

MOBILE WATER TREATMENT FACILITY

UMUV 01



January '10

Basic description of facility

UMUV 01 is a multi-purpose mobile water treatment facility which enables treatment from different sources of underground and surface water.

It uses distinguished technologies which all together enable connection in different operation modes depending on water chemistry and type of input water in order to get the required quality of output water.

Technological components of **UMUV 01** consist of integrated system installed on the fixed frame which is placed on the euro pallet. It enables its quick transport and fitting on the needed place with the minimal costs.

UMUV 01 cleans up undissolved substances, aluminium, organic substances including humic, color, water cloudiness, heavy metals (Pb, As, Cd) and partially iron and manganese from the raw water. Water is sanitary afterwards.

UMUV 01

| Amount of treated water (l/hour) | Size wxdxh (mm) | Weight (kg) | Supply (W) | Tension (V) |
|----------------------------------|-----------------|-------------|------------|-------------|
| 50-400 | 800x1200x1500 | 361 | 2100 | 230 |

Use

This treatment facility is designed for the rapid deployment in the affected area or for the use of armed guards for a supply of rear, field hospital and similar facilities.

- army – in the rear area, military field camps, during trainings or deployment within military peace missions, during decontamination activities within engineering activities;
 - humanitarian help – during humanitarian supplying activities, in the refugee camps, for drinking water supply in the contaminated areas;
 - civil protection – as a fixture of integrated emergency system, as a deployment during natural disasters, earthquakes or floods, contamination of traditional drinking water sources, disturbance of local infrastructure, ecological and natural catastrophes, etc.
- Facility MWTF 01 (1000 l/hour) was delivered to the Army of Czech Republic in 2006.**

Details

It is a compact facility which is placed on the self-supporting construction with the transport possibility. *Generator* with a rated power of 2,7 kW, 230V with a gas engine is a power supply. It is placed under the shelter up to the maximum distance of 10m. **MWTF 01** can be connected to the public electrical power network (it is necessary to provide minimum supply as it is supplied by the generator).

Grounding of facility frame and electrical cabinet must be done before the start-up via *grounding terminal* which is a part of standard equipment.

Pumping of raw water from the surface source is provided by *self-suction pump* from the maximum depth of 7m.

The facility is fully automated and consists of three-level filtration in automatic *pressure filters TKV 17 (2pcs)* and *TVKP 17H (1pc)*, which are gradually filled by filter sand of various granularity and activated carbon. Control of automatic valves for filter TVK is pneumatic. *Compressor* is the source of compressed air and it is a part of the facility. Filters TVK are controlled by control units with a microprocessor SIEMENS. Filter TVK-H is fully controlled by electronic control valve. Filter washing is done automatically. Water is not

treated in this period. During filter washing the water flows off through the waste piping (10m) out of the facility.

Pre-treatment of raw water before filtration is ensured by automatic chemical supply (commonly used in water-supply engineering) according to its quality, flow and treatment requirements. The first set-up is done by the trained employee. In the standard design the chemical-coagulant PAX 18 is dosed with a help of two *pulse dosing pumps*. There are two dosing pumps. The first one doses in front of the first filter TVK 17. In case of extremely impure water the second dosing pump switches on in front of the second filter TVK 17.

Disinfection of treated water is done automatically at the output with a help of *pulse dosing pump* by the dose of sodium hypochlorite (SAVO, BLEACH) Water sanitary will be doubled. That is the reason why the water after chlorination will flow through safety *filtration for 5 microns* and *UV radiator* before the pressure accumulation.

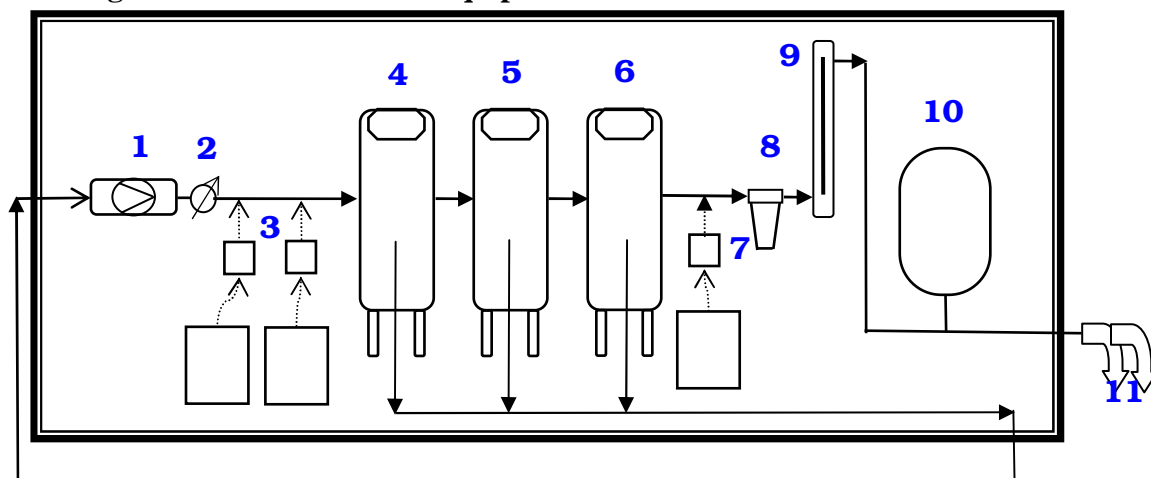
Water will be accumulated in the pressure tank of 35l capacity.

