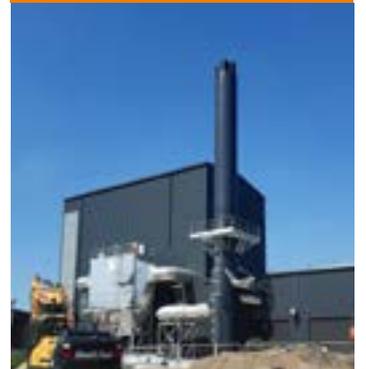




#### PROJECT SUMMARY:



**CLIENT**  
AMP Clean Energy/  
Muntons

**PROJECT**  
£16.5m Biomass Project

#### THE BENEFITS:

- > 15,500 tonnes of carbon reduction per year.
- > Worked with the client's professional team to enhance the design.
- > 2.7MW CHP engine brings increased resilience.
- > Ultra-efficient distribution network to minimise heat loss.
- > Accelerated programme to enable the project to meet Renewable Heat Incentive deadlines.

#### PROJECT OVERVIEW

AMP Clean Energy, Muntons & Vital Energi worked in partnership to create a biomass boiler & CHP system which would supply heat in the form of steam for the malting process and help Muntons reach their Science-Based carbon reduction targets.

The gas boilers at their Stowmarket site were reaching the end of their life and this provided an exciting opportunity to create a new renewable heat and power solution which would supply the malting process, be commercially viable and maximise carbon reduction.

The project saw Vital Energi appointed as the main contractor to deliver a full, turnkey solution

involving the construction of the energy centre, the full mechanical and electrical fit out, installation of the steam & HV distribution network and extensive support in designing the commercial model.

Muntons, who work with some of the biggest food and drink brands in the world, are sustainability leaders in the malting industry. To achieve this they have signed up to the Science-Based Targets initiative which requires them to reduce their emissions by 45% (Based on 2010 levels) by 2025.

AMP Clean Energy, who led the partnership, also provided the funding, development and running of the energy centre.

#### VITAL SOLUTION

To achieve this, Muntons created an innovative partnership where AMP Clean Energy would finance, build, operate and maintain a new biomass energy centre and Vital Energi acted as the main contractor and principal designer to design and build the solution. We also assisted with the commercial model and optimised the plants' operating strategy to maximise efficiency and reduce carbon emissions.

This saw the creation of a custom-built energy centre housing a 14MW biomass furnace and steam boilers, fuelled with virgin woodchip, a 2.7MWe gas-fired containerised CHP, back up steam boilers and distribution network to transport heat and electricity around the site. The system helps Muntons take strides to becoming self-sufficient for steam, heat and electricity and will reduce carbon emissions by 15,500

(Right) The system includes a 14MW biomass boiler weighing over 60 tonnes and a 2.7MW CHP engine. The new system will save 15,500 tonnes of carbon per year.



*“Our gas boilers at the Stowmarket site were approaching the end of their lifespan and we wanted to move away from traditional fuel sources and invest in low-carbon biomass. By investing in our Stowmarket site this could help bring us in line with our science-based targets and solve our site energy issues, as well as improve our efficiency.”*

JONATHAN FREE, PROJECT MANAGER AT MUNTONS

tonnes per annum.

### **Working with the Client to Enhance the Design**

Initially we worked with AMP Clean Energy to enhance the design, moving away from a double-biomass solution to a single biomass and gas-fired CHP solution to improve project economics. This also improved environmental performance by ensuring most of the demand was met by the biomass boiler, which would be supplemented during the unusual times of peak demand. The changes, however, meant the project had to return to the planning process, with Vital Energi delivering comprehensive support during this phase.

### **Building the Energy Centre**

We created a complex load-bearing raft foundation for the energy centre. This included pits and trenches in the foundation works to allow for the walking floor biomass feed system and waste ash conveyor system. Once the foundations were complete, we began construction of the 19m tall structural steel frame and vertical trapezoidal cladding.

The construction of the energy centre was made slightly more complex as it needed to be phased to allow the mechanical and engineering fit out to take place. This meant that some sections, such as steel columns were not

installed until after the delivery of the large biomass boiler.

### **Creating a 21st Century Energy Solution**

The heart of the Muntons energy scheme is the 14MW biomass boiler, fuelled with virgin woodchip, which supplies heat in the form of steam for the malting process. Alongside this is a 2.7MWe CHP which creates additional heat and electricity, along with steam back up boilers which are used at times of peak demand, but also provide n+1 resilience. A steam accumulator is also integrated into the system, which allows improved operation of the biomass boiler as demand varies.

The scale of the project can be seen through the size of the biomass system, which itself weighs over 600 tonnes. This created a logistical challenge due to the number of trucks arriving on site from across the UK and Europe, and the number of crane lifts required to install all of the system components.

### **The Distribution Network**

An essential part of any project is the distribution network. This system required transporting steam, gas, & water pipework and high voltage cabling throughout the Muntons site, which included a number of complex solutions such as pipe bridges over existing roads. The new energy system needed

to interface with existing buildings across the Stowmarket site, without interrupting the ongoing production process for Muntons. Many of these buildings, such as the kilns, are essential to the malting process, so we performed all building entries and installed new heating interfaces to connect them with the new energy supply.

### **Delivering an Accelerated Programme**

The project was particularly challenging as the commercial model was dependent on receiving Renewable Heat Incentive (RHI) and needed to meet a strict heat-on deadline to qualify. This saw an accelerated programme taking the scheme from final design, through construction and build phase to final commissioning in approximately 12 months.

This was essential as the RHI was a key component to the commercial model, enabling AMP Clean Energy to supply renewable heat to Muntons at a competitive rate.

One significant decision was based around procuring the boiler from Austria. At the time, Brexit posed the possibility of creating import issues, so our team opted for early delivery of the biomass system to safeguard the programme.

The conclusion was a project which has revolutionised Muntons' heating and electrical infrastructure, whilst creating significant energy savings.