A Corporate View of Energy Saving with PI

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Cascades inc., Ingénierie et Projets

Presentation Schedule

- Who is Cascades
- Energy in numbers and philosophy behind
- Old way of doing things
- New way of doing things with PI
- Real-Time energy monitoring
- Results that we got from this improvement
- How RtPM will help us
- Conclusion and Questions

Who is Cascades?

- Celebrating our 40th anniversary in 2004
- Raw material is mostly recycled products
- 160 facilities all around North America and Europe
- Made of 6 groups:
  - Cascades Tissue Group
  - Cascades inc, Specialized Products
  - Cascades Fine papers
  - Cascades Boxboard
  - Norampac (50% with Domtar)
  - Boralex

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Energy in numbers and philosophy behind

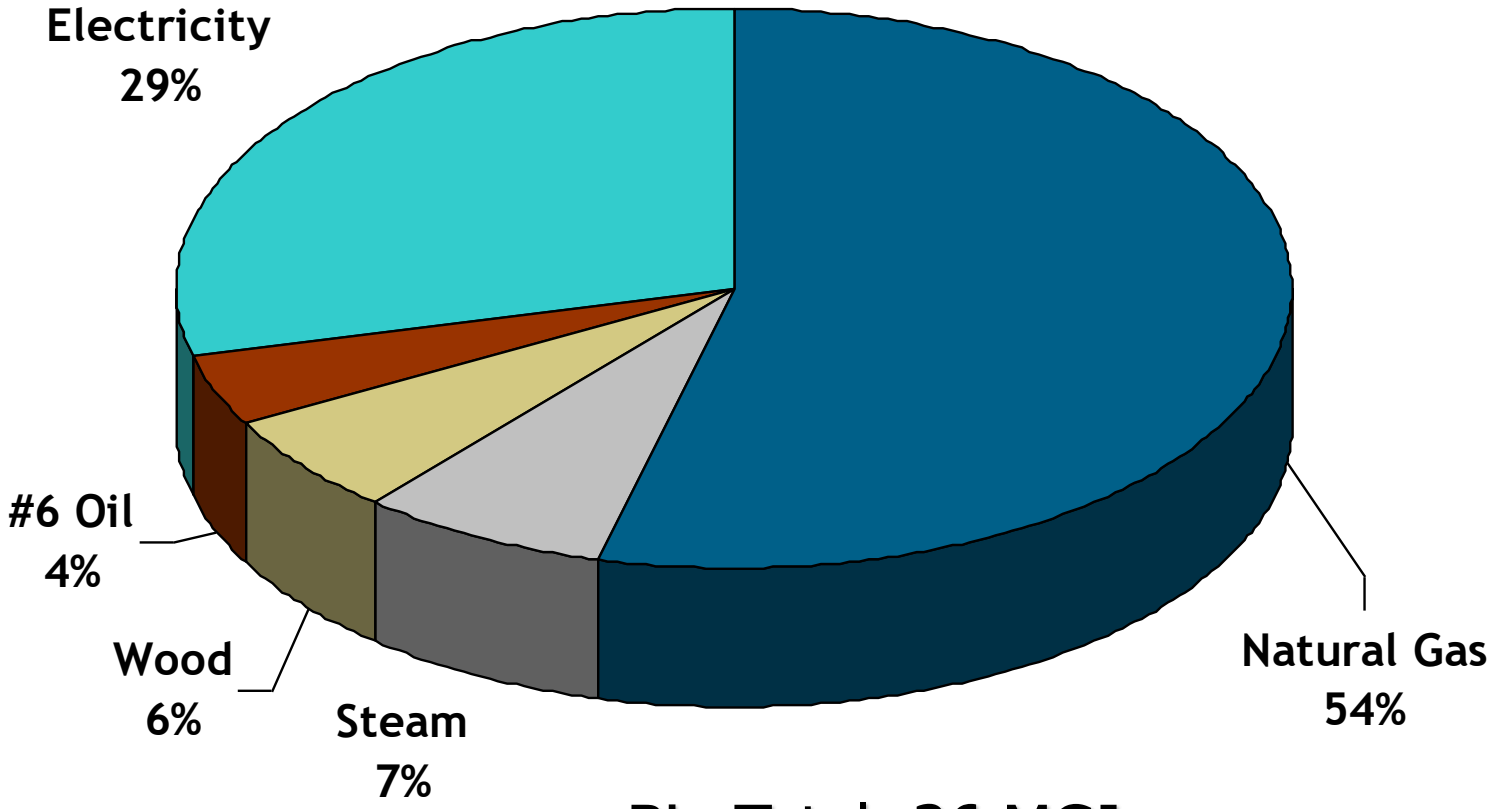
- In the 5 past years, the price of natural gas doubled
- In relation to net sales, energy cost has gone from 10% to 25%

