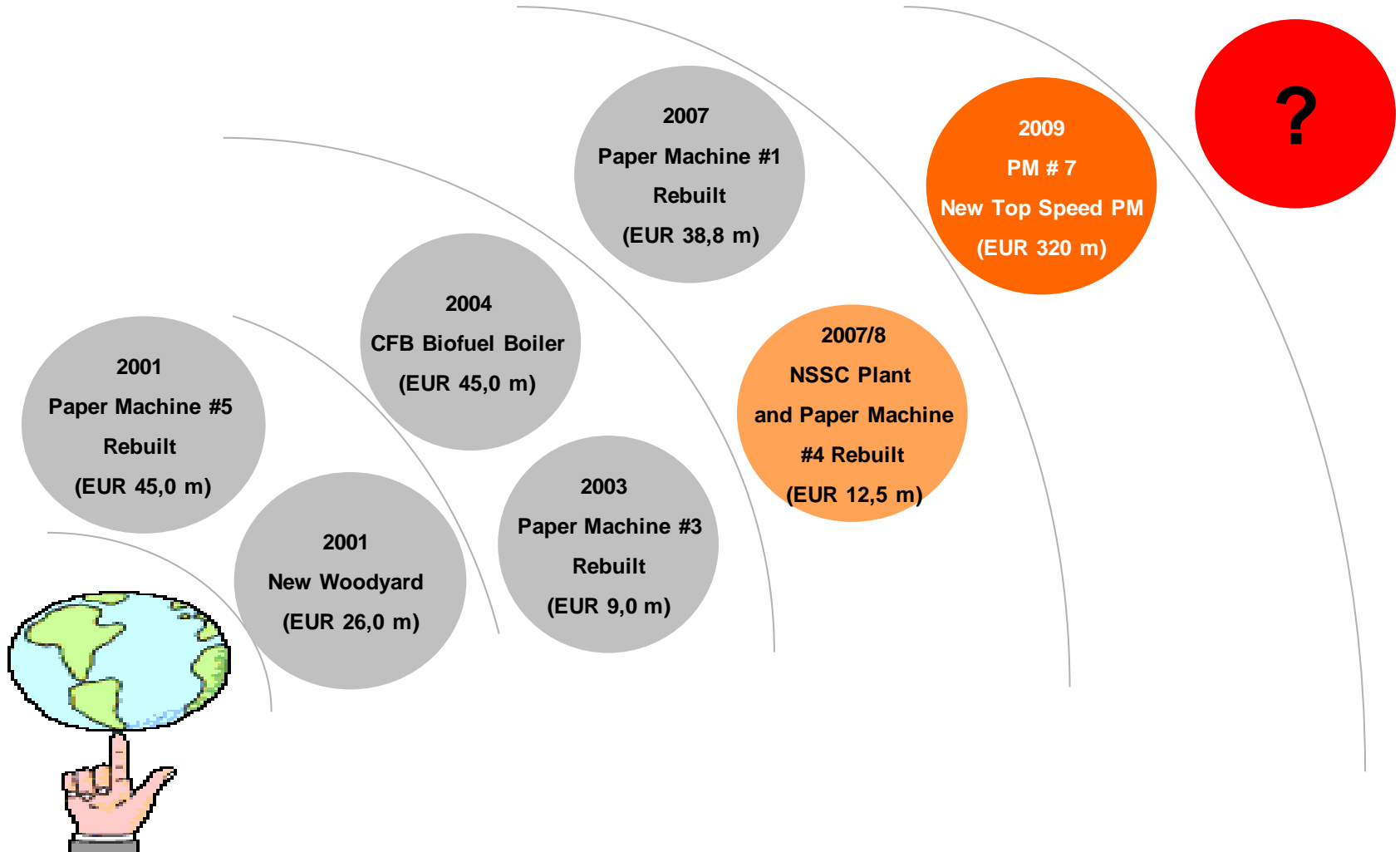
  – Gross Sales   395 mio Euro

  – EBIT   54 mio Euro

  – Paper production   844 581 T

  – Pulp production   464 194 T

  – Employees   996

  – Paper machines   5

Empowering Business in Real Time.

- Total PM production 1970 - 2008

Empowering Business in Real Time.

