



# Delivering Information in Real Time

Presented by **Maciej Koszur**  
Process-IT Manager, Mondi Świecie S.A.





# History of Mondi Świecie S.A.

# Over 40 Years of History

1960

- 1967 Dissolving Pulp Plant
- 1970 – 1976 Start Up of 5 PMs
- 1972 Kraft Pulp Plant
- 1976 NSCC Plant
- 1991 Transformation into Joined Stock Company
- 1992 Restructuring
- 1997 Privatisation Mondi 60%
- 1997 – 2003 New strategy implementation

2012

- 2008 – 2009 ECO7 Start Up 1 September 2009

# Świecie Paper Mill



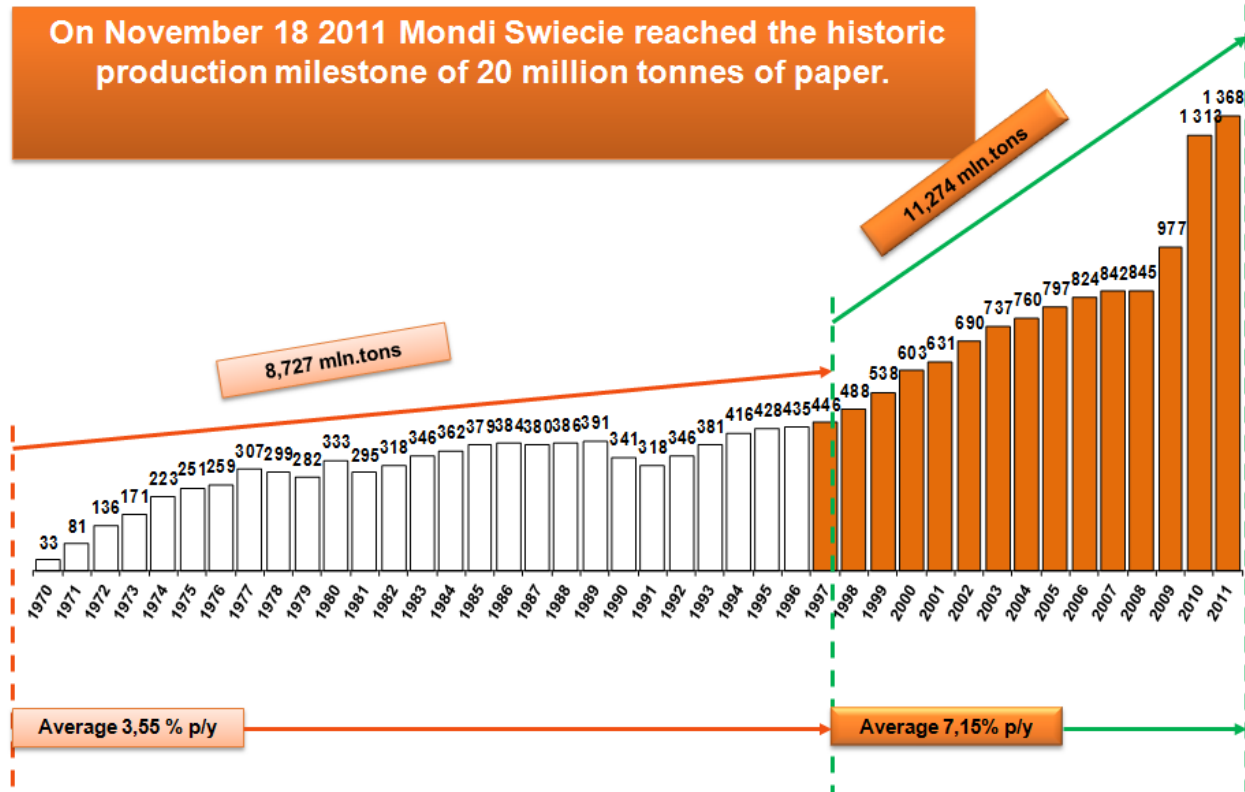
# Main Data

|                  | 2011      | 2010      |
|------------------|-----------|-----------|
| Turnover         | € 670 m   | € 566 m   |
| EBIT             | € 110 m   | € 82 m    |
| Paper Production | 1,368 m t | 1,313 m t |
| Employment       | 1 012     | 1 011     |
| ROCE             | 24,59 %   | 17,2%     |



