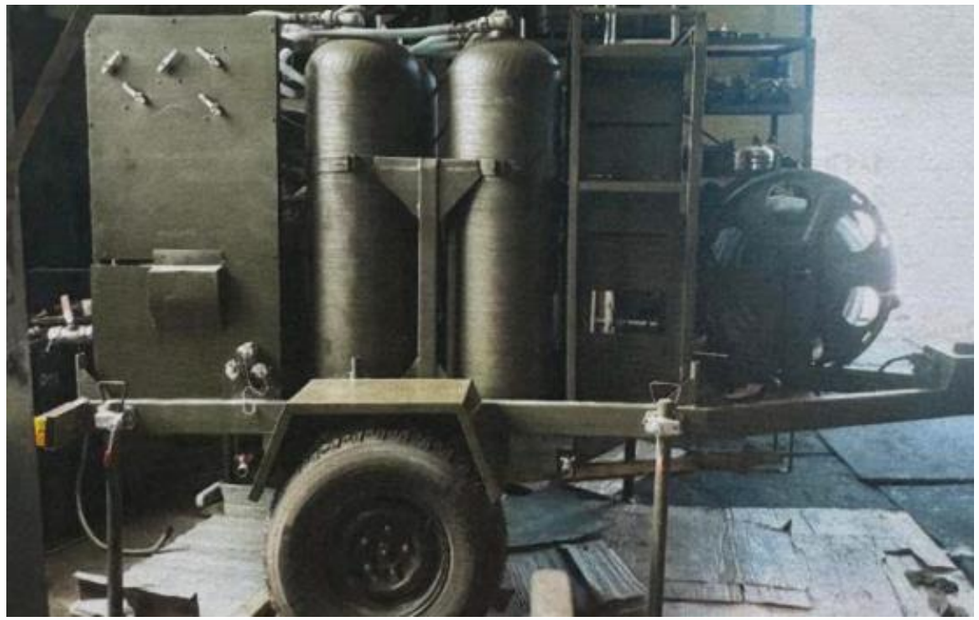
Dzherelo-2000 Mobile Water Treatment Station

The Dzherelo-2000 Mobile Water Treatment Station (MWTS) is designed for the treatment of surface water containing natural and artificial contaminants, including those resulting from biological, chemical or radioactive contamination. This technical description outlines the main performance characteristics and functioning principles of the system.



The MWTS consists of an MWF-2000 mobile water filter manufactured by PARTNER Systems (Poland) and a C-1500 single axle trailer manufactured by Spets-Service LLC (Ukraine). It's designed for field deployment at the battalion level, with a two-person service group capable of treating 20-24 m^3 of water per day.

Technical Specifications

1,500 kg

Total Weight

Station mass with ±50 kg tolerance

2 m³/hr

Treatment Capacity

Minimum water processing rate

30 min

Deployment Time

Maximum time required for setup

2 persons

Service Group

Required personnel for operation

The MWTS measures 3,650 mm in length, 1,620 mm in width, and 2,220 mm in height (all ±50 mm). It employs an uninterrupted stream treatment technology and can function in water temperatures from +1°C to -30°C and air temperatures from -30°C to +50°C. The system can travel at speeds up to 60 km/hr on Class I and II roads, and up to 25 km/hr in field conditions.