- Continuous investment project in Świecie mill

2001
Paper Machine #5
Rebuilt
(EUR 45,0 m)

2001
New Woodyard
(EUR 26,0 m)

2004
CFB Biofuel Boiler
(EUR 45,0 m)

2003
Paper Machine #3
Rebuilt
(EUR 9,0 m)

2007
Paper Machine #1
Rebuilt
(EUR 38,8 m)

2007/8
NSSC Plant
and Paper Machine
#4 Rebuilt
(EUR 12,5 m)

2009
PM # 7
New Top Speed PM
(EUR 320 m)

?

- ## Water and Electric Power Specific Consumption

Water Consumption
Per ton of paper produced

Water consumption chart (m3 / ton of paper):

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
96,0	77,4	46,6	37,9	35,5	32,1	29,1	27,0	27,3	27,8	27,7	26,5
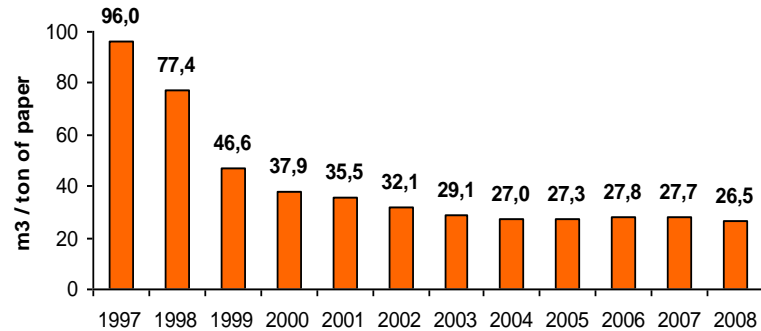
Electricity Consumption
kWh / ton of paper produced

Electricity consumption chart (kWh/t): 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008
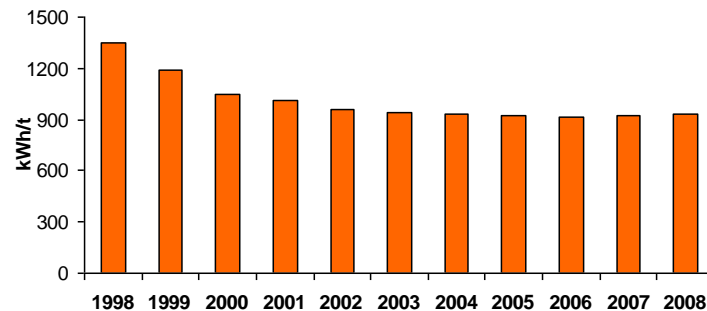
We effectively reduced water and heat consumption per ton of paper.

Empowering Business in Real Time.

•Background of Systems Development:

– SAP Implementation (1999 – 2001), (2006 – 2007)

– Product Tracking System & Production Planning System – MES (2001)

– Warehouse Management System (2002)

– Millwide Control System (Osisoft PI System) (2003)

Empowering Business in Real Time.

Architecture of Production Systems in Świecie (2002)