# Operational excellence – production increase

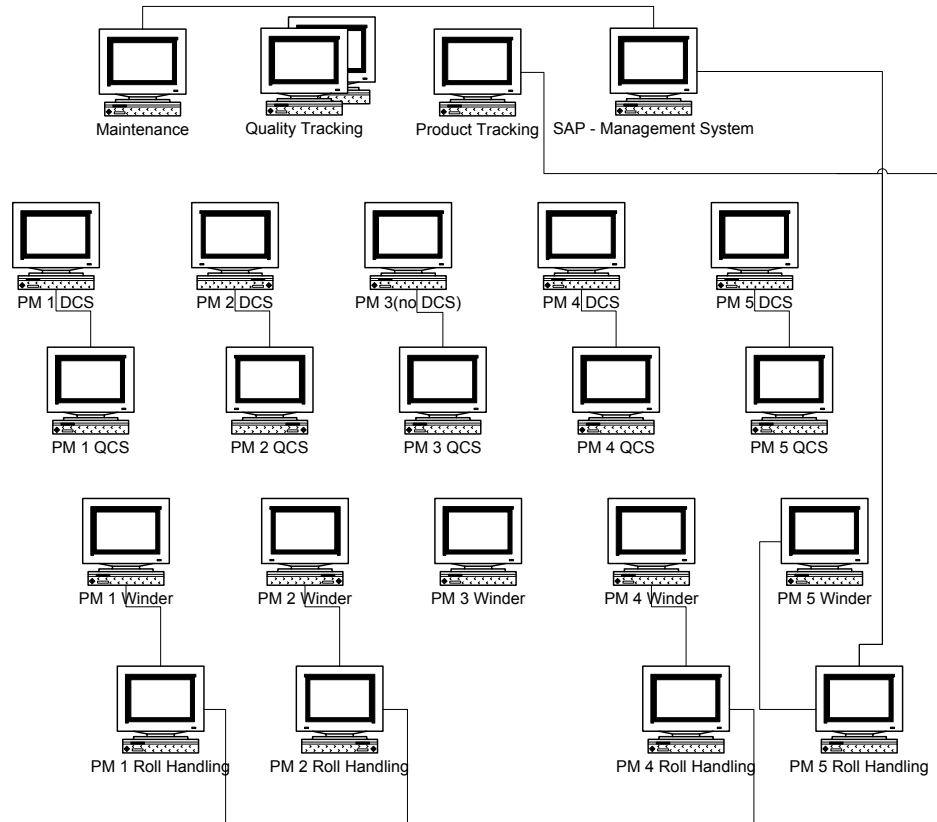
On November 18 2011 Mondi Swiecie reached the historic production milestone of 20 million tonnes of paper.



# Background of Systems Development

- SAP Implementation (1999 – 2001)
- Product Tracking System & Production Planning System – MES (2001)
- Warehouse Management System (2002)
- Millwide Control System (OSIsoft PI System) (2003)

# Islands of Production Systems in Świecie (2002)





# 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 System Standards

# Implementation of PI System in Mondi Świecie

Implementation of PI System was done by Plantsoft - German based company with employees in Germany, Czech and Poland.

Plantsoft works as PI System Integrator.

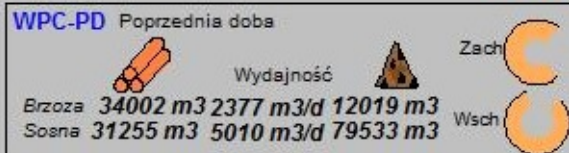
- Beginning of 2002 – Decision to implement Mill-wide Control System
- 2003 January 10 – Signing contract with Plantsoft, Start of Implementation
- 2003 April – Productive Start of Mill-wide Control System  
(it took less than 3 months to start!)
- 2008 August - Hardware and Software update to PI Server version 3.4.380.36 performed on August 2010 by Plantsoft

# PI System Implementation in Świecie

- Scope of Implementation with Plantsoft in 2003
- PI System – MS Cluster installation of PI Server with 5.000 Data Streams (now 50.000 Data Streams)
- Interfaces – PI OPC, PI UFL, PI RDBMS
- Clients – Professional (25), PI ProcessBook & PI DataLink (30), PI DataLink (20)
- PI ICE – 5 Licenses (now evolved into PI WebParts)
- Engineering – Software Installation, Laboratory Applications, Quality Certificate Report, and Paper Machine 3 Process Visualization and Profiles View

