CCD
Condensate contamination detection system
The CCD system monitors the conductivity of condensate being returned to the boiler and diverts contaminated condensate to drain.

Benefits of returning condensate
Steam is an extremely convenient way of transmitting energy, and is used for many industrial processes. When it has given up its heat to the process, the remaining hot condensate should be returned to the boiler feedtank in order to:

- Save energy by using the remaining heat in the condensate.
- Save water costs.
- Save on water treatment chemicals, as the condensate should be virtually pure water.

Contamination - the dangers
Whilst it is desirable to return the maximum amount of condensate to the boiler, it is essential to ensure that it is clean. Even low levels of contamination can cause foaming, scaling, or corrosion. If carryover of boiler water with the steam occurs, then the product can become contaminated, resulting in expensive lost production. Continuous condensate monitoring with the CCD system can protect the boiler, ensure product quality, and maximise energy and water savings.
System components
The system comprises a Spirax Sarco S20 sensor chamber with CP10 conductivity sensor and TP20 temperature sensor, mounted in a condensate line bypass.

The sensors are connected to a low range controller that constantly monitors and displays the conductivity level.

The controllers
The controllers have two relay outputs, one of which is normally used to divert the condensate flow, and the other to operate an alarm. Other features include a 0/4 - 20 mA output, and a temperature probe input facility.

The wall mounted BC3200 has a 4 digit LED display and two push buttons for simple commissioning, calibration, and operation. Features include:

- Four digit LED display of conductivity and system status e.g. normal or drain.
- Additional high turbulence filter.
- Normal range 0 - 100 µS/cm.
- Selectable security feature.
- Optional front cover lock.

The panel mounted BC3210 has the same features as the BC3200. An optional lockable cover is available.

How the system works
The condensate contamination detection system monitors and displays the conductivity of the condensate. It automatically diverts the condensate to drain instead of back to the boiler system should the level rise above a pre-selected set point. When the conductivity drops, the condensate is allowed to return to the boiler system, thus minimising heat and water wastage, as well as avoiding the possibility of contaminating the feedwater.

Note: Though the system can detect very small changes in conductivity, it will not detect the presence of contaminants that do not affect conductivity, such as oils, fats, and sugars.

If in any doubt, carry out a test on known clean condensate and known contaminated condensate, comparing conductivity.

The Spirax Sarco MS1 portable conductivity meter is ideal for this purpose.

Alternative valve layout
Two 2-port valves may be used instead of a 3-port diverter valve. An isolating valve in the condensate return line may be wired to close on detection of a high conductivity, and a dump valve in the condensate drain line wired to open at the same time.

User benefits
- Avoids boiler damage and product contamination.
- Temperature compensation sensor gives accurate results regardless of condensate temperature.
- Minimises energy wastage.
- Conserves expensive treated water.
- Choice of wall mounted or panel mounted controller.
Technical information (Dimensions approximate in mm)

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<th>BC3200 Controller ▶</th>
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**Associated equipment**

Customers' individual system requirements vary, so these items are usually ordered separately. Spirax Sarco supply an extensive range of products for the CCD system and will be pleased to provide descriptive literature on request.

**Available products include**

- SCS20 sample cooler systems
- MS1 portable conductivity meters
- Stop valves
- DCV2 check valves
- Electrically actuated valves
- Pneumatically actuated valves
- DS1000 remote digital display unit

**How to specify**

Wall mounted (or panel mounted) programmable blowdown controller with four digit LCD display.

Sensor chamber, 1¼" BSP, with conductivity and temperature sensor, sample connection, and plug tail.

**How to order**

**Controller** - BC3200 or BC3210.

**Sensor chamber** - S20, with CP10 conductivity sensor, TP20 temperature sensor, and PT2 plug tail.

**Digital display** - DS1000 (optional)

Some of the products may not be available in certain markets.

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