

Press Release

AES: Energy assessments provide powerful insights which ‘fuel’ change

7th July 2024

When a production or manufacturing facility is built, everything is new and operating optimally. Over time, equipment deteriorates - or modifications are made with the best intentions, but not always with energy efficiency in mind. It is therefore good practice to do regular energy assessments to ensure for example that steam traps are working correctly, and there are no steam piping ‘dead legs’.

“Someone may move a machine, and the line which used to provide steam energy is not properly isolated - but is still receiving energy. This is what we term a ‘dead leg’ and is extremely inefficient,” explains Brenainn Cross, Technical Director at specialist operations and maintenance service provider to the steam and boiler sector, Associated Energy Services (AES).

Detail is in the data

AES engages clients regarding precisely what equipment is on site, and how their steam process operates, which entails requesting data from their systems. Where reliable data cannot however be provided – as sometimes is the case - AES employs data capturing equipment to fill in the gaps.

When it comes to doing an accurate energy assessment, Cross says understanding a company’s steam offtake is vital: “We want to know what their process looks like, how much energy they use, how they use it and when. Some companies have a very flat profile (such as a tissue manufacturer) where there is a very consistent offtake - while others have a batch-driven process (such as a tyre or a food manufacturer) with peaks and troughs throughout their steam offtake cycle.

“Many businesses do not realise that products use steam differently. They see steam use as a linear process, and do not appreciate that product type and mix has a big impact. There is great value for clients when they start understanding their own energy usage-related data – and AES’s energy optimisation capabilities, once we have the correct data,” he advises.

This information allows AES to estimate whether or not the client’s thermal energy plant is fit for purpose.

Finding the energy blind spots

Cross maintains that a lack of data – and analysis – around the conversion rate of fuel into energy is a substantial blind spot for many manufacturing or processing companies. Most focus on fuel

consumption versus the quantity of product made – a process known as ‘fuel to product out’ costing - rather than monitoring how efficiently fuel is converted to steam energy and thereafter how much steam energy is used to produce the product.

He admits, however, there is no single ‘silver bullet’, and that energy assessments must be carried out on a case-by-case basis: “In instances where we see a mismatch between energy plant or equipment installed on site and the client’s energy usage profile, we will raise this. What we can achieve could be constrained by the incorrect or inadequate equipment. We have to assess whether capital investment is required for us to meet our energy optimisation commitments accordingly.”

To this point, AES’s advice may extend beyond the boiler itself, to issues such as water treatment and asset care: “One of our clients currently needs to consider additional feed water treatment to address a hard water challenge, and remove total dissolved solids that can affect overall boiler energy efficiency and - in the worst case - damage equipment,” Cross adds.

While data collected regarding pressures, flow rates and temperatures is invaluable, it is often difficult to access and complete a full and detailed risk assessment of all equipment while it is operational. For this reason, boilers need to be taken offline for inspection - so that AES can raise any problems with a client and discuss ongoing asset care and maintenance; as well as the impact thereof on the energy usage and optimisation process accordingly.

The power of change – and metrics

Cross describes an energy assessment as a “conversation continuing throughout AES’s relationship with the client”. Ongoing assessments are also vital due to staff and management changes: “We know the baseline situation when we take over the boiler operations and maintenance, however incoming staff and management may not. Therefore – from a perception perspective – it is very important that the client is consistently made aware of the implications were no energy assessments or optimisation to be done – and how pivotal these are to the long-term productivity and sustainability of their facility,” he says.

Energy savings speak for themselves. An example is the 21% and 38% improvement respectively registered at two food processing plants where AES is responsible for energy optimisation.

For Cross, initial assessments usually identify “low-hanging fruit” or early energy saving gains. Take insulation: AES has countless examples of advising clients to insulate heated surfaces as a quick way to recover wasted energy.

“Uninsulated steam lines result in energy losses through radiation heat transfer. For a steam line with the specific parameters stated, insulating this piping would amount to a reduction in CO₂e of ~620 tonnes per annum,” he says. This is illustrated as per the table below:

Nominal Pipe size	150	mm
Steam pressure	10	bar (g)
Ambient temperature	20	°C
Equivalent length of pipe	100	m

Assessments ‘fuel’ change

“Over the past three years, we have seen increased pressure from larger clients requiring a more direct line of sight when it comes to their energy efficiencies - specifically with a view to environmental or carbon tax concerns,” Cross observes.

He adds that AES has been asked to assess many unusual prospective fuel types, including the use of process byproduct streams as potential fuels. “An assessment often proves that the potential energy generation does not warrant the capital expenditure required to make the fuel change,” he explains.

The game-changer is the baseline cost of the energy, notes Cross, citing a recent energy assessment where a fuel switch for a client has the potential to unlock significant operational savings.

“Throughout the process, input from specialist engineers allows us to fully assess – and convey to the client - the true value of fuel (or other) changes. In manufacturing or processing facilities, the focus is on the process but not on the conversion of energy – and often not sufficiently on its cost, quality or efficiency.

Regular, accurate energy assessments really focus clients’ attention on powerful insights which AES can then use, to make the changes required to achieve energy usage and cost-savings, as well as improved environmental and operational sustainability,” Cross concludes.

Ends

(1 067 words)

Note to Editors:

AES is a pioneering, innovative, reliable and experienced steam and boiler operations and maintenance (O & M) service provider. The company has been in existence for over 25 years and is

widely regarded as the leading O & M provider in steam and boiler operations and maintenance service in South Africa. Target industry sectors include power generation, chemical, plastics and rubber, timber, pulp and paper, textiles, food and beverage, dairy, poultry and mining.

AES's purpose is to assist industrial plants to optimise their energy production processes, and achieve energy usage best practices, through the following offerings: the mitigation of risk and the reduction of plant downtime; the procurement of efficient fuel combustion; assistance with the care of assets over the plant's lifetime; diversification of the plant's energy resources; improvement in site operations; and a reduction in carbon footprint.

AES subscribes to the highest ethics and operates according to high safety standards, process excellence and product and service innovation, exhibiting a commitment to quality, technology advancement and the development of human capital. AES invests heavily in training and the promotion of talented people on an equal opportunity basis into the industrial operations environment. The company believes that making a positive difference to communities and the environment is the best way to ensure that everyone benefits from good work.

AES is ISO 9001, 14001 and 45001-certified, ensuring that the company maintains a focus on achieving, benchmarking and optimising its processes and activities.

Editorial Contact

Kendal Hunt

Managing Director

Kendal Hunt Communications PR and Media Liaison Agency

+27 - 11 462 6188

+27 - 82 823 6533

kendal@kendalhunt.co.za