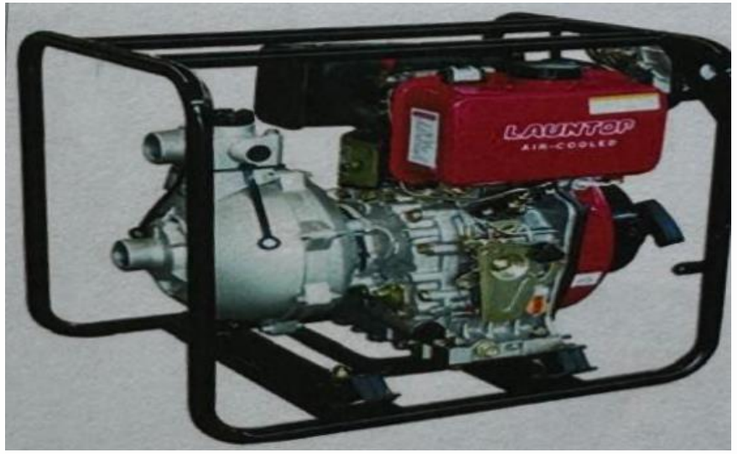
System Components Overview

Base Chassis

The single axle trailer serves as the principal vehicle of the MWTS, based on C-1500 or GO chassis. The trailer contains a towing device for attachment to military trucks, with uniform distribution of elements ensuring no excessive load on the towing device.

Filtering Columns

Four polymer columns (F1-F4) with 140L capacity contain activated charcoal. F1 and F2 columns are used for coagulation and filtration (initial treatment), while F3 and F4 are used for absorption processes.



Motor Pump

The Launtop diesel 6 KM 15M3/H Motor pump provides 6 hp maximum engine power with 15 m^3/hr nominal capacity. It features a 12.5L fuel tank, electrical triggering, and can achieve a water rise height of 110m.

Filtration System Details

F1 & F2 Columns

Used for coagulation and initial filtration

- Filled with 35 kg of DTO activated charcoal each
- Water flows from top to bottom

