

## Travancore Cochin Chemicals Limited Udyogamandal

### ELECTRODES RE-COATING & MEMBRANES REPLACEMENT WITH HIGH EFFICIENCY MEMBRANES.

The membrane cell hardware consists of anodes, cathodes and membranes. The anode mesh is Titanium made up of expanded metal with RuO<sub>2</sub> Catalyst coating having an effective area of 1.71 m<sup>2</sup>. The cathode mesh is copper made of punched metal with nickel plating. The normal life of the anode and cathode is 72 months; where as the normal life of the membrane is 36 months.

The factors determining the cell voltage are the cell hardware, electrolytic conditions and the conditions of the membranes. At 3 KA/M<sup>2</sup> current density, the cell voltage is as under :

Reaction Voltage	= 2.25 V
Structural IR drop	= 0.2 V
Membrane IR drop	= 0.35 V
Electrolyte IR drop	= 0.08 V
Anodic over Voltage	= 0.05 V
Cathodic over voltage	= 0.10 V
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Total Cell Voltage	= 3.03 V

At the fag end of the periods stated above, the cell voltage starts increasing to 3.6 V. At this stage the electrodes need to be re-coated and the Membranes need to be changed.

In 2004-05 we have replaced the Membranes and re-coated the electrodes at an expense of Rs.832 lacs. We have gained electrical energy to the extent of 85.43 lakh KWh and the saving in Rs. Comes to 228.11 lacs.

### PROCESS RE-ENGINEERING – PART CONVERSION OF THE MERCURY PRODUCTION CAPACITY TO MEMBRANE TECHNOLOGY – SECOND STAGE.

The purpose of this project was to reduce the energy consumption as well as to eradicate mercury pollution since no mercury is used in Membrane cells. There is enormous gain in electrical energy while using membrane cells. To illustrate these, the average specific energy consumption in the Uhde Mercury Cell Plant during January 2001 to December 2001 was 3855 KWh/MT. After the installation of the Membrane Cell Plants in lieu of the Mercury Cell Plant the energy consumption per MT has come down to as low as 2660 Kwh, (in September 2005) ie., a gain of 1195 Kwh/MT. In percentage this works out to 31%; it is a tremendous gain. The expense for the project was Rs.2200 lacs.

We have already taken up the project work for the third stage conversion of the 100 TPD Uhde Mercury Cell Plant which is expected to be commissioned by next year at a project cost of around Rs.2200 lacs. We hope to continue the conversion process afterwards.

