



AUTOMATIC VEHICLE WASHING SYSTEMS

**TRAIN WASHING SYSTEMS**

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## ABOUT US

DBF is the trademark brand of Automatic Vehicle Washing Systems produced by **ALSER Makina San ve Tic. Ltd. Co.** which is founded in 1987.

Production, Marketing and After Sales Service of Automatic Vehicle Washing Systems

Rail System Washing Plants

Vehicle Water Tightness Testing Plants

Water Treatment and Re-cycling Systems

Modern Agricultural Greenhouse Systems

General Equipment and Machine Manufacturing

Train Progression-Pulling Systems

International trade of several equipment

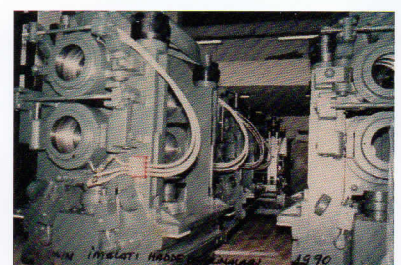
Our companies produce automatic vehicle washing machines and facilities for cars, buses, trucks, tankers, light rail systems, locomotives, subways, trams and various train wagons.

Design and production are made by using modern technology instruments. and

completely local engineering products. The auxiliary equipments used in the production are carefully selected from the best in the world. All machine bodies and related material are hot dip galvanized and phosphate coated against corrosion and protected by electrostatic paint.

In the past, our companies had set up Iron and Steel Plants in Tunisia and New Zealand and established greenhouse facilities in Russia. Since 1992, our companies has been dealing with automatic vehicle washing systems. Our company started production in 1995 with the acquisition of the Italian Cccato technical license.

Our company established over 2000 facilities in Turkey and over 500 facilities abroad. The DBF has become a global brand in this area.





# AUTOMATIC TRAIN WASHING PLANTS

Automatic Train Washing Systems are fixed systems where the train-sets, trams, or underground (metro) trains are passing through even driven or pulled on a progression system for constant control speed. During the operation depending on the chosen process, the rail vehicles may pass through the cooling prewash arch, chassis wash, emollient application arch, nose wash, high pressure locomotive wash, top brush, top corner brushes, skirt brushes, side brush washes, rinse wash, drying agent wax arch and drying fans. The dirty water coming out of the train wash is treated and recycled at a level minimum 70% thus the water is saved. With our experiences more than 30 years we have designed, produced and installed many plants in the World.

Every installed plant is designed according to the customers need with the DBF knowhow. We also produced train progression pulling systems for the constant and adjustable low speed of the trains for perfect washing processes. we use the latest PLC computer and SCADA control systems and even have the possibility to design and install remote control and camera systems in the plants.





# TRAIN WAGON WASHING PLANT UNITS

## PREWASH UNITS

Water at 7.5 bars is sprayed over the train wagon surfaces for cooling and prewashing.

## SOFTENER DETERGENT SPRAYING AND BRUSH LAYING ON SURFACE

The softener detergent which is sprayed is laid on the side surfaces, the upper corners with radius including the side wall tops and the ceiling sides and the side skirt surfaces by automatic brushing actions of those units. The brushes follow the contour of the vehicles as they travel past by pneumatic differential regulation control of brush pressure.

## AUTOMATIC NOSE WASH UNIT

Two sets of Side Brushes in this section, are mounted on each side of the track at fixed locations. The brushes are retracted back at vertical position at the start and finish of the cycle and move to their horizontal operating positions as the cycle begins to brush and rinse wash. The brushes follow the contour of the vehicles carefully by the aid of the electronic power brush pressure control. Those systems have their own chemical dosing and spraying system. The robotic system gantry moves forward and backward and the horizontal brush moves up and down in following the nose section of the vehicle while washing operation takes place. In the first forward operation the chemical is sprayed and at the rear movement the rinsing brushing takes place. As the washing operation of the nose finishes, the brushes get back to vertical home position.

## EAVE BRUSH UNIT

The upper corners with radius including the sidewall tops and the ceiling sides and the side skirt surfaces are washed by automatic brushing actions of those units together with washing water. The brush pressure is controlled by power control system.

## SIDE SKIRT WASHING UNIT

The surfaces of the lower sides of the vehicles are washed by sprayed water and brushing action. The movement of the vehicle brush blocks are driven by pneumatic pistons.