# PI System in Mondi Świecie – over 9 years of experience

- Operators view of PI System:
  - Laboratory Applications
  - Operators Quality Overview
  - Energy Monitoring
  - Process Control Screens
  - Reports
  - Quality Certificates
  - Profiles Views
  - Operators LogBooks
  - SMS notifications received on mobile
- OSIsoft Packages:
  - PI ProcessBook and PI DataLink
  - PI WebParts
  - PI Notifications
  - PI MCN Health Monitor
  - PI Control Monitor (not supported)
  - PI ACE (Advanced Computing Engine)
  - PI Profile View
  - PI Module Database
- Over 40.000 tags in use

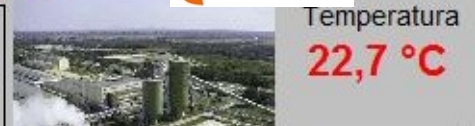
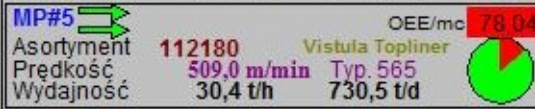
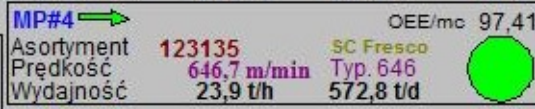


**WM**

| Frakcja           | długa | krótka |
|-------------------|-------|--------|
| Smarność (lab)    | 25    | 38     |
| Stężenie (lab)    | 6,00  | 6,30   |
| Stężenie (online) | 5,62  | 6,27   |
| Przepływ          | 2281  | 7127   |

| Parametry do maszyn | 1   | 2   | 3   | 4   | 5   |
|---------------------|-----|-----|-----|-----|-----|
| Smarność (lab)      | 40  | 39  | 37  | 45  | 41  |
| Stężenie (lab)      | 5,2 | 5,3 | 4,6 | 4,8 | 4,9 |
| Stężenie (online)   | 5,0 | 5,4 | 3,0 | 4,6 | 5,0 |



| Para        | Turbiny     |
|-------------|-------------|
| CFB 192 t/h | TG1 29 MW   |
| KS3 249 t/h | TG2 44 MW   |
| KW4 0 t/h   | TG3 0 MW    |
| KW5 88 t/h  | TG4 8 MW    |
| BFB 98 t/h  | Zakup 45 MW |

Cisnienie i Temperatura pary 0,6 Góra/ 0,6 Dół/ 1,3

0,62 0,62 1,19 [MPa]

194 195 251 [°C]

|   |   |   |                    |
|---|---|---|--------------------|
| <b>Kompresory</b>   |   |   | Ciśnienie 0,61 MPa |
|  |  |  | Temp 46,7 °C       |
| 1   | 2   | 3   | Przep 191 m3/min   |

| MOS Cel.       | MOS Pap.        | BOS           |
|----------------|-----------------|---------------|
| Dopływ         | Dopływ          | Dopływ        |
| ChZT 300,0     | ChZT 1300,0     | ChZT 1530,0   |
| Zaw. 380,0     | Zaw. 990,0      | Zaw. 360,0    |
| pH 10,0        | pH 7,7          | pH 6,0        |
| Siarcz. 2600,0 | Siarczany 420,0 | Temp. 39,4 °C |
| Temp. 30,4 °C  | T WM 28,5 °C    |               |
|                | T MP1 29,2 °C   |               |
|                | T MP3 48,9 °C   |               |
|                | T MP4 56,6 °C   |               |

| MPCh                | Woda Przem Nitka nr: |
|---------------------|----------------------|
| Stężenie (lab) 29,4 | 1 - 21,7 °C          |
| Smarność (lab) 13   | 2 - 22,8 °C          |

# PI Module Database for Storing Quality Data

- PI Module Database is used to hold all paper quality parameters for both dryend and wetend area.
- 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, speed, capacity, etc.
- it gives over 80 thousand values that need to be entered into the system

# Paper Analysis Available Immediately after Lab Check

QMS-P MP3.xls [Read-Only] [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Developer PI

