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## *CELDAR* ® TECHNOLOGY

**Case history**

**BORON REMOVAL**

| | |
|---|---|
| Location | UK |
| PRODUCED WASTEWATER | 20 cubic meter/hour |
| Typical problems in wastewater | High residual Boron |

TREATMENT PRINCIPLES AND AIMS

The customer asked us to evaluate the **Electrocoagulation** for the **removal of Boron** and to be able to drain the treated water into the sewer system.
Another option required was the **Zero liquid discharge** and therefore the possibility of **water recycling** with the least amount of consumption possible.
This option is possible using an **Electrocoagulation plant** since no chemicals are used and therefore the physical and chemical characteristics of the water to be treated have little variation compared to the treated water.

The Boron removal treatment was carried out with chemical-physical plants or with selective resins. The results are not always satisfactory and the costs are very high.
The ELECTROCOAGULATION technique has made it possible to tackle the removal of Boron in a simpler and less expensive way.
The conditions were the following:

| | |
|---|---|
| Number of electrodes | 36 |
| Type of alloy | CELDAR |
| Volt applied | 7 |
| AMPERES | 48 |
| Reaction time | 2 hours |
| Temperature | 48 °C |
| | |
| Final treatment | Flocculation |

The cell configuration has been programmed with three different selective electrodes of our production which are shown in the graph as CELDAR 1 - 2 - 3

| Time | CELDAR 1 | CELDAR 2 | CELDAR 3 |
|---|---|---|---|
| 0 | 29,25 | 29,25 | 31,2 |
| 30 | 5,7 | 0,9 | 7,95 |
| 60 | 2,85 | 0,6 | 3,5 |
| 90 | 1,76 | 0,24 | 1,96 |
| 120 | 0,83 | 0,1 | 1,08 |

The removal of boron evaluated by sampling the times indicated is in the graph.