

**MUST ECtop | Industrial Water Purification**

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**INTRODUCTION**

The MUST ECtop technology is a high effective wastewater treatment method for purifying difficult and demanding types of wastewater. The ECtop technology is a continuous electro-coagulation method, which has been developed over several years with development partners and universities as research partners. The focus of the technology is on wastewater, which contains dissolved impurities that are difficult to precipitate and which can be efficiently treated in a process loop for reuse.

**TECHNOLOGY**

MUST means **M**olecular **U**nique **S**eparation **T**echnology. The technology was developed over the past years and the achieved know-how is protected as IP in a patent. The ECtop method is based on a proven electro-coagulation technology, which uses the chemical-physical advantages for an efficient separation of predominantly dissolved or colloidal impurities.



The method is space-saving due to its compact design and can be set up and operated on site. This in form of containerized units or as a permanently integrated system.

**THE METHOD**

The main component of the ECtop method is the EC module, in which the purification takes place. The module is divided into an EC cell and a floc tower. The EC cell is a coaxial unit where, by applying direct current, the dissolved or colloidal particles are flocculated directly in the flow of the wastewater. The flocculation is achieved through the dissolving and applying ions, which can be of different types, depending on the wastewater and its impurities. In addition, the advantage of the vertical designed method and the function as a small electrolysis unit, are used in a targeted manner. Here, a tiny quantity of hydrogen is generated, which combines with the coagulated impurities and are caused to float as sludge or herewith so-called floc. The cleaned wastewater is discharge by using the siphon effect and the floc is geodetically extracted.

**STRENGTHS**

Das ECtop method is highly efficient and can be operated at a low cost. The ECtop systems are very compact and reduce the space required by factors compared to conventional systems. The technology and the standardized industrial components used are proven and ensure low-maintenance operation.

**PROCEDURE FOR A MUST ECtop - System**

Carrying out a test with MUST ECtop [lab] Lab-Reactor-Unit in your company as an indication of the achievable cleaning performance. Determination of the scope and integration in the process with the implementation of a test operation using ECtop iPlant (fully automated operation with a 4 - 6 m<sup>3</sup>/h ECtop container system).

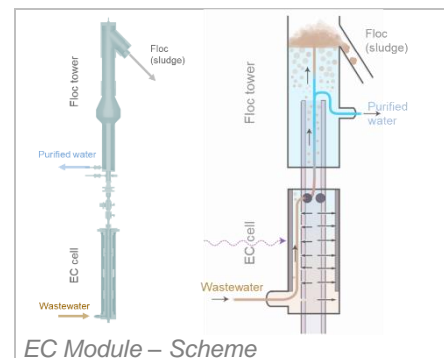
ECtop systems can be installed within a short delivery time and integrated into the operation or cycle in a modular and scalable manner.



MUST ECtop iPlant – mobile and fully automated test installation with 4 - 6 m<sup>3</sup>/h purification capacity

**ADVANTAGES FOR THE INDUSTRY**

- **Oil and gas industry** with cleaning and reusing of process water for improved performance
- **Mining and metallurgy industry** with separation of particles and recovery of valuable minerals and metals
- **Pulp & Paper industry** with the possibility of a closed water cycle and maintaining the process water temperature
- **Waste landfill sites** with elimination of heavy metals and toxic organics
- **Textile industry** with treatment and reuse of the process water
- As well as **other industries**



EC Module – Scheme

**OPERATIONAL ADVANTAGES**

- **Efficient cleaning**
- No extensive sludge treatment required
- The **resulting sludge is drier** and requires less energy for further treatment

**ECONOMICAL ADVANTAGES**

- **Low operating costs**
- Compact **space-saving footprint**
- **Decentralized systems**
- Low-maintenance operation

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