Clipboard Font Alignment Number Styles Cells Editing

110 05-04-2012 15:44:00

**mondi MP3**

v.1,23

| Parametr                            | Typowa | jednostki | wartości       | 12-04-03 23:26 | 12-04-03 22:51 | 12-04-03 22:17 | 12-04-03 21:38 | 12-04-03 21:21 |
|-------------------------------------|--------|-----------|----------------|----------------|----------------|----------------|----------------|----------------|
| Czas                                |        |           | 12-04-05 15:44 | 12-04-03 23:26 | 12-04-03 22:51 | 12-04-03 22:17 | 12-04-03 21:38 | 12-04-03 21:21 |
| Tambor                              |        |           | 30126591       | 30126518       | 30126517       | 30126516       | 30126515       | 30126514       |
| Asortyment                          |        |           | 112170         | 112170         | 112170         | 112170         | 112180         | 112180         |
| Gramatura skaner                    | 170,0  | g/m²      | 171,2          | 170,8          | 172,2          | 171,3          | 178,1          | 184,8          |
| Gramatura                           | 170,0  | g/m²      |                | 170,9          | 172,3          | 170,7          | 177,1          | 184,8          |
| Gładkość                            |        | ml/min    |                | 2686           | 2689           | 2701           | 3116           | 2697           |
| Przepuszczalność pow. pokrycie      |        | s/100ml   |                | 45,4           | 44,3           | 44,5           | 43,3           | 45,3           |
| Przepuszczalność pow. spód          |        | s/100ml   |                |                |                |                |                |                |
| Przepuszczalność pow. średnia       |        | s/100ml   |                | 45,4           | 44,3           | 44,5           | 43,3           | 45,3           |
| Woski Dennisona                     | 16     | nr        |                |                |                | 16,0           |                |                |
| Stopień zaklejenia Cobb 60 pokrycie | 30,0   | g/m²      |                | 26,0           | 23,5           | 27,0           | 25,0           | 23,5           |
| Stopień zaklejenia Cobb 60 spód     | 150,0  | g/m²      |                | 136,5          | 139,5          | 138,0          | 156,5          | 150,0          |
| Rozwarstwienie - ZD test (kPa)      |        | kPa       |                |                |                | 536,0          |                |                |
| SCT MD                              |        | kN/m      |                |                |                |                |                |                |
| SCT CD                              | 3,200  | kN/m      |                | 3,150          | 3,170          | 3,230          | 3,390          | 3,270          |
| Przepuknienie pokrycie              | 540,0  | kPa       |                | 520,0          | 510,0          | 503,0          | 540,0          | 530,0          |
| Przepuknienie spód                  | 540,0  | kPa       |                | 544,0          | 554,0          | 582,0          | 579,0          | 572,0          |
| Przepuknienie średnia               | 540,0  | kPa       |                | 532,0          | 532,0          | 542,5          | 559,5          | 551,0          |
| Sztynność rozciągania CD            |        | kN/m      |                |                |                |                |                |                |
| Sztynność rozciągania MD            |        | kN/m      |                |                |                |                |                |                |
| Wilgotność skaner                   | 7,8    | %         | 7,8            | 7,9            | 8,2            | 7,7            | 7,4            | 8,7            |
| Wilgotność Suszarkowo Wagowa        | 7,8    | %         |                | 7,9            | 6,9            | 7,7            | 8,0            | 8,2            |
| Grubość                             |        | um        |                | 271,600        | 268,400        | 270,600        | 276,800        | 293,400        |
| Wilgotność susz-wag kalibracja      | 7,8    | %         |                |                |                |                |                |                |
| TSI CD                              |        |           |                |                |                |                |                |                |
| TSI MD/CD                           |        |           |                |                |                |                |                |                |
| TSI MD                              |        |           |                |                |                |                |                |                |
| Białość pokrycie                    |        |           |                | 17,2           | 17,6           | 17,6           | 17,7           | 17,5           |
| Białość spód                        |        |           |                |                |                |                |                |                |

