

Sequence Controls

Date added to ETL 2001 (Revised 2009).

1. Definition of Technology

Sequence controls are products that are specifically designed to control the manner in which boilers and/or burners are switched on and off, and/or modulated, to meet the heat load placed on the overall boiler system.

2. Technology Description

Sequence controls realise fuel savings by optimising the combination of boilers used, and / or burner firing rates, to meet the heat demand placed on the multiple boiler systems commonly used for industrial process heating, and for space heating in larger buildings.

A wide range of sequence controls is available for multiple boiler systems. The ECA Scheme aims to encourage the purchase of products that automatically ensure that the most energy efficient combination of boilers and/or burner firing rates is used to meet demand.

The ECA Scheme covers three categories of sequence controls:

1. **Standalone units** that are self-contained control units that are designed to directly control the operation of, and to be directly connected to, boilers and/or burners
2. **'Add-on' modules** that are designed to be incorporated into other control systems, and to either directly, or indirectly, control the operation of boilers, or burners.
3. **Packaged products** that consist of two or more control modules or units that are designed to be connected together during installation, and to either directly, or indirectly, control the operation of boilers, or burners.

Investments in sequence controls can only qualify for ECAs if the product is named on the Energy Technology Product List. To be eligible for inclusion on the Energy Technology Product List, products must meet the eligibility criteria as set out below.

3. Eligibility Criteria

To be eligible, products must:

1. Be able to automatically control the operation, and firing sequence, of:
 - At least two boilers, of different thermal ratings (in terms of kW of heat output), whose output is connected into a single heat distribution system.
 - A combination of modulating and non-modulating boilers (i.e. consisting of one or more modulating boilers and one or more non-modulating boilers).
2. Incorporate a microprocessor based controller is pre-programmed to:
 - a) Automatically match boiler heat output with heat demand, whilst maintaining boiler output within a specified temperature and/or pressure range.
 - Prioritise the use of more efficient boilers and/or burners over less efficient ones, whilst making optimal use of any modulating boilers being controlled.

3. Provide facilities that enable operators to:
 - a) Schedule the times of the week (to within 5 minutes), when the boiler system should be switched on and off, and be operated at a reduced pressure.
 - b) Schedule at least two different operating set-points for the boiler system (to enable for example operation at a reduced level at off peak times).

4. Provide facilities that enable commissioning engineers to:
 - a) Define the relative operating priority of each boiler and burner controlled, and the operating set-points at which each boiler should be switched on and off.
 - b) Where automatic boiler rotation is employed, to exclude individual boilers from automatic rotation, or to divide the boilers into two or more rotational groups.

5. Incorporate an anti-tampering mechanism that prevents the product's control strategy and configuration settings from being modified, and automatic control from being disabled, except during commissioning, maintenance or testing.

6. Conform with the requirements of the EU EMC Directive 89/336/EEC (as amended) or its replacement EU EMC Directive 2004/108/EC, or be CE Marked.

Products that are designed to optimise the overall operation of wet heating systems, and include facilities such as optimum start and weather compensation, are not eligible.

Products that are designed to directly adjust burner air-fuel ratios are not eligible.

4. Scope of Claim

Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and the direct costs of installation. Clarity on the eligibility of direct costs is available from [HMRC](#).