

Press Release

The chemistry of energy: AES ensures cost-effective and energy-efficient operations and maintenance in the chemical sector

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“Anything that we can do to help manage inflationary pressures, and to ensure a manufacturer can get their products to market cost-effectively - so that their customers can affordably access what they need - is always a good thing,” says Associated Energy Services (AES) Commercial Director, Dennis Williams.

“As one of South Africa’s leading operations and maintenance service providers, with a 30-year track record of providing cost-effective energy-efficiency to the chemical manufacturing sector, AES understands the important role which chemicals play in the manufacture of everything from very technical, application-specific products to commonly used, everyday consumables,” Williams explains, adding that - by advising and supporting local chemical manufacturers in the optimisation of their energy plant operations and maintenance - AES contributes to greater productivity and cost-savings, with a positive knock-on effect for industry and the economy as a whole.

A track record of good chemistry

AES began working for its first client in the chemical sector 3 decades ago, in Pretoria during the 1990s. The company supplied super-heated steam for a steam turbine. Steam was also used in the by-products recovery plant at the same manufacturer, where wash oil was heated to drive off the tars – benzene, toluene and xylene - which could then be beneficiated. The cleaned gas was then returned to the coke oven battery for use as a fuel.

AES’s role in the chemicals sector then evolved, with various manufacturers which became clients. In 2003, AES worked on a dehumidifier regeneration steam supply project for a large pharmaceutical manufacturer in KwaZulu-Natal. Here, AES’s thermal system drove hot air through a humidifier filled with an industrial desiccant to remove moisture from the production plant.

An even more recent project for a large chlorine manufacturer saw AES installing four gas-fired boilers. Since installation was completed in June this year, the company has been working closely with this particular client to optimise and improve steam production, and contain their thermal energy costs.

Steam for the people

“In the current economic climate, efficiencies across all business areas are critical. One of the significant challenges for local chemical manufacturers is global chemical producers, which make chemicals very

cheaply. Local manufacturers risk having their products displaced by more affordable (but not necessarily better or safer) imported chemicals - which has massive implications,” says Williams.

He adds that the best way to manage thermal energy - and production costs as a whole - is by giving chemical manufacturers the best possible chance to maximise production efficiencies and reduce the amount of steam used.

“Although it may seem contradictory, it is in our interests to give clients the best quality thermal energy supply, and enable them to keep their demand for steam from AES to a minimum. This makes them stronger and more competitive – and that gives AES longevity on site - even though we may be producing smaller volumes of energy, he explains.

“For example, when you think of chlorine products which are used in the treatment of water, you realise that these are supplied to every municipality. Any cost or availability issue will impact on every person in South Africa, as everyone drinks water, and uses it for domestic, agricultural, manufacturing and many other applications. Therefore, the knock-on effect of AES’s energy efficiency management impacts not only on those chemical producers - but also on their supply and export chains - and even the person in the street. Think every day consumables such as washing powder, shoe polish, almost any consumable one can think of,” he says.

Steam and sustainability

The next area where AES can make a difference is by developing a client’s thermal energy efficiency plans, and also by looking at how to replace their so-called ‘dirty’, carbon-intensive fuels – such as coal - with ‘greener’, less carbon-intensive ones, to address their carbon footprint and sustainability goals.

Williams notes that the European Union recently (in October 2023) introduced stringent carbon border tariffs. Consequently, companies wishing to export chemicals must prepare to meet these strict requirements, and a specialised auditor is required to oversee the regulatory process.

AES can advise on adjustments to client’s energy plant and operations to ensure compliance. “For instance, we can offer alternative, less carbon-intensive fuels, or advise on renewable energy sources – such as biogas or biomass - or provide a sustainable energy mix. We can furnish the operational data for the client to submit to their auditors too, ” he explains.

However, it is not as simple as flipping a switch, he advises: “Typically, chemical plants are frequently very energy-intensive, featuring legacy operational footprints and equipment. Traditionally, South Africa’s large thermal energy users have relied on coal or heavy residual fuels due to cost and availability. Despite these factors, there is still an opportunity for plants to be optimised to reduce carbon intensity

and improve efficiency. This is where AES facilitates the application of plant management methodologies and oversights to reveal generation benefits for the client.”

When it comes to a fuel change, AES has 3 decades’ worth of technical knowledge and experience. The company operated a biomass power station for almost 10 years with 6MWe capacity, and has also executed several technical solutions in this space.

“We are solutions-, technology- and fuel-agnostic, so we can generate steam using multiple fuels. For example, we have clients where we can generate steam using their own by-products which, under other circumstances, would simply have been disposed of, often at cost. For our clients, we increase the efficiency of the overall thermal energy process,” Williams points out.

Sustainability is also an ever-changing space. “Shortages of natural gas are currently being predicted, which will see AES finding alternative sources of energy for our existing clients which utilise natural gas. This is where our accrued benefit of technical expertise and on-site industry experience really comes to the fore,” he says.

The cornerstone of steam

Williams admits that, in the chemical sector - where manufacturing is more complex and to an extent differs from other kinds - steam can either play a direct or an indirect role in the overall process, and AES works closely with its clients to arrive at the right solution.

“Thermal carriers are common to all chemical industries but, in our service level agreements, we include services which are operationally tailored to the individual client: some may have a continuous offtake which is constant and predictable; while others may operate in batches based on demand. We could have different processes running concurrently, with a lead-time for demand. We design thermal systems that are customised for the client, and often we can offer strategic input in their processes. What we have developed, which is an innovation for our industry, is a system applied where steam is provided from multiple boilers. Effectively, it is a load-balancing system across the boilers which has delivered significant improvements in efficiencies and visible emissions,” he says.

Overall, the AES competitive edge comprises technical know-how, experience, depth of institutional memory and wide-ranging ongoing research. The company is able to focus on steam production in a way that most clients would simply not be able to do if this remained under their own management.

Risky business

Notwithstanding these considerations, Williams adds that the crux of the matter will always be the provision of skilled human resources.

“We cannot get away from the importance of skills in energy efficiency management, however equally, we cannot ignore the prevailing shortage of technical skills in South Africa: not only when it comes to expertise, but also industry experience. The challenge is that these shortages can spill over into the substantial area of risk mitigation. The key part of what we do is to mitigate operational risks. We have, over 30 years, developed the baseline knowledge to successfully do this.

In fact, AES’s ISO 9 001, 14 001 and 45 001 certifications are specifically for plant operations & maintenance. Once we have the workflows set up, we make room for the inevitable project variants and we manage that risk. The chemical sector is broad field - there are fuel risks, flammable gases and liquids, emissions, hazardous chemicals, health and safety considerations and compliance requirements - right through to carbon tax.

Therefore, as a company, we invest heavily in our people, and in the training and development of staff on-site in the client’s energy plants. This is a crucial aspect of the value-add that we offer – particularly in a sector as dynamic and challenging as the chemical manufacturing industry,” he concludes.

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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.

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