Log on to PI as: Koszur\_Maciej

Count: 5 100%



# Sheet Break Classification

**mondi** Rejestracja PPWZ MP1

Odśwież >> < Data >

2009-09-12

**Temat Opisu Postoju**  
wymian silnika M-21003

**Kod Postoju**  
I

**Opis postoju**

**Kategoria Postoju**  
I12

**Przyczyna/Miejsce Postoju**  
I1203

Podziel Konsoliduj Dodaj

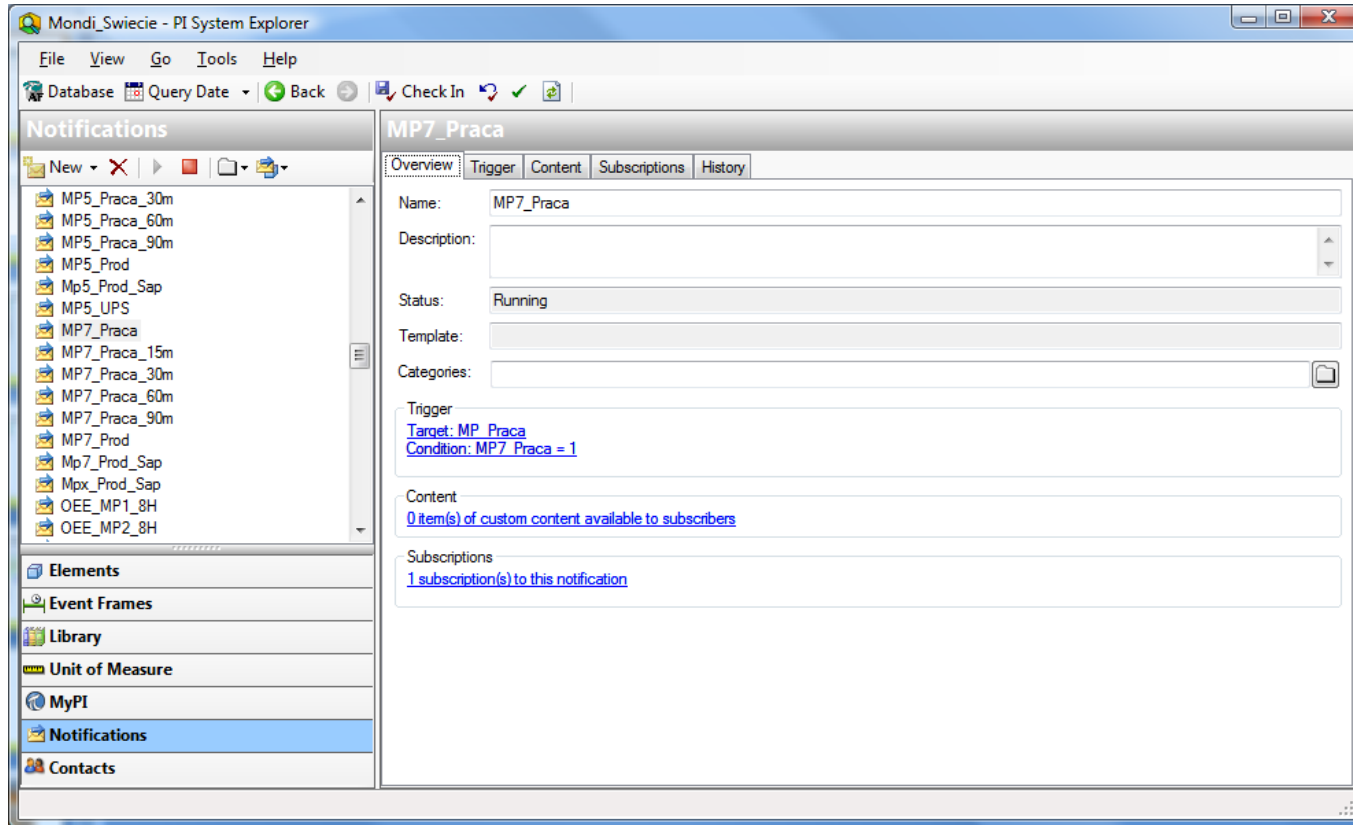
MP1 2 2009-09-13 04:39 2009-09-13 06:44 I1203 Zapisz ><

| Kolejny Nr | Początek Postoju    | Koniec Postoju      | Kod Postoju | O | Czas Postoju | Powód Postoju   |
|------------|---------------------|---------------------|-------------|---|--------------|---|
| 1          | 2009-09-13 03:09:08 | 2009-09-13 04:38:59 | I0204       |   | 89m51s       | Typ: Wewnętrzne<br>Kategoria: Postój nieplanowy<br>TECHNOLOGICZNY<br>Przyczyna: Zmiana asortymentu          |
| 2          | 2009-09-13 04:39:00 | 2009-09-13 06:44:59 | I1203       |   | 125m59s      | Typ: Wewnętrzne<br>Kategoria: Postój nieplanowy<br>ELEKTRYCZNY/NAPEĐOWY<br>Przyczyna: Część prasowa MP (EI) |