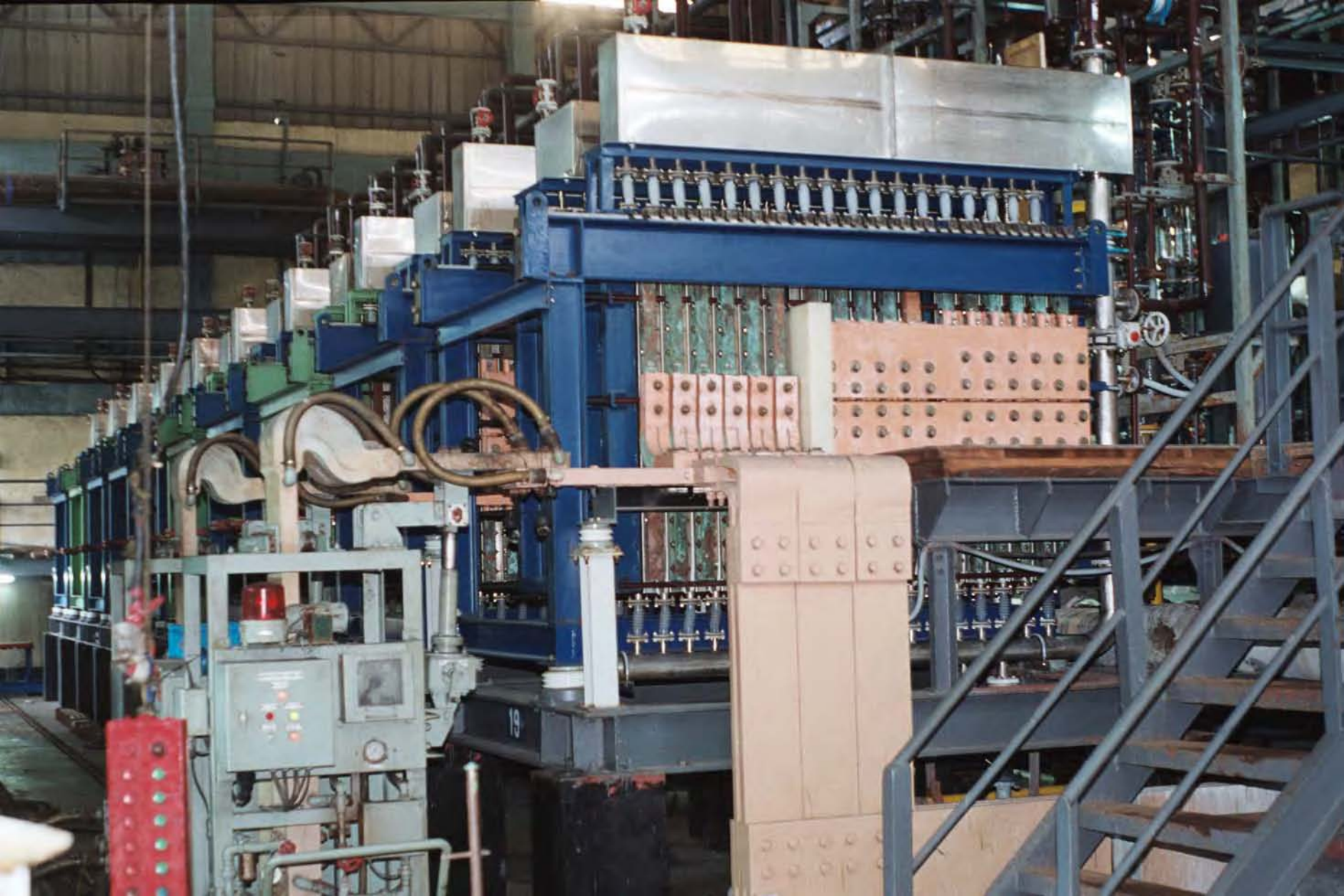


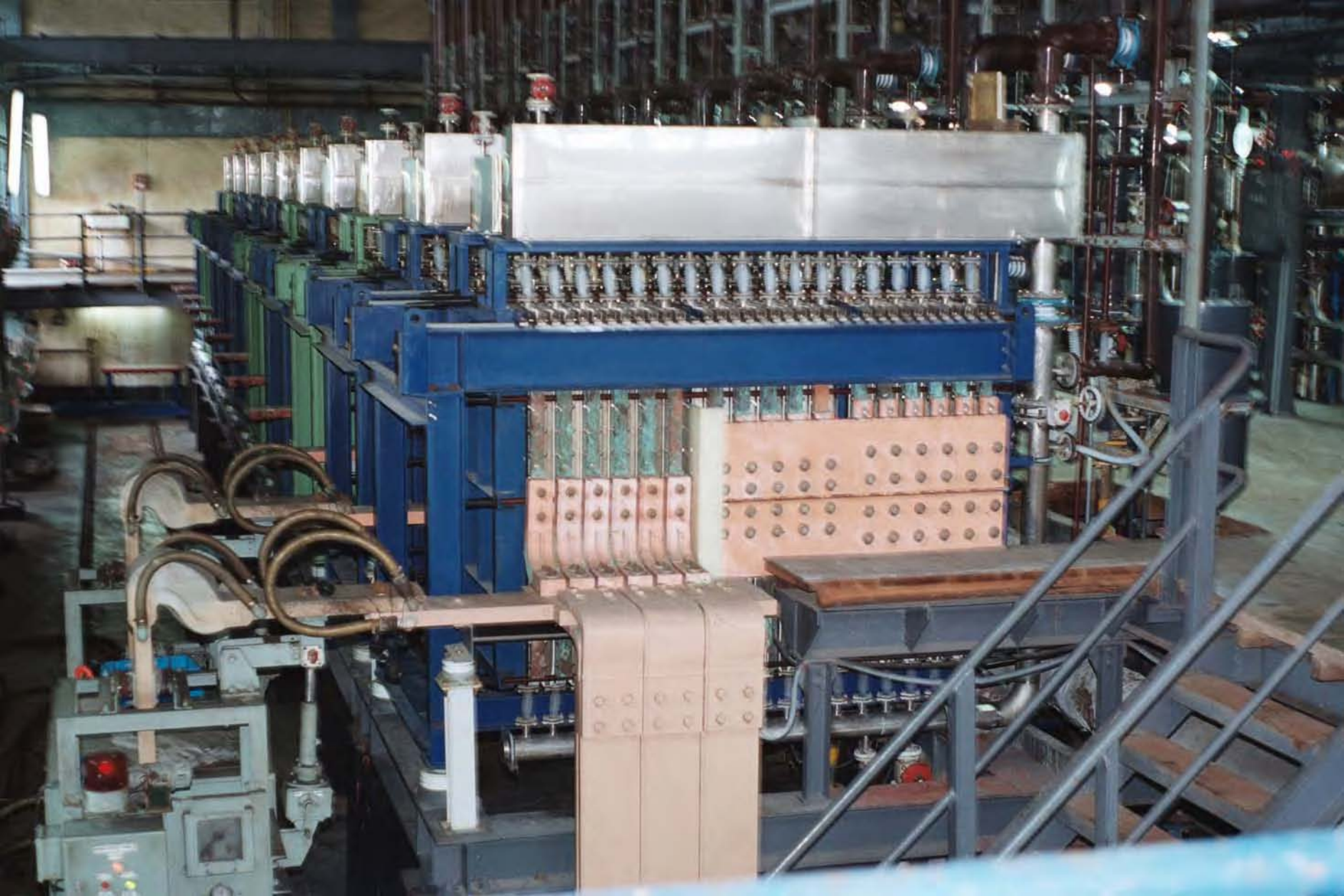
