

## **Design and development of cold plasma based portable water treatment unit for armed forces in difficult conditions**

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### **Project Objectives**

- Development of a suitable new technique (plasma) which can be adaptable in portable water treatment
- Designing of a low weight, low cost portable unit for water treatment
- Optimization of the cold plasma treatment technique with varying voltage and treatment time
- Studies to evaluate the degradation of contaminant and water quality check
- Computational modeling of the treatment and its effectiveness in comparison with practical data
- Cost effectiveness of the portable unit, operation and economic evaluation of the treated water

### **Description**

Access of clean drinking water for armed forces in difficult conditions is a basic requirement. With the increase in the contaminations (e.g. bacteria, pesticides) because of pollution, worldwide, the need to develop new technologies to provide clean and safe water for drinking is on the rise.

Cold plasma method effectively combines the contribution of UV radiation, active chemicals, and high electric fields for the treatment of food and water. As a non-thermal processing technique the term cold plasma explains a mixture of ionized gas, charged electron and protons at ambient temperature. These reactive species facilitate inactivation of microorganisms by destroying their genetic material and interfering with their chemical components. The focus of this research work is to develop a portable device for treatment of drinking water. Ideally, this aims to address access to pure and safe drinking water in difficult conditions.