F3 & F4 Columns

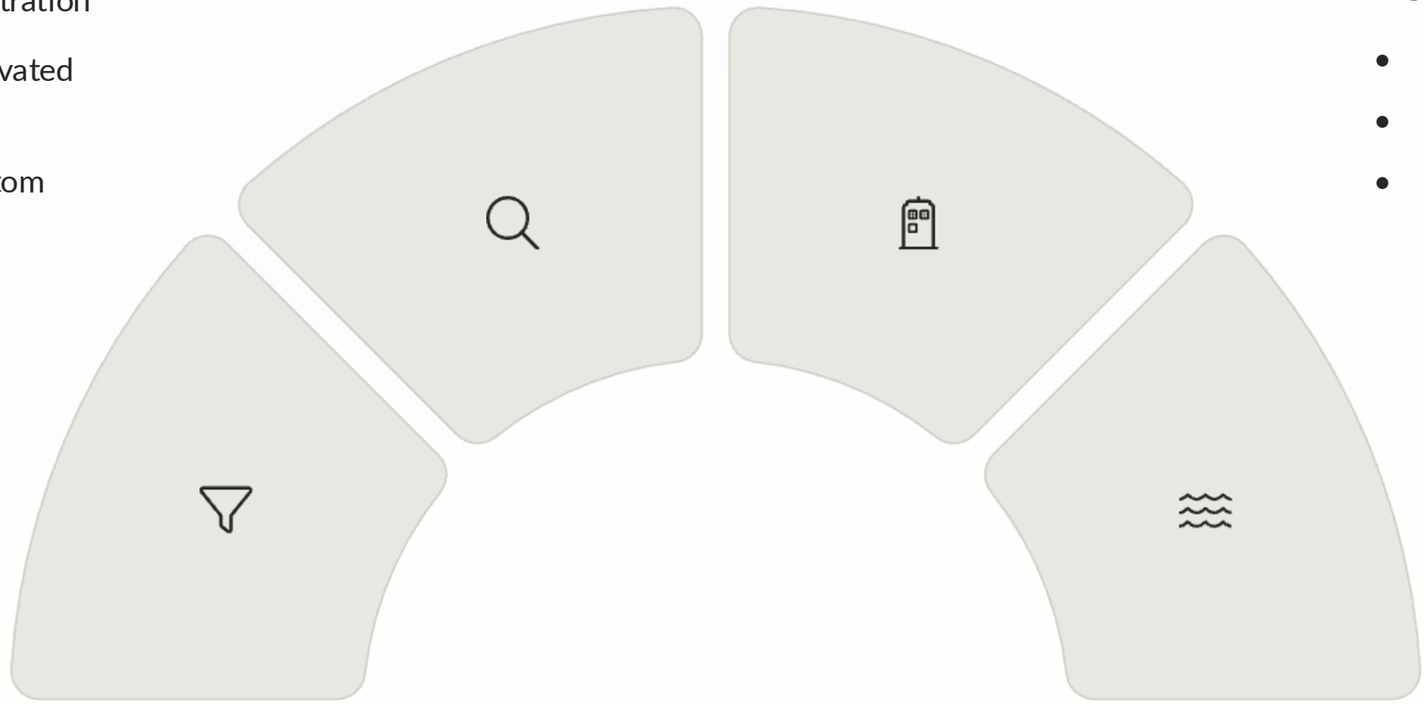
Used for absorption processes

- F3 filled with DTO activated charcoal
- F4 filled with DTX activated charcoal
- 62 kg of substance in each column

Column Specifications

Physical dimensions and capacity

- Total capacity: 150 dm^3
- External diameter: 410 mm
- Total height: 1,472 mm



Water Treatment

Chemical treatment parameters

- Oxidant dose: 50 or 100 mg/dm^3
- Coagulant dose: 50 mg/dm^3
- Residual chlorine: 2 to 5 mg/dm^3

Dosing System & Reagents

ProMinent BT4b Dosing Pumps Pumps

These specialized pumps deliver precisely measured quantities of reagent solutions to both raw and treated water. They ensure accurate chemical dosing throughout the treatment process, maintaining consistent water quality.

The pumps are controlled through the electrical system panel and can be adjusted to deliver different reagent concentrations as needed for varying water conditions.

Reagent Tanks

Three 10 dm^3 reagent tanks are located in the rear section of the MWTS under the dosing pumps and electrical switchboard. These tanks store the appropriate chemical reagents needed for water treatment.

The tanks are fabricated from special plastic that can withstand chemical reagents. Their design ensures easy discharge of reagents and removal of sediment that may occur when using calcium hypochlorite.

Control Systems

Water Flow Control Panel

Located in the lower section of the panel are pressure gauges indicating water pressure in each filtering column and valves for air venting. The intermediate section contains a meter that records the total amount of clean water produced since the beginning of operation.

Hydraulic System Control Panel Panel

Features valves for setting the appropriate functioning mode of the MWTS, outlet metal pipes for connection with water output hoses, and an informational plate showing the location of valves and connectors for each technological operation.

Electrical System Control Panel

Powered by a 12V supply, this panel contains switches for the heater, lighting, dosing pumps, main pump start/stop, and main/emergency functions. It provides centralized control over all electrical components of the system.

Auxiliary Components

Heating Device

The Air Top AT2000STC heating and ventilation device allows MWTS operation in winter conditions when ambient temperature is below zero. It heats the air under the MWTS tarpaulin and is controlled from the electrical system panel.

PVC Storage Tank

A 2,500 dm^3 PVC tank with special antibacterial coating for storing drinking water in field conditions for up to seven days. It can also store water while rinsing the filtering columns. The complete kit weighs approximately 12 kg.

Injector System

Used for rinsing the F1-F4 columns and venting air from them. The working medium is untreated water delivered by the pump, creating pressure in the mixing chamber (0.05-0.06 MPa) when water is sucked through the suction hose.

Operational Modes & Procedures

Conventional Treatment

Standard water purification using F1, F2, and F3 columns with specific valve configurations as shown in the informational table. This is the primary operating mode for normal conditions.

Special Treatment

Enhanced purification mode for water containing biological, chemical, or radioactive contaminants, utilizing all four filtering columns with adjusted valve settings.

Rinsing Procedure

Maintenance operation to clean individual filtering columns (F1-F4) using the injector system and dedicated rinsing hoses with specific valve configurations.

Charcoal Removal

Procedure for replacing exhausted activated charcoal in the filtering columns after approximately 100 hours of operation, requiring specific valve settings and the charcoal removal hose.

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