

# ALEXANDRA HOUSE

COMBINED HEATING AND POWER FOR ELDERLY CARE



The new Alexandra House, operated by Care South, is a two-storey, 58-room residential care and nursing home designed to offer high standards of communal accommodation for the elderly, including dementia and nursing care in Parkstone, Poole, Dorset. The new building, situated on the site of the previous Alexandra House, uses traditional building materials to minimise its environmental impact and incorporates special features such as themed lounges and a secure, sensory garden.

Requiring a well designed and reliable heating and hot water system was paramount for Alexandra House, where the comfort and wellbeing of its residents often requires above average levels of heating year round. Adveco Ltd. was contracted to supply a TOTEM T20 micro combined heat and power (m-CHP) appliance as part of a complete heating and hot water system designed by Nicholas Villareal of McCarthy Bainbridge Ltd.

**Customer**  
Care South

**Sector**  
Residential Care

**Location**  
Poole, Dorset

**Application**  
Cogeneration of hot water and power

**Products**  
Totem T20 m-CHP  
Adveco MSS 2500-litre buffer vessel  
A.O. Smith Upsilon 110 boilers & IT500 indirect calorifiers

# ADVECO

EXPERTLY ENGINEERED FOR YOU



### MICRO-COGENERATION FOR HOT WATER AND POWER

The high-efficiency, ultra-low NO<sub>x</sub> combined heat and power unit will allow the building to satisfy the requirements of Part L of the Building Regulations in addition to providing a reliable, cost-effective, and environmentally friendly solution to meeting their year-round heating and hot water demands.

Installed by Holton Plumbing Services Ltd., the Adveco T20 CHP works in conjunction with a custom-built Adveco MSS 2500-litre buffer vessel, as well as a cascade of two AO Smith Upsilon 110 boilers and two AO Smith IT500 indirect calorifiers. Supplied as a complete package, alongside ancillaries and backup heating components via electric immersion elements, Adveco Ltd. have supplied Alexandra House with a complete, bespoke heating and hot water solution featuring some of the highest quality products and renewable technologies on the U.K. market.

Care homes, like all residential applications, typically exhibit a continuous electrical demand alongside a significant, but varied, hot water and heating usage pattern. By sizing a CHP unit to meet the thermal energy requirements – knowing that there will always be an electrical demand to make use of the produced power – allows the machine to maximise its contribution to

a building's overall efficiency. In the case of Alexandra House, the most effective design was that of a boiler return preheat system.

The TOTEM T20 CHP at Alexandra House is connected to a bespoke buffer vessel to store its thermal energy, which in turn connects to the boilers and central heating system. This will additionally provide domestic hot water through the use of duplex indirect calorifiers, each incorporating an immersion heater to provide a separate heat source for further redundancy. A correctly sized thermal store allows the CHP to run for extended periods of time while it heats up – all the while providing low carbon power to the building – ready to cover periods of peak usage. With the bulk of the required energy coming from the CHP, the boilers are only used to top-up the temperature or cover periods of off-peak demand while the thermal store is recharging.

The design of the hot water and heating system at Alexandra House is projected to achieve over 7,100 CHP operating hours per year, resulting in annual carbon reductions in excess of 44.5 tonnes and providing expected energy savings, inclusive of CHP maintenance costs, of £7,500.00 per year.

With almost 50 years of industry experience, Adveco Ltd. is the trusted specialist provider of bespoke hot water, heating and power systems to the building services industry. Committed to partnering with its commercial and government customers, Adveco helps create comfortable, efficient, functional, safe and sustainable buildings through invaluable support in the design, supply, commissioning and service of business-critical hot water, heating and power. Headquartered in the UK, the company operates across Europe from offices in the Netherlands and Belgium.

### TOTEM M-CHP

- Purpose-built for operation on natural gas
- Combined Heat and Power range with outputs of 10, 20, 25 and 50 kW<sub>e</sub>
- Total cogeneration efficiency up to 107.4%
- Ultra-low emissions: NO<sub>x</sub> at <12 mg/kWh and <10 mg/Nm<sup>3</sup>,
- CO at <10 mg/Nm<sup>3</sup>
- Unparalleled reliability.
- Eligible for full points under the revised POL02 category of the 2018 BREEAM New Construction Scheme, even when installed in high pollution urban areas.

