

Thiess Energy Efficiency Opportunities Report 2008

Controlling Corporation

Leighton Holdings Limited ABN 57 004 482 982

This report contains data on the Thiess energy use financial year 2007/08 and provides information on the outcome of our energy efficiency assessment conducted between March and December 2008.





Our Company

Thiess is shaping sustainable solutions and delivering successful outcomes for clients.

Overview

Thiess is a leading mining, construction and services contractor with diverse operations throughout Australia and selected international markets. We are committed to achieving sustainable and profitable growth through ingenuity and innovation, delivering better outcomes for our clients. We aim for excellence across all our operations and have built our reputation by consistently meeting and exceeding the expectations of our clients.

We base our sustainable development on our Thiess value of being future oriented, shaping sustainable outcomes that align with the needs and aspirations of our people, clients, partners, community and the natural environment.

In everything we do, Thiess is driven by the statement that sums up the essence of our company: One Team – Making a Difference – Our Future. This principle has driven our approach to workplace health and safety, environmental management, community relations and sustainable practices that promote stakeholder value.

Our Response

Governments, businesses and communities are faced with one of the most significant environmental, social and economic challenges they will ever have to consider and are therefore preparing their individual responses to the issue of climate change.

Climate change

As a large mining contractor and a major construction and services business working on some of Australia's most significant infrastructure projects, we are a large energy user. We believe we have a responsibility to reduce our carbon footprint and our energy use for the benefit of the environment, the communities we operate in, our shareholders and future generations.

Energy efficiency opportunities

While we are part of Leighton Holdings Limited, Australia's largest project development and contracting group, we have directly managed our own participation in the Energy Efficiency Opportunities (EEO) Program.

Our involvement in the EEO Act has provided us with a systematic approach to assess and further optimise our mining operations. The EEO assessment process has supported our existing efforts to reduce our fossil fuel consumption and to prepare for the commencement of the Federal Government's Carbon Pollution Reduction Scheme.

As a mining contractor, we face some unique challenges in relation to applying the requirements of the EEO Program. To ensure we have addressed those challenges in a way that meets the requirements of the Program we have worked closely with the Department of Resources, Energy and Tourism (RET) in the following ways:

- by participating as a 'trial company' providing detailed input to help develop the legislation
- by completing a 'trial verification process' with RET to inform the approach adopted, and
- by working with RET to develop a case study of our assessment so we can share what we have learnt with other companies.

By implementing four major initiatives identified through the assessment we estimate that the business will save 150,800 GJ/annum, 10,600t CO₂-e per annum with a simple payback period of less than two years.

As well as fuel savings, these initiatives will improve Thiess' operational efficiency, reduce our maintenance costs and potentially reduce the number of vehicles required to complete projects. The EEO assessment process has increased the importance and urgency of energy efficiency within the business and has allowed good practice to be shared across all of our operations.

As the representative approach we developed is unique within the mining industry, we decided to undertake a verification trial with RET. The verification meeting in December 2008 provided certainty that Thiess had met the intent and key requirements of the EEO Act. Our approach exceeded the Department's expectations and was described as a "smart" approach to EEO that mirrored the specific requirements of our industry.





Our Assessment

Thiess conducted its assessment between March and December 2008. The assessment complies with the intent and key requirements of the EEO Program.

Summary of assessment

In designing the assessment we needed to account for the fact that mobile equipment accounts for more than 90% of our energy use in Australia. This is predominantly due to the fleets of excavators and dump trucks used in our mining operations where the transfer of overburden, coal or ore between locations is the main task across all mine sites.

The assessment was conducted using a representative assessment methodology that was developed in close consultation with RET, ensuring that it met the intent and key requirements of the EEO Program.

The assessment involved:

- careful upfront planning to ensure the involvement of both corporate and site level management
- analysing energy and production data across all operations and communicating the outcomes to employees through a comprehensive background paper
- conducting a workshop with operational, maintenance and other personnel at one of our sites to identify opportunities
- conducting a workshop with leaders of our mining business and other corporate staff to review and augment the initiatives identified at the single site
- reviewing those initiatives identified and developing detailed business cases
- gaining sign-off and support for the implementation of relevant initiatives, and
- commencing the implementation process and communicating outcomes through a case study, and government and public reports.

This approach saved Thiess significant resources and time when it came to completing the assessment and enhanced the outcomes of the assessment. It will also ensure that when Thiess commences work on a new mine the identified opportunities will be available for implementation immediately.

Using a representative assessment approach the following sites were included:

- Burton
- Collinsville
- Curragh North
- Glendell
- Lake Vermont
- Liddell
- Mt Owen
- Prominent Hill
- South Walker Creek
- Tarong – Meandu
- Westside
- Wilpingjong

These projects accounted for 85% of Thiess’ total energy use during the 2007/08 financial year. Moreover, while we have completed our assessment requirement for the five year EEO cycle we will continue to identify opportunities and incorporate them into our annual EEO public report.

Assessment results

Our assessment process identified 206 energy saving initiatives. These were amalgamated into common streams resulting in 46 opportunities to carry forward in the assessment. Of these, four will be immediately implemented and a further 42 will be further investigated and implemented once they can be accurately measured and become financially feasible.

This outcome reflects the enthusiasm of our operational and management teams and our commitment to increase energy efficiency, increase shareholder value and reduce the company’s carbon footprint.