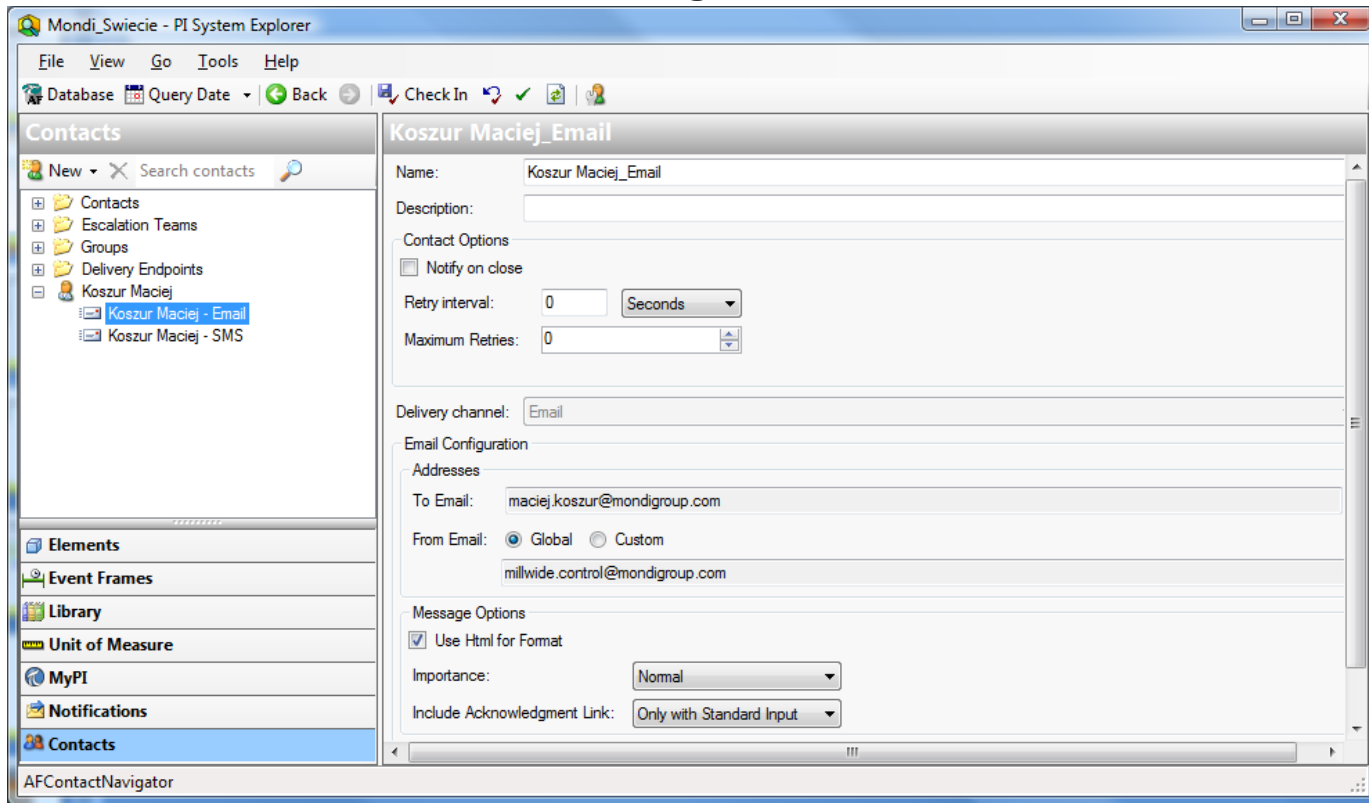
Log on to PI as: PIDEMO



# PI Notification Rules Based on Sheet Break Time



# PI Notifications Delivery Channels



# Paper Log Books Replaced by Spreadsheets Linked to PI System

B12    Produkcja zdana do magazynu:

**Raport LIDERA ZMIANY MP3 (str. 1)**    Zapisz

|            |        |         |                   |  |  |  |  |
|------------|--------|---------|-------------------|--|--|--|--|
| 1. Data    | Zmiana | Brygada | Nazwisko i Imię   |  |  |  |  |
| 2009-09-23 | 2      | B       | Guzowski Zbigniew |  |  |  |  |

2. Zmianę przyjęto od: **Wcisło Sławomir**

|                              |                          |                    |           |          |                          |                    |                          |
|------------------------------|--------------------------|--------------------|-----------|----------|--------------------------|--------------------|--------------------------|
| 3. Asortyment                | Godzina wej. Asortymentu | Czas trwania [min] | Gramatura | Prędkość | Wydajność MP na h        | Zużycie kleju [kg] | Zużycie siarczczanu [kg] |
| VISTULA W/B PLUTING 120G/M2  | 23-09-09 14:00           | 239                | 120       | 465      | 14,8                     |                    | 746,6                    |
| VISTULA W/B PLUTING 135G/M2  | 23-09-09 17:59           | 241                | 135       | 469      | 15,3                     |                    | 754,0                    |
|                              |                          |                    |           |          |                          |                    |                          |
|                              |                          |                    |           |          |                          |                    |                          |
| Produkcja zdana do magazynu: | 116,1 [t]                |                    |           |          | Śr. zużycie [kg/ t pap.] |                    | 12,9                     |

Postoje : (zryw, itp..)

