

Project Report



CUSTOMER

Cobalt Energy is an Engineering Service Provider specialising in the delivery of thermal-renewable, energy-storage technologies and plant O&M services in the UK. The company needed a reliable compressed-air system for an energy-from-waste plant it was building for a client in Malvern and worked with BOGE for the first time.

PROJECT

Working in close partnership with Cobalt Energy and in compliance with strict planning regulations, BOGE designed, supplied, installed and commissioned an integrated compressed-air system – comprising duty and stand-by screw compressors, refrigerant dryers, absorption dryers and auto drains – that met all of Cobalt's specifications.

BOGE PRODUCTS IN USE

Malvern

- 2 x 15-kw C 20 F screw compressors
- 2 x DS26-2 refrigerant dryers
- 2 x DACZ 18-2 absorption dryers
- 2 x Beko 13 autodrains

Stoke

- 2 x 30-kw S 40 screw compressors
- 2 x DS 40-2 refrigerant dryers
- 2 x DAZ 36-2 absorption dryers
- 2 x BEKO 13 auto drains



BOGE's technical expertise key to successful construction of waste-incineration facilities

Cobalt Energy is an independent engineering and operational services company specialising in the delivery of energy-from-waste and biomass thermal technologies. Every project the company works on is unique and it takes a tailored and dynamic approach to each, priding itself on providing practical solutions to complex problems.

In 2019, in its role of engineering, procurement and construction (EPCM) contractor, Cobalt Energy began to build Haylers End Energy Recovery Plant in Malvern for client Waste Energy Power Partners. Previously a derelict waste-incineration facility, the new plant would use clean and safe furnaces to process 8000 tonnes of clinical waste (received from organisations such as the National Health Service (NHS) and other private medical companies) per year using a reciprocating grate system. Power would be scavenged from the process using a modern waste heat-recovery boiler,

which would raise steam that could then be harnessed to generate electricity and to provide hot water to clean the clinical-waste receptacles. During full operation, the facility would be self-sufficient in terms of the electricity it consumes and any excess could be exported to the distribution network to provide power for the local community.

The successful operation of the facility would be dependent on a reliable supply of compressed air, which would be necessary for the flue-gas clean-up system and the running of ancillary systems, where it would be used, for instance, to operate valves. While the flue-gas clean-up system could work with lower-quality compressed air, the ancillaries would require air certified as Class 2 according to ISO 8573-1:2010. Cobalt Energy drew-up its specification for a compressed-air system accordingly and invited number of companies to tender for the work.

PROJECT INFORMATION

> THE CHALLENGE

A new plant replacing a derelict waste-incineration facility would be dependent on a reliable supply of compressed air. While the flue-gas clean-up system could work with lower-quality compressed air, the ancillary system would require air certified as Class 2 according to ISO 8573-1:2010.

> THE BOGE SOLUTION

For both Malvern and Stoke, BOGE came up with a reliable and energy efficient compressed-air solution ideal for compact spaces and designed for ease of maintenance.

> THE RESULT

The complex project was completed successfully and Cobalt Energy was so impressed with BOGE's professional and proactive approach that it commissioned the company to supply the compressed-air system for a second energy-from-waste plant it was building in Stoke. Work in Stoke is ongoing.



Proactive approach

It was during this tendering process that Cobalt Energy's manager for the project, Michael Rigby and Engineer, Melanie Watts, first came into contact with BOGE's team and were immediately struck by its professionalism and expertise. Michael explains: "A number of companies were invited to Malvern to outline their systems. During these meetings, the BOGE team were very accommodating and took a highly professional approach. We put questions to other suppliers and were often told, 'we'll get back to you on that one'. BOGE had access to the information and had the answers to every question that we asked."

Michael says that once it had won the tender, BOGE's expertise and its proactive approach to solving problems proved vital to the successful completion of the project. Owing to planning restrictions, Haylers End had to be re-built in the image of the original site, which made the project significantly more complicated than it would have been otherwise. The air compressors, for instance, had to be fitted in the basement of the facility, so getting air to and from them, and keeping them cool, required a complex set-up. According to Michael, the input of BOGE project manager Neil Gibson was invaluable in navigating these issues, helping his team with the design of the ventilation route and more. Further, the space available for the installation of the compressed-air system was limited, but this issue could be overcome thanks to the relatively small footprint of the compressors BOGE specified.

For the duty and stand-by systems, BOGE recommended its 15-kw C 20 F screw compressors, which – like all models in the company's C series – are designed for installation in small spaces. They are also reliable and easy to maintain, as the number of pipes and connections they feature has been deliberately kept to a minimum.

These were paired with BOGE's energy-efficient DS26-2 refrigerant dryers, which feature a highly efficient aluminium heat exchanger that minimises performance losses in the refrigeration cycle and at the same time uses less refrigerant than comparable models, and DAZ absorption dryers with active carbon towers. The systems are completed with Beko 13 auto drains.

Professionalism from cradle to grave

When it came time for BOGE to install the compressed-air system, Michael says that the company continued to excel. He continues: "Some contractors can be awkward, but the installation work carried out by BOGE went very smoothly. It makes my job much easier when the contractors sent to site are reliable, professional and abide by all of the health and safety regulations."

Michael was so impressed by BOGE that, when work started on another project to build a larger energy-from-clinical-waste facility in Stoke, he recommended that the project team approached the company selected to supply the Malvern compressed air system directly, rather than issuing an invitation to tender.

For the Stoke project, BOGE was able to recommend larger duty and stand-by systems than those installed in Malvern. It proposed a pair of its tried and tested 30-kw S 40 screw compressors, which have been designed for energy efficiency, reliability and ease of maintenance. These would work in conjunction with two DS 40-2 refrigerant dryers, which also feature highly efficient aluminium heat exchangers, and two DAZ 36-2 adsorption dryers, which were again fitted with active carbon towers. As in Malvern, the systems were rounded out with a pair of BEKO 13 auto drains.



Wade Pritchard, Stoke Project Manager continues: “The Stoke project was more straightforward than the Malvern project; there’s more room and it’s all on one level. In terms of footprint, it is probably 50% larger than Malvern, but the compact size of BOGE’s machines has still been highly beneficial.”

So too has the strong working relationship the Cobalt team has built-up with Gibson and his colleagues at BOGE. At one point, complications with the planning of the facility meant that Cobalt Energy had to put its order with BOGE on hold for several months. Wade explains: “Neil bailed us out of that one. Fortunately, it worked out alright and we still received the compressors in plenty of time.”

Customer satisfaction

As always, the best results are achieved when a supplier and their customer can work together as a team. The Haylers End plant is now up and running and the facility in Stoke is due to be completed in June 2021. Wade concludes: “With something so critical to the running of the plants as the supply of compressed air, you need it to be reliable. That’s what we get from BOGE.”