Thiess’ energy use 2007/08	
Group member/business unit/key activity/sites that have been assessed	Energy use (GJ) Based on financial control definition
Thiess Australian Mining	7,630,167
Others	1,383,831
Total Thiess PTY LTD	9,013,998

Our energy data accuracy meets the EEOA ±5% requirements

EEO assessment outcome

Status of opportunities		Number of opportunities	Estimated energy savings per annum by payback period (GJ)		Total estimated energy savings per annum (GJ)	Accuracy range (%)
			0 – < 2 years	2 – ≤ 4 years		
Outcomes of assessment	Identified (accuracy ≤ ±30%)	4	4	0	150,800	Within ≤ ±30%
	Identified (accuracy > ±30%)	42	0	42	TBD	TBD
	Total identified	46	4	42	150,800	Within ≤ ±30%
Business response	Under investigation	38	0	38	TBA	TBA
	To be implemented	3	3	0	145,900	Within ≤ ±30%
	Implementation commenced	1	1	0	4,900	Within ≤ ±30%
	Implemented	0	0	0	NA	NA
	Not to be implemented	4	0	0	NA	NA



Our Initiatives

Thiess is committed to implementing a range of energy saving initiatives. The estimated energy savings will total approximately 1.7% of our annual energy use.

1) Payload management

Payload management is central to the efficiency of Thiess' mining operations and as such has always attracted a continuous improvement focus. By ensuring that each dump truck carries the optimum tonnage of material, not only is fuel efficiency increased but in some cases we may be able use fewer trucks to achieve the required task.

The assessment highlighted that the biggest challenge to improving payload management was that accurate data was not being consistently reported to operational personnel in a timely manner. Supported by the Technical Services group in the Brisbane Head Office, payload data was gathered, analysed and compared across projects. This work had occurred historically, however, it has received a heightened focus as a product of the EEO Program.

By comparing the performance between crews and sites, the following key initiatives were identified and will be implemented across all Thiess operations where gaps exist:

- daily payload more frequently downloaded
- the actual versus targeted payload is communicated to operators more frequently
- field leadership is encouraged, for example by having supervisors ask truck operators for payload data over two-way radios as a matter of course, and
- results reviewed regularly by senior management.

The availability of timely and accurate data, clearly articulated targets and ongoing feedback is central to achieving the identified potential energy savings.

Additional benefits include the potential for:

- reduced fleet size
- reduced maintenance costs, and
- improved operator skill and overall performance.

Benefits

Payload management will save pa:

- **Energy: 117,300 GJ**
- **Emissions: 8.200t CO₂-e**



2) Automating mobile lighting equipment

Most of the mobile lighting units used for Thies's mining operations need to be manually turned on and off. This has resulted in some lighting units remaining on for longer than necessary. As many of our operations are geographically expansive, the light-vehicle diesel and labour costs associated with manually turning the units on and off can also be significant.

This new initiative involves fitting automated systems to diesel-powered lighting plants to ensure that operation occurs only during periods of low light.

The estimated diesel saving from this initiative is 165,000 litres of diesel/annum (6,400 GJ/annum) for a payback period of less than two years. Additional benefits include:

- reduction in operator labour time
- fuel savings for light vehicles
- improved safety due to a reduction in the potential for heavy vehicle interaction, and
- reduced maintenance and longer operational life of the lighting units.

Benefits

Automating mobile lighting equipment will save pa:

- Energy: 6,400 GJ
- Emissions: 460t CO₂-e



3) Plant idle time management

By minimising the amount of time equipment idles unnecessarily, a significant quantity of diesel can be saved. This is known and has always been managed by Thiess, however, the assessment raised the importance of analysing the idle time of equipment and, at the operational level, identifying opportunities to reduce it.

This initiative is similar to payload management in that it involves direct feedback of operational efficiency data to operators. For example, there is direct feedback and reinforcement including comparison of performance across crews and comparison of day shift with night shift performance. Many of the savings will come through improved planning, which will not only minimise fuel use but also ensure that skilled operators spend more of their time working to meet production objectives and result in less equipment being required to meet production targets.

Benefits

Plant idle time management will save pa:

- **Energy: 22,200 GJ**
- **Emissions: 1,550t CO₂-e**



4) Turbo idle down time

Original Equipment Manufacturers (OEM) provide a pre-determined setting that means plant idles for a set period before shutting down the turbo on the engines. For the majority of our equipment this is standardised by the OEM at five minutes.

This opportunity was to reduce the period for which plant idles from five minutes to a suitable lesser time to be agreed with the OEM on a case by case basis. It was suggested that for the conditions that Thiess operates in, a three minute idle time would be sufficient. This has been accepted by OEM's to date and hence will not impact on the warranty conditions.

The potential saving, which involves no capital outlay, is estimated to be 120,000 litres of diesel/annum (5,000 GJ/annum) and has a very low payback period.

Benefits

Turbo idle down time will save pa:

- Energy: 4,900 GJ
- Emissions: 344t CO₂-e





Benefits

By implementing these four major initiatives at all our projects it is estimated that we will save 150,800 GJ/annum, 10,600t CO₂-e with a simple payback period of less than two years.

Apart from fuel savings, these initiatives will improve our operational efficiency, reduce our maintenance costs and potentially reduce the number of vehicles required to complete our work. The EEO assessment process has significantly increased the importance and urgency of energy efficiency within our company and has allowed good practice to be shared across all of our operations.

Declaration

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*.



David K. Saxelby

Managing Director

Thiess Pty Ltd

THIESS PTY LTD

Head Office

Level 5, 179 Grey Street

South Bank

Brisbane QLD 4101

Ph: +61 7 3002 9000

Fax: +61 7 3002 9009