- Canada Total: 259 MM$CDN
- USA Total: 54 MM$CDN
- Europe Total: 68 MM$CDN

Big Total: 381 MM$CDN

- Energy Usage Reduction Goal: 2% per year for the 3 next years

Energy in numbers and philosophy behind



Big Total: 36 MGJ

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Old way of doing things

- The mills send copy of bills and production reports
- The data are captured in a FoxPro database
- Every 6 months, we export the data to Excel files
- Converting files and formatting the report takes 30 minutes to 2 hours for each mills.
- A lot of mistakes must be manually corrected
- Tracking the bills is the only input we have

Old way of doing things
(Report Example)

Rapport d'évolution énergétique Inopak Drummondville

17-avr-04 09:43:17

		Énergie consommée		Coût de l'énergie ($)		Production		GJ / unité de productio		Évolution	$ / unité de productio		Évolution
Mois	Compteurs énergi	2002	2003	2002	2003	2002	2003	2002	2003	(%)	2002	2003	(%)
Janvier	049-ELEC-M	515	326	8 886	7 752	137	103	3.76	3.18	-18.38%	64.87	75.52	14.10%
	049-GAZ-1	168	280	1 884	3 360	137	103	1.23	2.73	55.04%	13.75	32.73	57.98%
Total Janvier		**683**	**606**	**10 770**	**11 112**	**137**	**103**	**4.99**	**5.90**	**0.37**	**78.62**	**108.25**	**0.72**
Février	049-ELEC-M	504	338	8 564	7 338	138	97	3.64	3.48	-4.67%	61.88	75.54	18.08%
	049-GAZ-1	76	248	870	3 147	138	97	0.55	2.55	78.49%	6.29	32.40	80.59%
Total Février		**580**	**586**	**9 434**	**10 485**	**138**	**97**	**4.19**	**6.03**	**0.74**	**68.17**	**107.93**	**0.99**
Mars	049-ELEC-M	526	335	10 523	7 431	151	81	3.47	4.14	16.13%	69.51	91.89	24.36%
	049-GAZ-1	25	99	336	1 428	151	81	0.17	1.22	86.51%	2.22	17.65	87.42%
Total Mars		**551**	**434**	**10 859**	**8 859**	**151**	**81**	**3.64**	**5.37**	**1.03**	**71.73**	**109.55**	**1.12**
Avril	049-ELEC-M	480	334	8 441	7 368	139	125	3.46	2.67	-29.72%	60.80	58.80	-3.40%
	049-GAZ-1	19	50	261	750	139	125	0.14	0.40	65.70%	1.88	5.98	68.55%
Total Avril		**499**	**384**	**8 702**	**8 118**	**139**	**125**	**3.59**	**3.06**	**0.36**	**62.69**	**64.79**	**0.65**
Mai	049-ELEC-M	391	313	7 630	7 231	106	107	3.68	2.92	-26.00%	71.74	67.41	-6.42%
	049-GAZ-1	13	0	190	19	106	107	0.12	0.00	#DIV/0!	1.79	0.17	-931.97%
Total Mai		**404**	**313**	**7 820**	**7 250**	**106**	**107**	**3.80**	**2.92**	**#DIV/0!**	**73.53**	**67.59**	**-9.38**