Empowering Business in Real Time.
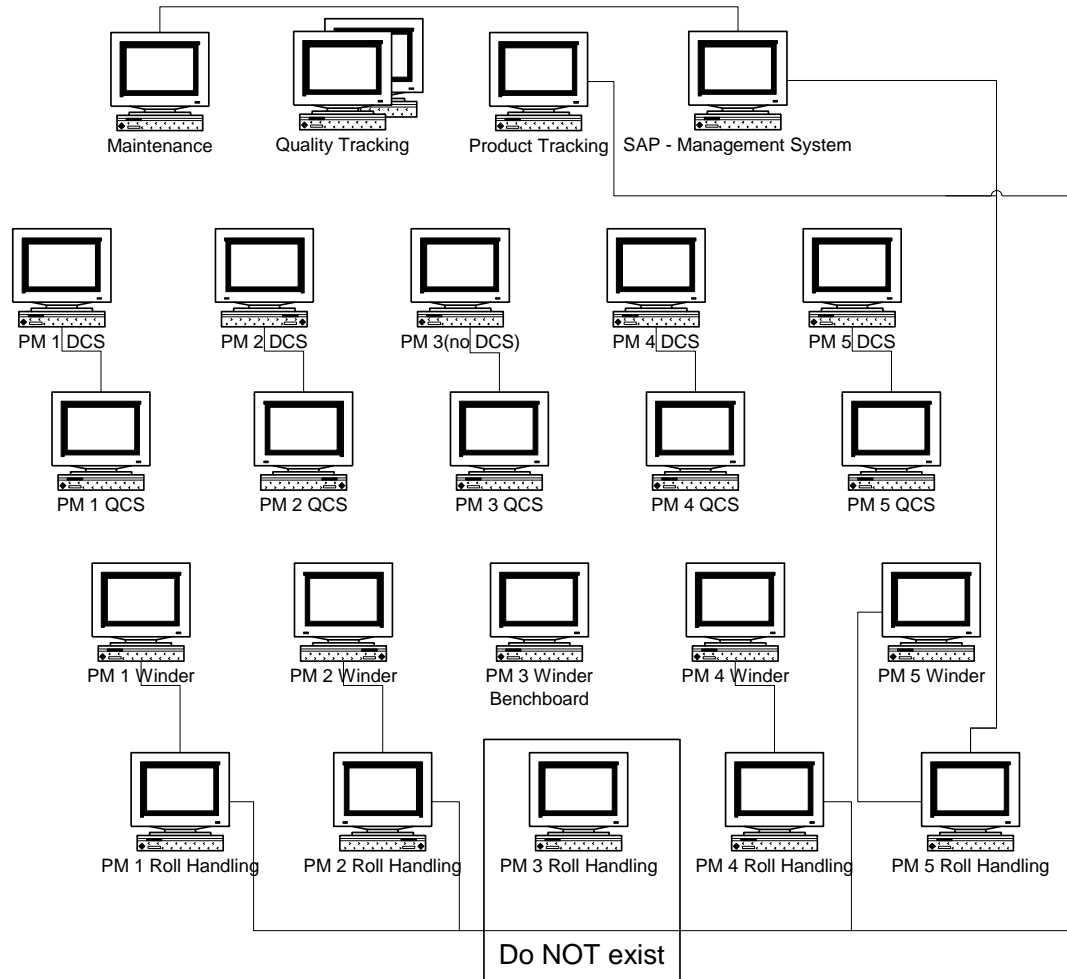
- Variety of Systems in Świecie (status in 2003)

  – Honeywell-Measurex – DCS, QCS
  – ABB – DCS, QCS
  – Honeywell Plantscape –
  – Emerson DELTA V –
  – Measurex Vision –
  – MES (ABB) – ORACLE
  – Energy Monitoring System – SQL 7.0
  – Text Files – Non PI Standards

Empowering Business in Real Time.

- Implementation of PI System in Mondi Świecie

  – beginning of 2002 - Decision to implement Millwide Control System

  – 2003 January 10 – Signing contract with Plantsoft, Start of Implementation.

  – 2003 April – Productive Start of Millwide Control System

- Plantsoft –
  – German based company with employees in Germany, Czech and Poland that is offering PI System as well as engineering all around Europe
  – Official OSIsoft product distributor and PI System Integrator

Empowering Business in Real Time.

- Osisoft PI System implementation in Świecie

  – Scope of Implementation with Plantsoft in 2003.

    - PI System – Cluster installation of PI Enterprise Professional Server with 10.000 Data Streams

    - Interfaces – OPC, TXT, Relational DB,

    - Clients – Professional (25), ProcessBook&DataLink(30), DL (20)

    - PI-ICE – 5 Licenses

    - Engineering – Software Installation, Laboratory Applications, Quality Certificate Report, and PM#3 Process Visualization and Profiles View

•Osisoft PI System in Mondi Świecie from over 6 years of experience:

– Operators view of PI:
  • Laboratory Applications
  • Operators Quality Overview
  • Energy Monitoring -
  • Process Control Screens
  • Reports -
  • Quality Certificate Reports -
  • Profiles View
  • Operators LogBooks

– OSIsoft Packages:
  • Process Book and Data Link
  • rtWebParts
  • PI Notification
  • MCN Health Monitor
  • Control Monitor
  • Advanced Computing Engine (ACE)
  • Profile
  • Module Database
  • About 40.000 tags in use

Empowering Business in Real Time.

