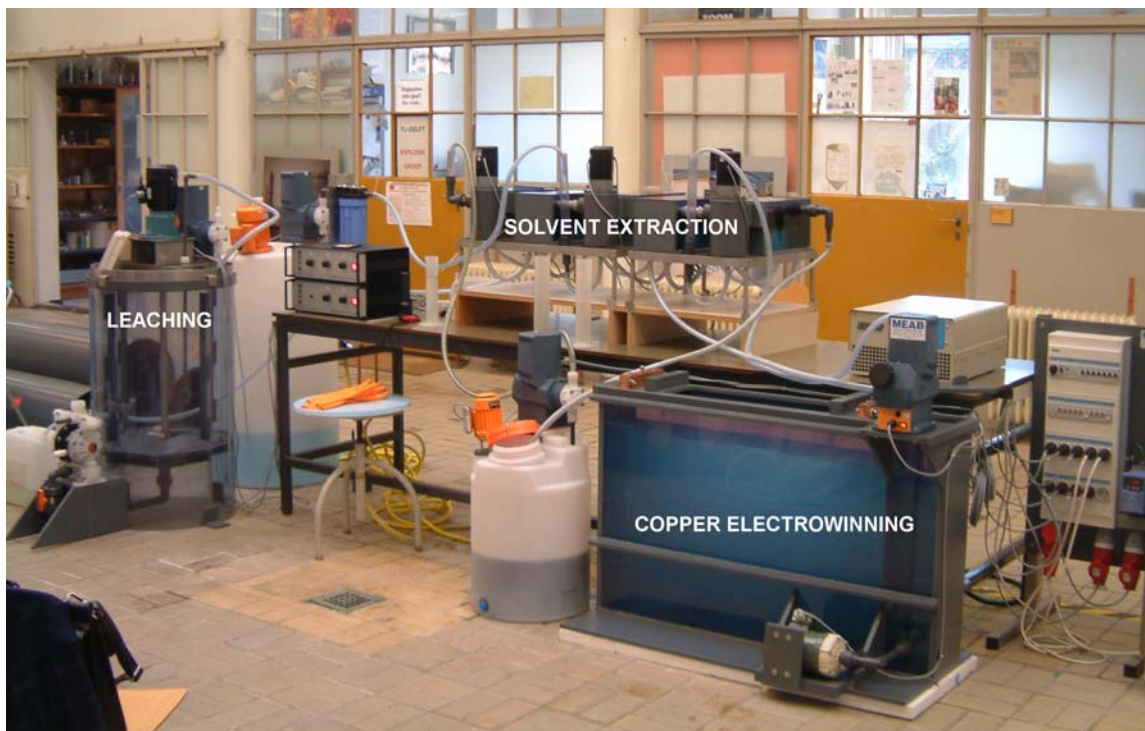


MEAB

HYDROMETALLURGY - LABORATORY EQUIPMENT



The need for practical hydrometallurgical training of chemical engineers on university level has caused an inquiry for a complete equipment set-up of a laboratory copper-refining unit. As the equipment was intended for training students, the material of construction chosen (transparent PVC) allowed visual inspection of the reactions inside the equipment. An effort also was made to engage a group of students simultaneously during the training. Thus, all operations are controlled manually. The delivered equipment is shown above.

The following three unit-operations are included in the equipment set-up:

- Leaching copper oxidic material with sulphuric acid
- Purification of the leach solution with solvent extraction
- Copper metal production through electrowinning

Besides following the sequence of operations, all three unit-operations can be studied separately. Leaching is a batch operation, while solvent extraction and electrowinning are performed continuously.

