

CASE STUDY

Dairygold Mallow WwTP Upgrade - Turbo Blowers



The existing secondary treatment process at Dairygold Mallow WwTP was based on a combination of attached growth (BioTower) and trickling filters using stone media. This process was installed approximately 60 years ago and had reached end of life.

EPS, in collaboration with Dairygold's Technical Team, evaluated a number of potential replacement alternatives.

The preferred solution consisted of a Dual Stream Biological Nutrient Removal (BNR) process based on activated sludge.



PROJECT START DATE

June 2021



CONSTRUCTION PERIOD

8 Months



CLIENT

Dairygold



Implementing the Solution

The process included dedicated steps for Biological Removal of Nitrogen and Phosphorus. Existing settlement tanks were repurposed and retained as part of the final solution.

Replacement of the Secondary Treatment process at Mallow is the final stage of a phased replacement of the entire WwTW infrastructure at the Mallow site to complete undertaken by Dairygold over the last 7 years.

The works on the Mallow site were delivered within a tight construction programme to coincide with Dairygold's production profile. The biological process was constructed and commissioned in two separate phases.

Provision of air to the new BNR process at Dairygold required careful consideration. In modern wastewater treatment plants, aeration power can account for as much as 60% of the overall power consumption.

The Dairygold plant is located on a flood plain within the environs of the town of Mallow. As a result, all machinery had to be located on elevated plinths.

Selection of equipment with a small footprint and low noise levels was a prerequisite for the project.

The final aeration system installed at Mallow consisted of 5 No. 37.0 kW Turbo Blowers configured in parallel to supply a Fine Bubble Diffused Aeration (FBDA) system. The FBDA was designed to generate a tapered aeration profile within the aerobic zone of the secondary process.

Selection of the Turbo Air Blower for the Mallow site over conventional Rotary Lobe Blowers was based on the following:

- 25% less energy consumption (resulting in annual saving of 25->30k)
- 20% lower noise levels
- 40% less footprint required due to compact design
- Much lower maintenance costs. Turbo blowers are oil free, as are the air foil bearings utilised
- Blowers are direct driven which eliminates pulleys and belts
- Dramatically reduced costs of installation. The Turbo Blowers is designed for plug and play. PLC, VSD, HMI are contained within the package. The Electrical and one Mechanical connection is all that's required to complete installation.
- Wide range of turndown across the full operating range without loss of efficiency.