Output of treated drinking water will be provided by two *taps 1/2"* with a possibility of disassembly and connection of outlet hose 1/2" (see option equipment).

Set of chemical dosing set-up including check-up measurement of free chlorine in the treated water and basic safety working aids (for the skin and eyes) are also parts of the facility.

We recommend ordering the service set of spare parts for 20 facilities due to a necessity of immediate repairing of some worn-out parts.

Technological scheme – standard equipment



1. self-suction pump for raw water 1pc
2. pulse water flowmeter 1 pc
3. dosing pumps for pre-treatment 2 pcs
4. corrosion-proof pressure sand filter TVK 17 1 pc
5. corrosion-proof pressure sand filter TVK 17 1 pc
6. glass-fiber reinforced pressure carbonic filter TVKP 17H 1 pc
7. dosing pump for sodium hypochlorite 1 pc
8. piping filter for 5 microns 1 pc
9. UV radiator 1 pc
10. pressure accumulation of treated water with a max. capacity of 35 l 1 pc
11. intake taps 2 pcs
12. sewage water from filter washing 1 pc

Power parameters of UMUV sets

We are able to design and manufacture such a solution of mobile water treatment facility so that it will meet your requirements. Power parameters of mobile water treatment facilities UMUV are given below.

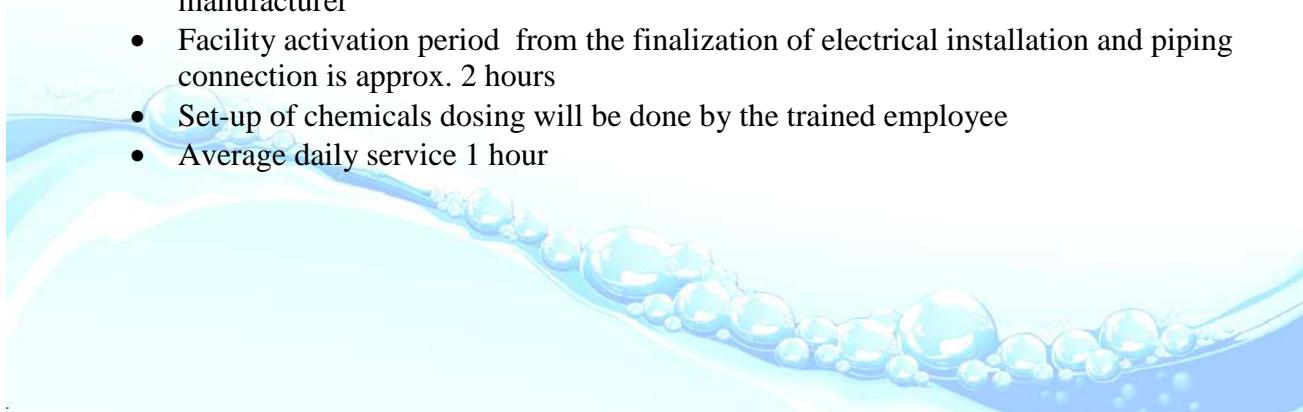
| Type | Amount of treated water daily in m3 | A Number of persons | B Number of persons |
|---------|-------------------------------------|------------------------|------------------------|
| UMUV 01 | 7,2 | 2400 | 72 |
| UMUV 1 | 24 | 8000 | 240 |
| UMUV 3 | 72 | 24000 | 720 |
| UMUV 5 | 120 | 40000 | 1200 |
| UMUV 10 | 240 | 80000 | 2400 |
| UMUV 15 | 360 | 120000 | 3600 |

A use of treated water only for drinking(3l/day)

B use of current consumption(100l/person)

Technical conditions for operation

- Normally it is necessary to place the facility under the shelter (covering for the free-standing placement – see option equipment)
- Grounding of frame and electrical cabinet via grounding terminal
- Outdoor temperature +5°C up to + 45°C
- Permanent supply of raw water
- Suction of raw water from the depth of max. 7m (increase up to 13m – see option equipment)
- Source distance max. 10m
- Guarantee of drinking water quality required in the ordinance of Czech Ministry of Health No. 252 Coll. dated 22.4. 2004 which fixes sanitary requirements for drinking water and by ordinance No. 187 dated 4.5. 2005 which supports the ordinance 252/2004 Sb. and according to drinking water quality guidelines of WHO 2004 („Guidelines for Drinking Water Quality“) is ensured in case of facility use for raw water quality of limiting values which are mentioned in the appendix No.13 enclosed to the ordinance of MH No.428/2001 Coll., category I. a II.); facility use for waters which do not meet the criteria of this ordinance should be consulted with the manufacturer
- Facility activation period from the finalization of electrical installation and piping connection is approx. 2 hours
- Set-up of chemicals dosing will be done by the trained employee
- Average daily service 1 hour