Juin	049-ELEC-M	381	336	7 642	7 423	90	107	4.22	3.15	-34.02%	84.69	69.59	-21.69%
	049-GAZ-1	0	0	19	18	90	107	0.00	0.00	#DIV/0!	0.22	0.17	-27.82%
Total Juin		**381**	**336**	**7 662**	**7 441**	**90**	**107**	**4.22**	**3.15**	**#DIV/0!**	**84.91**	**69.76**	**-0.50**
Juillet	049-ELEC-M	387	358	8 012	7 807	121	127	3.21	2.81	-14.06%	66.40	61.32	-8.28%
	049-GAZ-1	0	0	20	19	121	127	0.00	0.00	#DIV/0!	0.17	0.15	-14.09%
Total Juillet		**387**	**358**	**8 032**	**7 826**	**121**	**127**	**3.21**	**2.81**	**#DIV/0!**	**66.57**	**61.47**	**-0.22**
Août	049-ELEC-M	349	448	7 740	8 732	84	114	4.16	3.93	-5.81%	92.24	76.61	-20.40%
	049-GAZ-1	0	0	20	19	84	114	0.00	0.00	#DIV/0!	0.24	0.16	-46.85%
Total Août		**349**	**448**	**7 760**	**8 750**	**84**	**114**	**4.16**	**3.93**	**#DIV/0!**	**92.48**	**76.77**	**-0.67**
Septembre	049-ELEC-M	379	438	8 075	8 660	122	120	3.10	3.65	14.96%	66.12	72.15	8.36%
	049-GAZ-1	0	1	19	28	122	120	0.00	0.01	100.00%	0.16	0.23	31.98%
Total Septembre		**379**	**439**	**8 094**	**8 687**	**122**	**120**	**3.10**	**3.66**	**1.15**	**66.28**	**72.38**	**0.40**
Octobre	049-ELEC-M	403	478	8 307	9 203	128	140	3.14	3.42	8.17%	64.69	65.81	1.69%
	049-GAZ-1	17	26	230	380	128	140	0.13	0.19	28.78%	1.79	2.72	33.96%
Total Octobre		**420**	**504**	**8 537**	**9 583**	**128**	**140**	**3.27**	**3.60**	**0.37**	**66.49**	**68.52**	**0.36**
Novembre	049-ELEC-M	378	439	7 977	8 470	100	127	3.79	3.45	-10.03%	80.05	66.52	-20.34%
	049-GAZ-1	115	101	1 423	1 386	100	127	1.15	0.79	-45.50%	14.28	10.88	-31.16%
Total Novembre		**493**	**540**	**9 400**	**9 856**	**100**	**127**	**4.95**	**4.24**	**-0.56**	**94.33**	**77.40**	**-0.52**
Décembre	049-ELEC-M	338	455	7 586	8 813	91	136	3.72	3.34	-11.44%	83.51	64.67	-29.13%
	049-GAZ-1	245	144	2 912	1 913	91	136	2.70	1.06	-155.22%	32.05	14.04	-128.34%
Total Décembre		**583**	**599**	**10 498**	**10 726**	**91**	**136**	**6.42**	**4.40**	**-1.67**	**115.57**	**78.71**	**-1.57**
Total annuel		**5 709**	**5 547**	**107 568**	**108 693**	**1 408**	**1 385**	**4.06**	**4.01**	**-1.23%**	**76.41**	**78.50**	**2.73%**
Total 049-ELEC-M		**5 031**	**4 598**	**99 382**	**96 228**	**1 408**	**1 385**	**3.57**	**3.32**	**-7.62%**	**70.60**	**69.50**	**-1.56%**
Total 049-GAZ-1		**678**	**949**	**8 185**	**12 465**	**1 408**	**1 385**	**0.48**	**0.69**	**29.73%**	**5.81**	**9.00**	**54.82%**