14:03-14:07 (4min.) Zryw na nawijaku - wymiana tambora    20:07-20:29 (22min.) Zryw l-a gr.suszająca - spod nadyw SN

Uwagi do przebiegu zmiany:

122120 SCT +5,6    CMT30 +1,3  
 122135 SCT +1,6    CMT30 +1,6  
 Awaria siłownika wyrzutnika tam na krajce od SO mech.pospawali.

Lider Zmiany

# Shop Floor Operators Performance Available While on Job

B12    Produkcja zdana do magazynu:

**Raport LIDERA ZMIANY MP3 (str. 1)**    Zapisz

|            |        |         |                   |
|------------|--------|---------|-------------------|
| 1. Data    | Zmiana | Brygada | Nazwisko i Imię   |
| 2009-09-23 | 2      | B       | Guzowski Zbigniew |

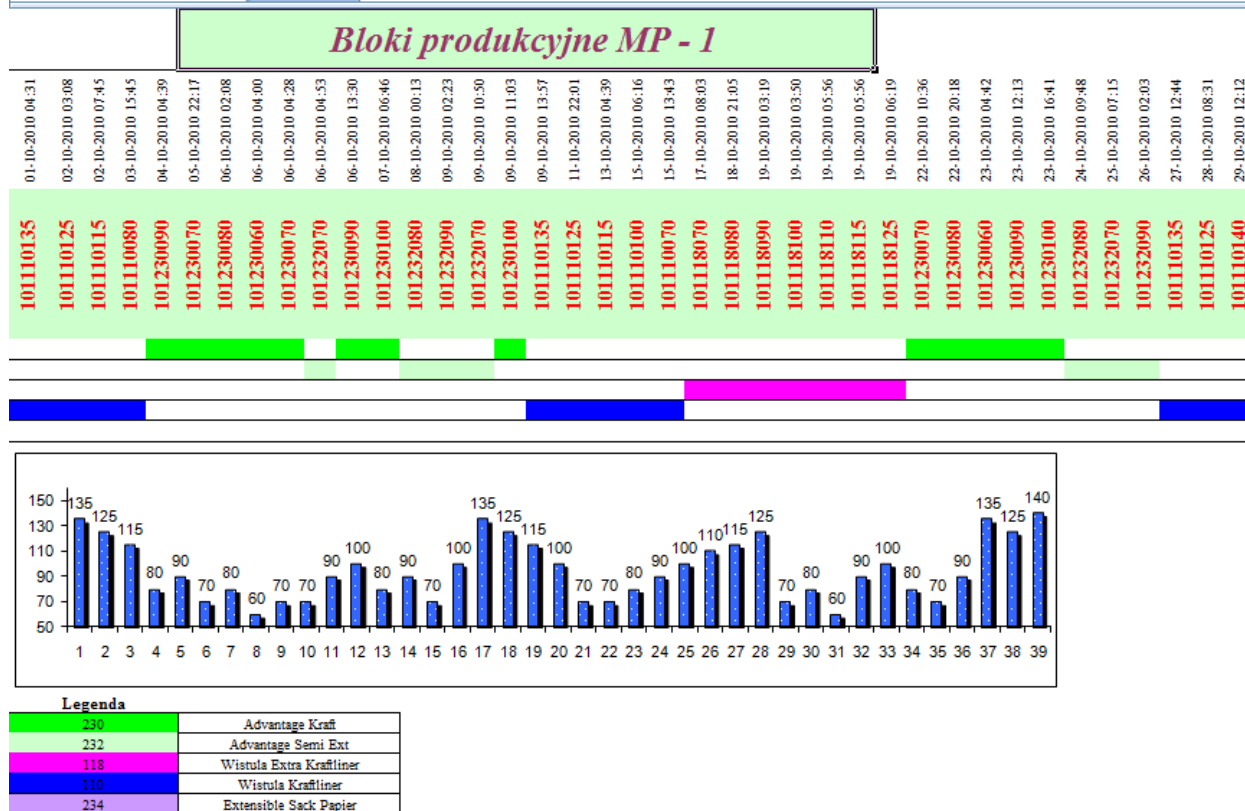
Uwagi BHP - SUSZARNIOWY :  
No events found.