Option equipment

- *Spare chemicals PAX 18, 10 l* – operation chemicals for input coagulation (consumption period approx. 40 days)
- *Spare chemicals SAVO (BLEACH), 5l* – operation chemicals for sanitary protection (consumption period approx. 40 days)
- *Spare UV radiator* – doubled sanitary protection (operation period 8000 hours)
- *Covering for MWTF 01* – proof against the dripping water (rain)
- *Car trailer* – transport possibility for MWTF 01
- *Feeding sewage pump 0,7 kW* – for the suction increase of 13m
- *Suction hose 10m, 1", incl. rapid coupling* – for the possibility to connect feeding pump
- *Outlet rubber hose 25m, 1/2", incl. rapid coupling* – connection to distant consumption point

Product documentation and certificates

All manufacturing is certified according to ČSN EN ISO 9001:2001 and 14001:2005.

Technology of water treatment is manufactured from the facilities and materials with drinking water certificates.

VODASERVIS, s.r.o. owns utility design of MWTF and filters TVK registered at Patent Office, Czech republic.

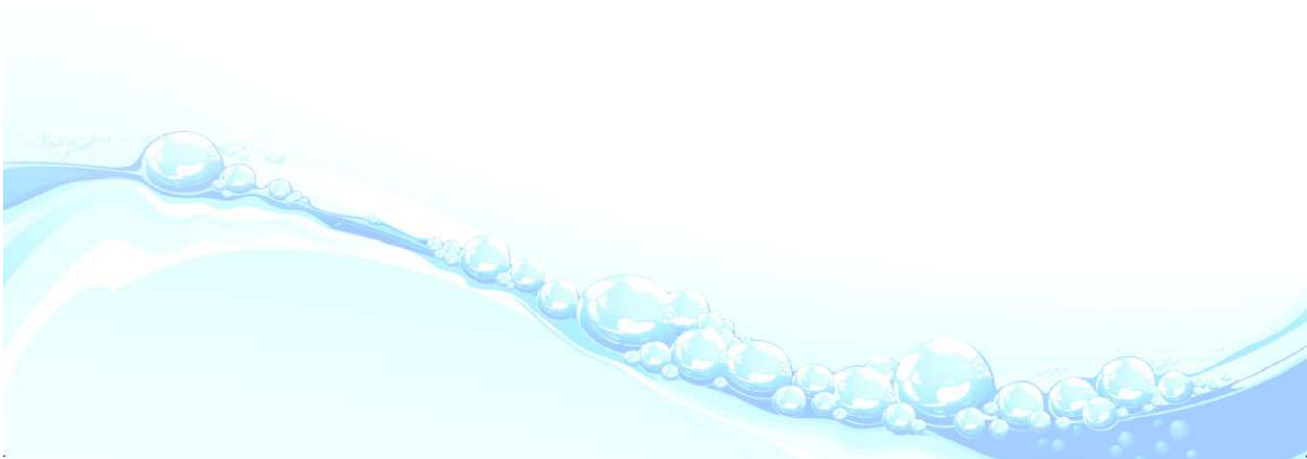
Manual MWTF 01 (CZ).

Operation log (CZ).

Declaration of conformity of individual facilities.

Electrical revision.

Overseas packing.



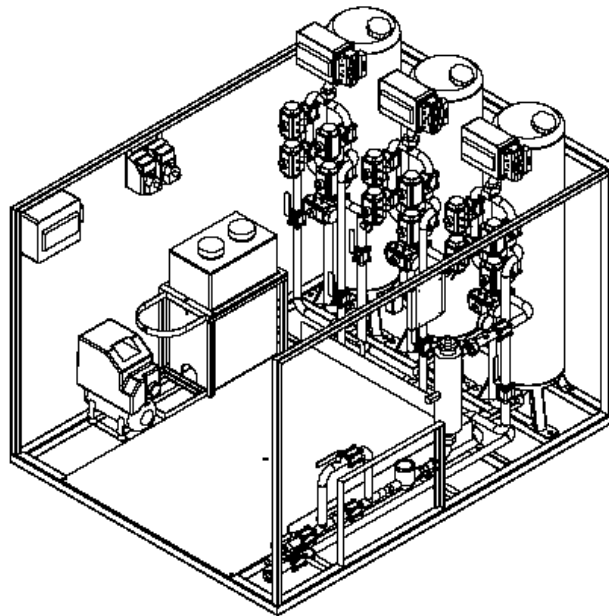
Illustrative pictures



MWTF manufactured for Army of Czech Republic



MWTF in the small container at the fair



UMUV design preview