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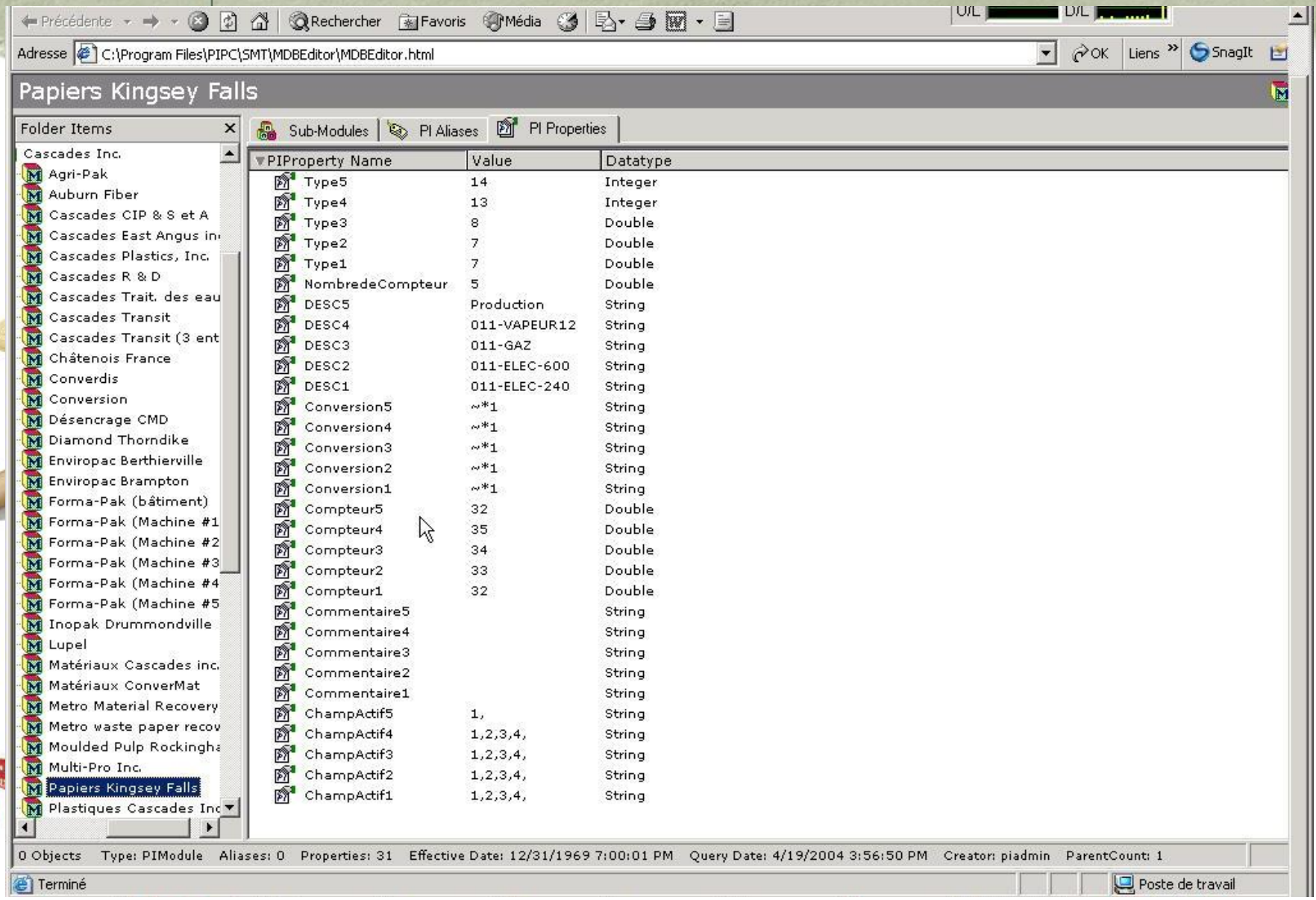