| Osiągnięte wskaźniki produkcyjne za zmianę: | JM               | Bieżąca | Typowa |
|---|------------------|---------|--------|
| Wykorzystanie prędkości                     | [%]              | 99,3%   | 100,0% |
| Straty papieru                              | [%]              | 4,1%    | 3,5%   |
| Ilość zrywów                                | [szt]            | 2       |        |
| Czas zrywów                                 | [min]            | 26      |        |
| Wskaźnik zużycia energii elektr.            | [kWh/t]          | 430     | 530    |
| Wskaźnik zużycia energii ciepln.            | [GJ/t]           | 6,1     | 6,6    |
| Wskaźnik zużycia wody przemysł              | [m3/t]           | 6,2     | 8,0    |
| Wskaźnik zużycia kleju papiern. (do netto)  | [kg/ t papieru]  | 0,0     | 0,0    |
| Wskaźnik zużycia siarcz. glinu (do netto)   | [kg/ t papieru]  | 12,9    | 6,0    |
| Wskaźnik zużycia en.el. - OPM (do netto)    | [kWh/ t papieru] | 136     | 165    |
| Zwrot kondensatu                            | [%]              | 80,0%   | 80,0%  |

Podpis prowadzącego zmianę : .....

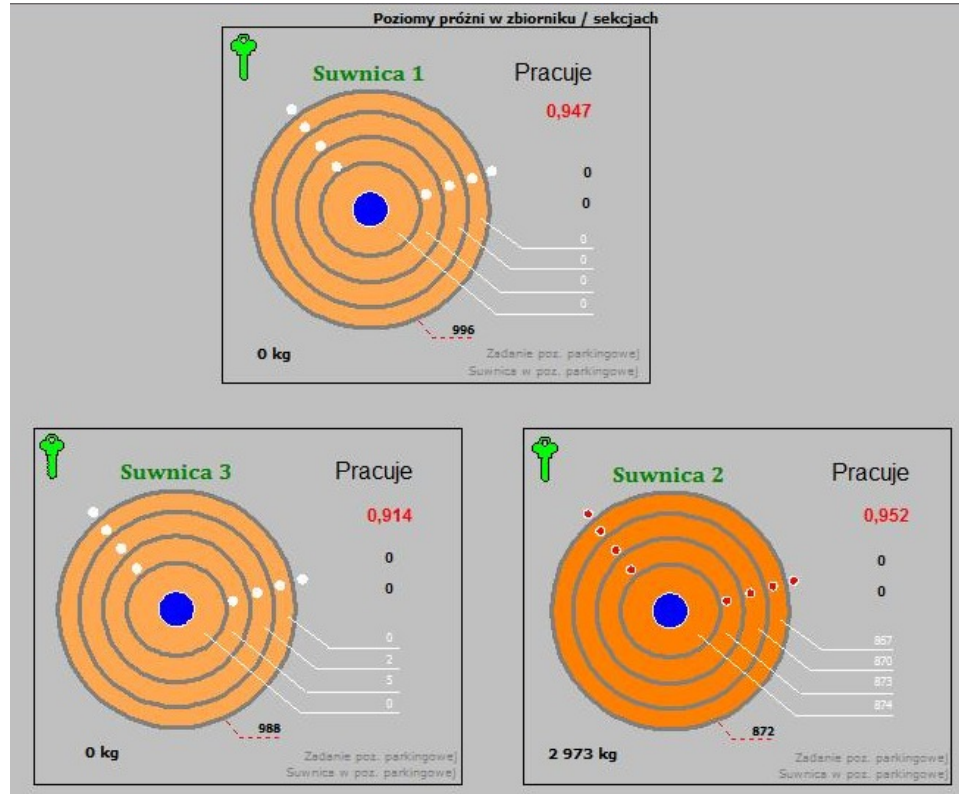
Lider Zmiany

## View to the Future Allows to Prepare Power Plant Operations





# Monitoring start-ups of new projects





# Monitoring start-ups of new projects





*And so, my fellow PI System Users: ask not what  
PI System can do for you - ask what you can do for  
your PI System.*

# Maciej Koszur

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# THANK YOU

Brought to you by  **OSIsoft.**