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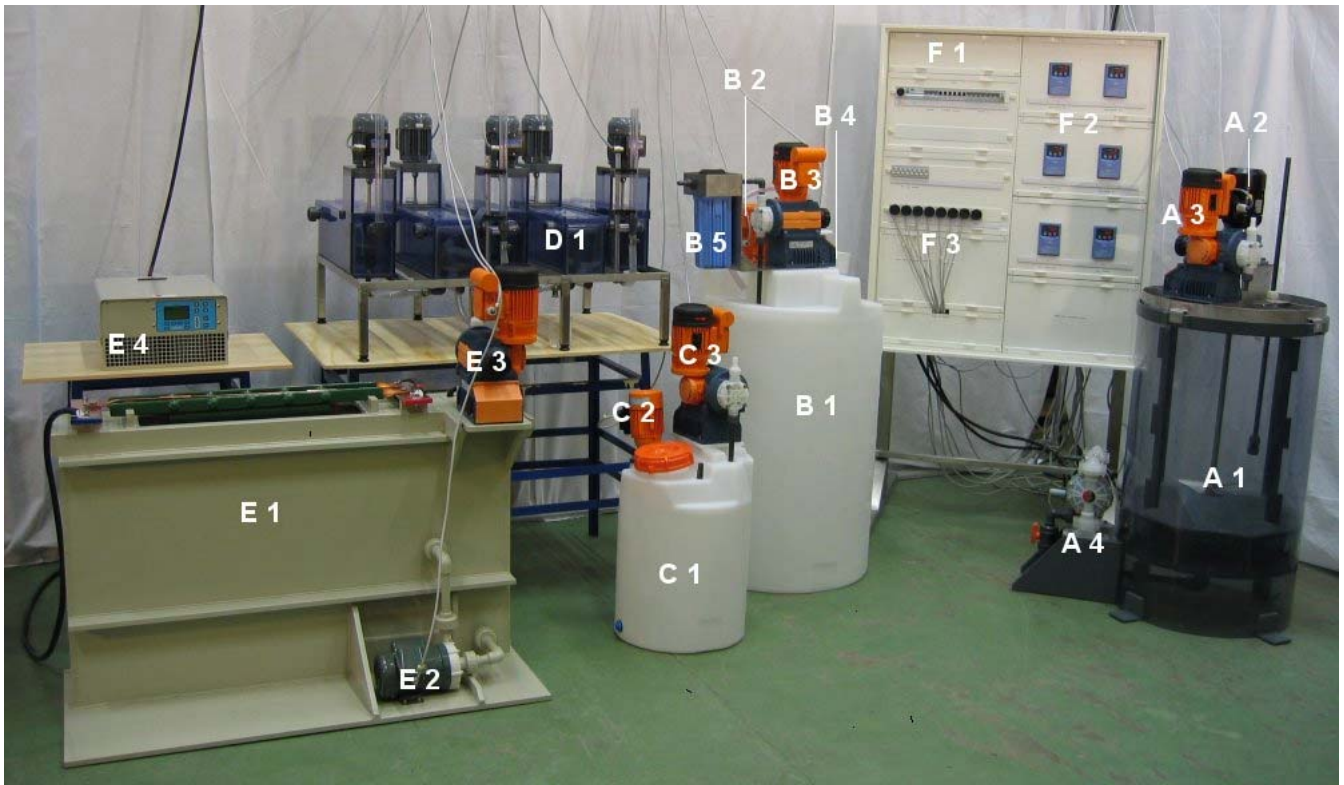
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Copper Refining Pilot Equipment

- University Demonstration Unit – Leaching, Solvent Extraction and Electrowinning



- | | | | |
|-----------|---|-----------|--|
| A1 | Leaching tank | C1 | Organic solution support tank |
| 2 | Stirrer , controlled by frequency inverter | 2 | Stirrer |
| 3 | Feed (clear solution) pump | 3 | Organic feed dosing pump |
| 4 | Slurry pump | D1 | Mixer-Settler arrangement |
| B1 | Feed (extraction) support tank | E1 | Electrowinning cell |
| 2 | Stirrer | 2 | Circulation pump |
| 3 | Feed (extraction) dosing pump | 3 | Strip solution (electrolyte) dosing pump |
| 4 | Roughing filter (Büchner funnel) | 4 | Rectifier |
| 5 | Fine filter (cartridge) | F1 | Control panel |
| | | 2 | Frequency inverters for mixer-settlers |
| | | 3 | Plugs for pump and stirrers |