Mondi Świecie S.A. – Mill Overview

WPC-PD Poprzednia doba

Wydajność

		Zach
Brzoza	16706 m3	0 m3/d	8129 m3
Sosna	41680 m3	6295 m3/d	71209 m3	Wsch

WPC Poprzednia zmiana

	L1	L2	Wydajność	Obroty ślimaka dozującego
L. Kappa	81,70	77,60	L1 Kraft 493 t/d	46,51
Smarn.	12,50	12,00	L1 WW 0 t/d	
Str. Alk.	17,70	9,20	L2 WW 502 t/d	46,07
St. Ł Cz.	15,50	17,00	WMPCh 355 t/d	

Razem cel.: **1315 t**

1 2 3 4 5   MPCh
59 77 81 49 74 %   50 77 %
89 115 122 247 742 t   153 t

WM Poprzednia doba

Zużycie

			Poziomy w wieżach
OCC	36661 t	0 t/d	
MIX	20 t	0 t/d	

Razem mak.:
Postój L400   175 t

C	D	102	103	104	105	
1	9	75	71	84	78	%
0	2	33	33	38	70	t

WM

Frakcja	długa	krótka
Smarność (lab)	36	38
Stężenie (lab)	6,50	6,30
Stężenie (online)	6,35	7,03
Przepływ	2274	5689

Parametry do maszyn	1	2	3	4	5
Smarność (lab)	41	43	40	42	40
Stężenie (lab)	4,5	5,4	5,4	5,2	5,3
Stężenie (online)Unit Dov	3,0	5,3 2,9	4,8	5,0	5,1
Przepływ	0 0	121	239	124	160

MP#1
Asortyment 232070 SE Advantage
Prędkość 708,4 m/min Typ. 760
Wydajność 15,7 t/h 375,5 t/d

MP#2
Asortyment 110170 Kraftliner
Prędkość 676,0 m/min Typ. 674
Wydajność 29,3 t/h 704,0 t/d

MP#3
Asortyment 112200 Vistula Extra Topliner
Prędkość 309,9 m/min Typ. 310
Wydajność 16,7 t/h 398,4 t/d

MP#4
Asortyment 123160 SC Fresco
Prędkość 580,8 m/min Typ. 569
Wydajność 25,0 t/h 583,9 t/d

MP#5
Asortyment 110140 Vistula Kraftliner
Prędkość 640,9 m/min Typ. 638
Wydajność 27,2 t/h 653,0 t/d

MP#7 Zryw
Asortyment 122100 Vistula W/B Fluting
Prędkość 1101,0 m/min Typ1050
Wydajność 0,0 t/h 0,0 t/d

Temperatura
12,7 °C

Para		**Turbiny**	
CFB	192 t/h	TG1	26 760 kW
KS3	229 t/h	TG2	47 200 kW
KW4	97 t/h	TG3	0 kW
KW5	97 t/h	TG4	7 872 kW
BFB	8 t/h	Zakup	40 MW

Cisnienie i Temperatura pary 0,6 Góra/ 0,6 Dół/ 1,3
0,60 0,60 1,20 [MPa]
192 197 257 [C]

MOS Cel.		**MOS** Pap.		**BOS**	
	Dopływ		Dopływ		Dopływ
ChZT	120,0	ChZT	1280,0	ChZT	980,0
Zaw.	40,0	Zaw.	1250,0	Zaw.	120,0
pH	10,0	pH	7,7	pH	6,4
Siarczany	90,0	Siarczany 520,0		Temp.	35,0 °C
Temp.	25,1 °C	T WM	24,6 °C		
		T MP12	42,7 °C		
		T MP3	42,2 °C		
		T MP45	46,0 °C		

MPCh
Stężenie (lab) 31,9
Smarność (lab) 11
L. Kappa 101

WRL
Alkalia Efektywne 97,70
Siarczkowość 38,10

Woda Przem Nitka nr:
1 - 16,2 °C
2 - 17,1 °C

Poz. zbior.
KOZŁOWO
29,3 [m]

- MDB – Module Database for storing quality data

  – MDB is used to hold all quality parameters of paper both dryend and wetend.

  – total 10 different grades of paper

  – average 10 grammage per grade

  – between 60 to 100 different quality parameters per grade per grammage

  – about 10 different values like lolo, lo, hi, hihi, typical, name, speed, capacity, etc.

  – it gives over 80 thousands values that need to be enterd into the system

QMS – Paper Analysis :

Empowering Business in Real Time.

Empowering Business in Real Time.

Empowering Business in Real Time.

Empowering Business in Real Time.

Empowering Business in Real Time.

Empowering Business in Real Time.

Empowering Business in Real Time.

Thank you

Maciej Koszur

maciej.koszur@mondigroup.com

Empowering Business in Real Time.

Thank you