

Millennium Inorganic Chemicals Limited – Asia / Pacific

ENERGY EFFICIENCY IMPROVEMENTS REPORT 2009

Millennium Inorganic Chemicals Limited (MIC) is a wholly owned subsidiary of Cristal Global. It operates two industrial sites that form one manufacturing unit in Australia and prides itself as a global leader in efficient production of TiO₂.

With a total energy use across the Australian sites of approximately 2 PJ, MIC has been involved in the Australian Government's Energy Efficiency Opportunities (EEO) program since it was introduced in July 2006.

2009 has seen significant efficiency gains by the company with a greater than 5% improvement in energy use per tonne of pigment in one year.

MIC employs a continuous improvement approach to energy efficiency efforts. Assessments of both the Kemerton Processing Plant site and Australind Finishing Plant site were conducted in the two years following the introduction of the EEO program. This represented over 90% of the Australian operations energy use. Site energy use is metered to better than +/- 5%, with Kemerton using 0.5 - 0.6 PJ and Australind using 1.3 – 1.5 PJ. The assessments drew on the combined experience of many employees, from operators to engineers and have complied with the intent and the key requirements of the Energy Efficiency Opportunities program.

The following table identifies the number and potential energy savings of projects identified since the introduction of the EEO program;

MIC – Australian Operation

Status of Opportunities		Number of Opportunities	Estimated energy savings per annum by payback period (GJ/yr)		Total estimated energy savings per annum (GJ/yr)	Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%)	12	219472	20980	240452	+/- 10% to 30%
	Identified (accuracy > ±30%)	32	167028	28442	195470	+/- 30% to 100%
	Total Identified	44	386500	49422	435922	+/- 10% to 100%
***Business Response	Under Investigation	20	117564	11692	129256	+/- 10% to 100%
	To be Implemented	7	114190	12100	126290	+/- 10% to 50%
	Implementation Commenced	8	36172	4150	40322	+/- 10% to 50%
	Implemented	9	118574	21480	140054	+/- 10% to 50%
	Not to be Implemented	0	0	0	0	-

With appropriate metering, remote monitoring and routine collaboration, MIC will continue identifying opportunities for energy efficiency gains into the future. This has been shown in the most recent reporting period with the implementation of a number of identified opportunities from the previous period and already progress of further opportunities identified in the last 12 months.

Changes Since 2008

Changes since the opportunities reported in 2008 are as follows;

- Eleven new opportunities were identified in the Dec 2008 to Nov 2009 period - some of these were progressed to commencement of installation,
- Three opportunities previously under investigation were assessed to a greater level and found to have a payback of greater than 4 years. These were removed from the report.
- Two opportunities were split across the two sites to better gauge their potential for savings.
- Five opportunities were implemented.

Examples of Opportunities identified.

Opportunity 1
<p>Heat Recovery:</p> <p>It was identified that potential savings could be derived from preheating intake air to driers from sources we wish to cool or otherwise allow to be expelled to atmosphere. These opportunities will be further investigated during 2010.</p>
Opportunity 2
<p>Pre-heat boiler feed water:</p> <p>It was identified that there is possibly an opportunity to preheat boiler feed water. This makes a saving on the amount of gas needed to raise the temperature of the water to the necessary steam temperatures. This opportunity will be further investigated in 2010.</p>
Opportunity 3
<p>Boiler Startup & Shut Down:</p> <p>Parts of the process rely on other parts for feed stock. Establishing specific instructions and better communication between these parts of the process has allowed boilers to be shut down earlier when not needed and start up later rather than sitting on idle waiting for feed stock that on occasions in the past has not come. With identifiable gains and very little outlay in costs, this opportunity was assessed and implemented in 2009.</p>

Savings & Success

MIC has a history of efficient Titanium pigment production, making modest improvements year to year. However, while we continue to strive for excellence in this area, as we do in all areas of our business, attaining a >5% energy efficiency improvement in 2009, in less than favourable economic times is a significant achievement in its own right. This is a testament to the dedication and ingenuity of our employees and business acumen. Implementation of identified opportunities has added to efficiency gains seen prior to the introduction of the Energy Efficiency Opportunities legislation.

Energy KPI (APAC Site GJ/t)



Board Review

The information included in this report has been reviewed and noted by the board of directors and is to the best of my knowledge, correct and in accordance with the *Energy Efficiency Opportunities Act 2006* and *Energy Efficiency Opportunities Regulations 2006*.



 Dominic Manganaro – Director of Manufacturing Asia / Pacific.