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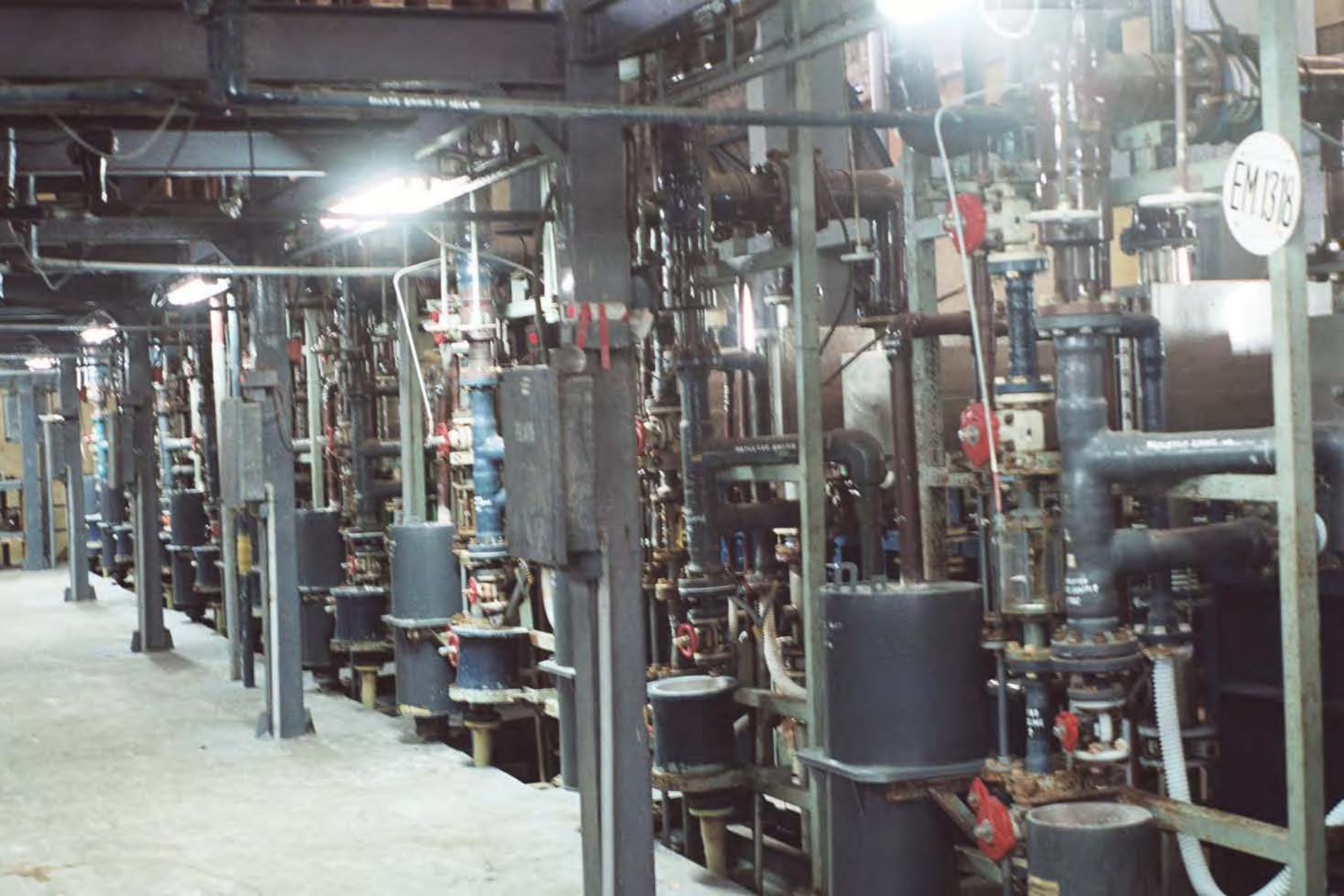