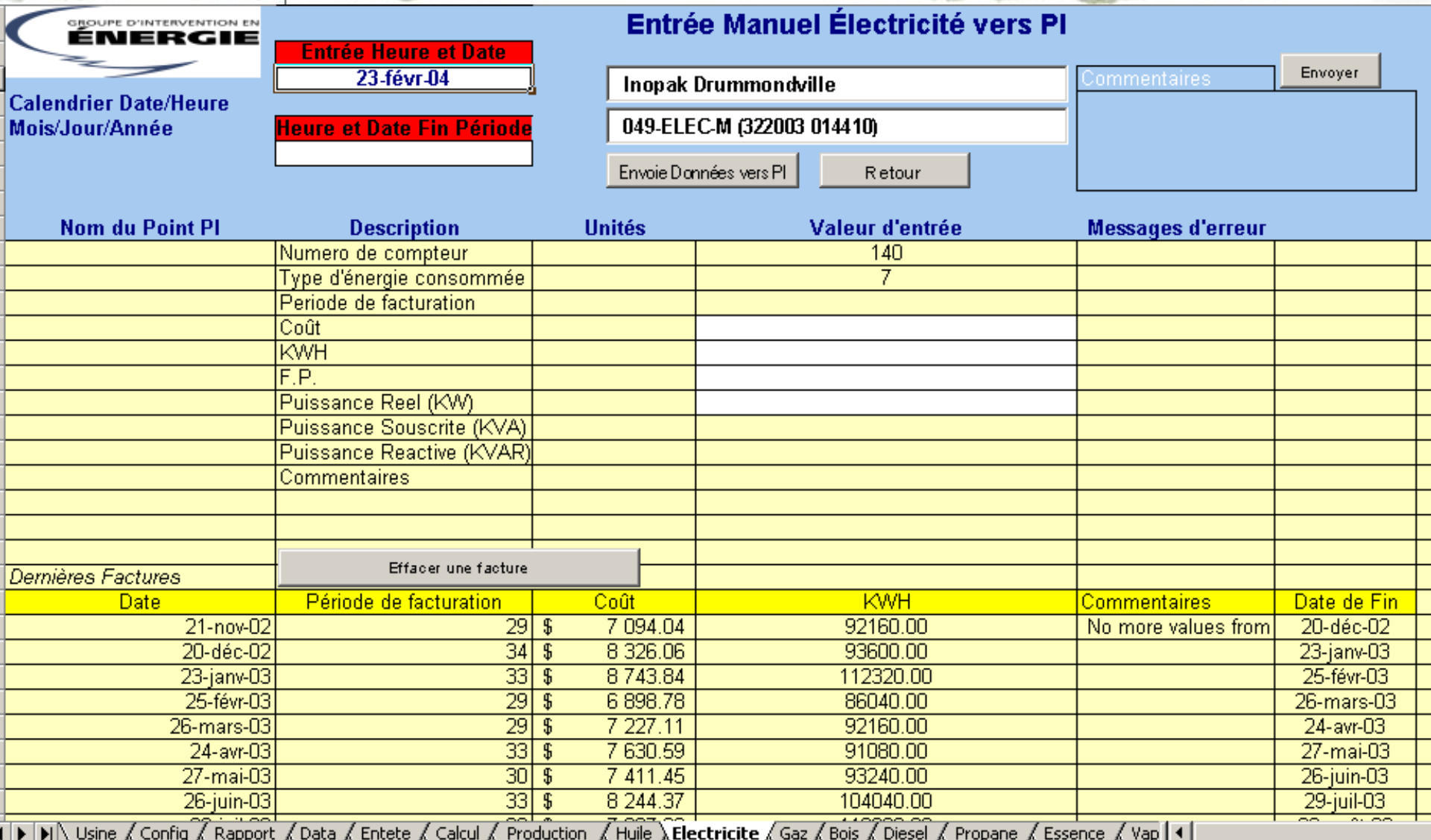
New way of doing things with PI

