INDUSTRY FOCUS



Energy from Waste and Recycling

In this regular feature, we focus on how organisations across different industries approach energy management. Here, we are exploring the world of energy from waste and recycling with Ethan O Brien, Carbon Management Advisor at Cory Riverside Energy.

Cory Riverside Energy's (Cory) mission is to provide London with a safe, secure, and sustainable energy supply, derived from London's waste resource. Cory use a fleet of tugs and barges on the River Thames to transport sealed containers of waste (c.750,000 tonnes pa.) from riparian transfer stations to its Energy from Waste (EfW) facility in Belvedere, South-East London. This 72MW facility powers around 160,000 homes annually. Additionally, Cory choose to work with sustainable aggregate recyclers to produce c.200,000 tonnes pa. of useful recycled aggregate materials from Incinerator Bottom Ash (IBA) and Air Pollution Control Residue (APCR); by-products from the energy recovery process. The overall process moves waste up the waste hierarchy, increases UK resource productivity, and saves carbon emissions produced from mining virgin aggregates.

Further up river, Cory Riverside Energy's flagship Smugglers Way Materials Recycling Facility (MRF), located at Wandsworth, sorts 80,000 tonnes of recyclables per annum. Cory's river based, local waste disposal and energy generation solution has substantial carbon savings compared to road based transport and landfilling of waste. Throughout the operation using energy responsibly, increasing efficiency and reducing carbon emissions are central to enhancing the Cory Riverside Energy brand.

A unique approach for a unique operation

Energy management at Cory has been high on the agenda since 2008. It has officially been endorsed by senior management in a Carbon Management Commitment Policy that governs operations. The policy sets out an ambitious aim; "to become the lowest carbon producer within the industry and to encourage its customers, suppliers and stakeholders to reduce their carbon emissions."

Cory has long recognised that the practical starting point is to measure and manage the challenges that energy poses to the organisation. A compliance plan is in place to assure Cory is fully compliant with the Carbon Reduction Commitment (CRC), Energy Savings Opportunities Scheme (ESOS) and other energy and environmental legislation. The experience of the business in using systems to deal with health, safety and environmental risks underpins the approach; the Cory Compliance Team use their expertise in running an Integrated Management System (IMS) covering an ISO 14001 Environmental Management System, ISO 9001 Quality Standard and an OHSAS 18001 Occupational Health and Safety Standard to develop the energy management strategy within the company. The next phase to enhance the existing IMS, is to incorporate an ISO 50001 energy management system, further demonstrating Cory's commitment to improving energy management.

To produce energy and manage waste resource, energy is required in day to day operations. Electricity and gas procurement is also managed within the Compliance team; both commodity and non-commodity elements of site energy bills are reviewed to ensure energy charges are cost reflective of Cory's consumption patterns. As energy costs continue to rise, and non-commodity costs make up more of the final bill, this part of the job will be more critical than ever. Demand side management is another area where Cory is actively looking into possible revenue opportunities whilst reducing peak demands on the national grid.

Cory's energy consumption profile is unique. Buildings and operations range from state-of-the-art modern facilities and tug fleet, to more historic buildings on the banks of



the river. In the same way Cory tugs navigate the River Thames carrying London's waste, the route to energy savings requires navigating through a sea of usage data. Cory has been collecting robust energy use data for all activities, for over 10 years.

Energy is used at Cory Riverside Energy's waste transfer stations and the Smugglers Way MRF in various industrial processes. These already incorporate various energy saving systems; many motors, conveyors and compressors are variable speed drive (VSD) controlled for instance. There is excellent visibility of half-hourly electricity consumption, thanks to the installation of Automated Meter Reading (AMRs) meters across sites. The Compliance Team investigate unexplained electricity consumption patterns in half-hourly data and actively report on potential improvement measures. Cory

recently identified that the mechanism for conveying this data back to sites could be improved. An online energy management portal is being introduced, with email alarms to inform staff of overnight spikes in electricity use and triad warnings issued to facilitate demand reduction opportunities. The aim is to widen data access and

improve all-round communication. Everyone can benefit from greater communication around energy management. Energy audits undertaken as part of ESOS compliance had already identified a range of energy saving projects and a selection of the most feasible will be included in a new 'Energy Roadmap' implementation programme. Re-development work is on-going across the business and senior management are working to ensure that energy efficiency opportunities are incorporated into the new business development plan. The cleanest, greenest source of energy is after all, the unit not used.

Cory's use of the River Thames to transport waste, instead of trucks on the road, saves a significant amount of energy, by using less fuel. We estimate Cory's 'green highway' operations on the river save some 14,000 tonnes carbon and removes 100,000 truck movements from London's congested streets every year. These figures have been externally supported by a leading UK energy consultancy. The 'green highway' operation requires careful planning and at Cory's Charlton site, fleet management is robustly organised and maintained by a dedicated team. Interval and planned maintenance systems are in place for all Cory vessels to ensure the efficient scheduling and use of fuel in the Cory fleet. Cory's vessels all have engines that are classed as low nitrous oxide (LoNOx) discharge and fuel consumption is tightly monitored. River-going tugs have to contend with many different variables which affect the amount of fuel consumed on seemingly identical journeys. These include: tidal variations, different gross



and therefore the development of a CHP solution at the site is a key objective.

The Way Ahead

Carbon efficiency and wider environmental sustainability factors are essential to the Cory Riverside Energy brand and aligned to business objectives. Cory are committed to using energy responsibly,

increasing efficiency and reducing carbon emissions. New business development plans being set out in 2017 are encouraging even more ambition, aiming to achieve new recognition for our performance. Everyone at Cory is aligned on the direction of travel and ensuring that we work as a team to secure our place at the heart of London's resource management infrastructure into the future.

Author's profile:

Ethan graduated with an MSc from the University of Edinburgh Business School in 2014. Post-graduation, he spent two years jointly developing renewable energy projects in East Africa and consulting on energy management for UK businesses, prior to joining Cory Riverside Energy in his current carbon advisory role.



loading on barges and London's varying weather. To understand these variations, fuel use is benchmarked against different driving factors including: litres per tonne waste; litres per hour and litres per nautical mile. Indicating the ongoing success of the logistical operation, the Cory Riverside Energy fleet have seen an 18% reduction in energy used per tonne of waste transported over a 5-year period between 2012 and 2016.

Cory's single most significant area of energy consumption, is the self-generation requirement at Cory Riverside Energy's EfW plant. First commissioned in 2011, Cory Riverside Energy EfW is extremely modern and efficient, the first EfW plant in London to be accredited as an 'R1' facility (i.e. classed as waste 'recovery' rather than a waste