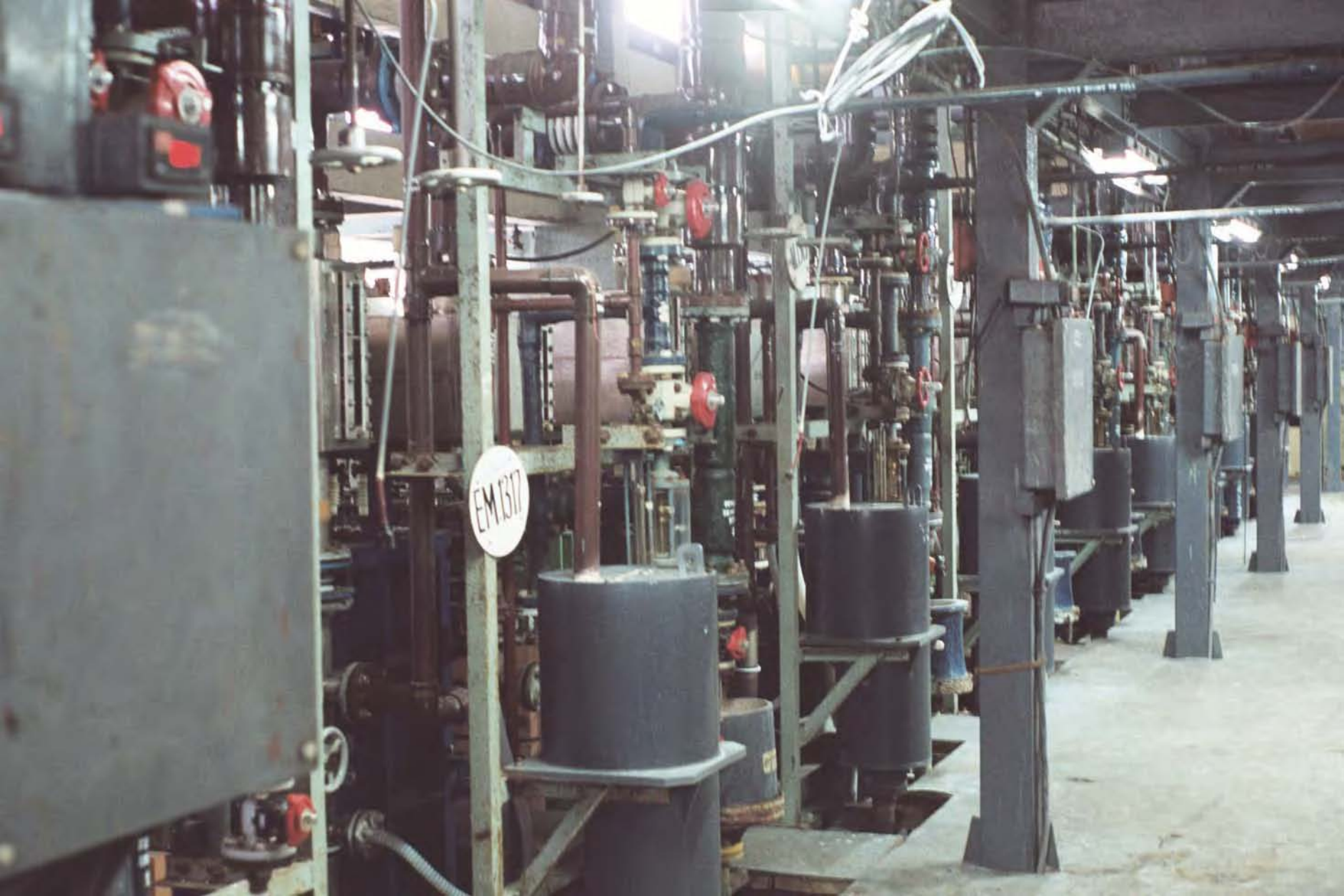








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