- Some bills will be downloaded on the web using PIHtml
- The other bills will be tracked with a new interface (Excel)
- Generating reports now takes seconds for a mill and a minute for a group.
- Alarming if a mill's energy usage change or is out of the target.
- Ease of creating custom reports

New way of doing things with PI (Module Database)



New way of doing things with PI
(New Interface)



GROUPE D'INTERVENTION EN ÉNERGIE

Entrée Manuel Électricité vers PI

Entrée Heure et Date: 23-févr-04

Heure et Date Fin Période:

Calendrier Date/Heure Mois/Jour/Année

Inopak Drummondville

049-ELEC-M (322003 014410)

Envoie Données vers PI | Retour

Commentaires | Envoyer

Nom du Point PI	Description	Unités	Valeur d'entrée	Messages d'erreur	
	Numero de compteur		140		
	Type d'énergie consommée		7		
	Periode de facturation				
	Coût				
	KWH				
	F.P.				
	Puissance Reel (KW)				
	Puissance Souscrite (KVA)				
	Puissance Reactive (KVAR)				
	Commentaires				

Effacer une facture

Dernières Factures

Date	Période de facturation	Coût	KWH	Commentaires	Date de Fin
21-nov-02	29	$ 7 094.04	92160.00	No more values from	20-déc-02
20-déc-02	34	$ 8 326.06	93600.00		23-janv-03
23-janv-03	33	$ 8 743.84	112320.00		25-févr-03
25-févr-03	29	$ 6 898.78	86040.00		26-mars-03
26-mars-03	29	$ 7 227.11	92160.00		24-avr-03
24-avr-03	33	$ 7 630.59	91080.00		27-mai-03
27-mai-03	30	$ 7 411.45	93240.00		26-juin-03
26-juin-03	33	$ 8 244.37	104040.00		29-juil-03

Usine | Config | Rapport | Data | Entete | Calcul | Production | Huile | **Electricite** | Gaz | Bois | Diesel | Propane | Essence | Vap

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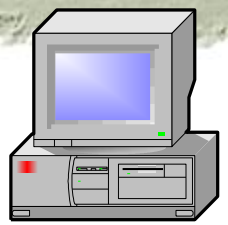
Real-Time energy monitoring



Local monitoring at
a different rate

LOCAL
ETHERNET
NETWORK

Cascades
INTRANET

PI
GIE

PROCESS

Instruments

Local
Controler

Data Acquisition
Module or PI Node
or PI Server

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Results that we got from this improvement

- Efficient Alarming

	Power Factor
13-Nov-2003	0.90
14-Dec-2003	0.91
12-Jan-2004	0.88
14-Feb-2004	0.85
15-Feb-2004	0.90

When the power factor changes to much, there are some warnings.

	Subscribe Power
13-Nov-2003	92,160KVA
14-Dec-2003	93,580KVA
12-Jan-2004	110,843KVA
14-Feb-2004	112,824KVA
15-Feb-2004	109,193KVA

With some suppliers, if the Subscribed Power is exceeded for 3 months and we don't call to readjust it, we pay big penalties.

Results that we got from this improvement

- Efficiency for energy tracking
  - Reduce the time for capturing data and generating reports
  - More time to work on the processes and find solutions to improve the energy usage
  - Data is accurate and reliable
  - Flexibility, Customizable, Generic
  - More data available

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How RtPM will help us

- Bi-Directionnal Information, Web Report

- Much more information available
  - More points from the process instead of general counters
  - Production data more accurate

- No need of external Logger

- Because of the cost and the in-house PI resources, it will be much easier to deploy applications for the Energy Action Group and for mill people.

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Conclusion and Questions

- Energy is a fix cost that NEEDS to be optimized
- Information for tracking the improvements is essential
- We want to focus on optimization, not on manual data analysis (time efficiency)
- PI became an essential tool to help us take the right decision and contributes to achieve our goal of a reduction of 2% in energy usage annually

Saving == 2% * 381 MM$CDN == 7.62 MM$CDN

- Future == ??? (Taking a copy of RTApps back home)