## SIDE WASH UNIT

The side surfaces of the vehicles are washed by sprayed water and brushing action. The movement of the vehicle brush blocks are driven by pneumatic pistons. The brushes follow the contour of the vehicles as they travel past by pneumatic differential regulation control of brush pressure. This guarantees the efficient washing of the surfaces.

## RINSE WATER SPRAY UNIT

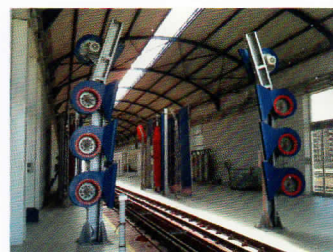
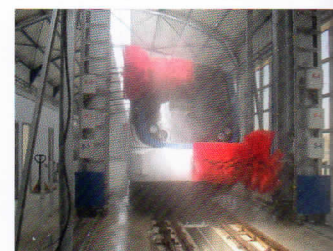
Rinse fresh water is sprayed over the train's surfaces.

## DRYING AGENT WAX SPRAY UNIT

Drying agent wax is dosaged in the spray water to enable a slippery surface.

## WATER SWEEPING OFF FROM SURFACE - DRYING UNIT

Water left on the surfaces on the trains are swept off by the high velocity airflow fans.





# LOCOMOTIVE WASHING ADDED UNITS

## HIGH PRESSURE BOGIE AND UNDER CHASIS WASHING SYSTEM

The under surfaces, bogie equipment and internal surfaces of the wheels are washed with cold or hot (due to demand) high pressure (15 bars-50 bars) water. The washing efficiency can be increased by under chasis chemical spraying.

## ROTOWASH-LOCOMOTIVE BOGIE HIGH PRESSURE SIDE WASH

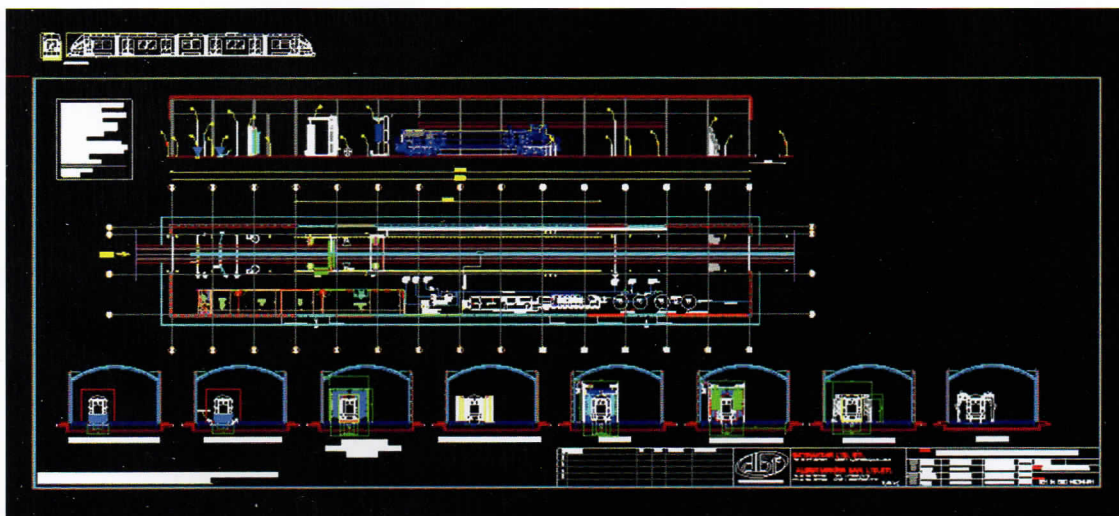
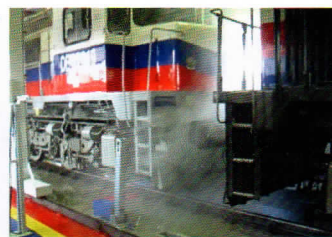
The system Works automatically by the sensing of the photocell system while vehicles are moving. While the train is moving, the side surfaces of the bogie equipment and the wheels are washed perfectly by the use of hot or cold high pressure water through a specially designed equipment made of stainless steel rotors and rotating impact spray jets. The system has its own high pressure water pump.

## MOVABLE CHEMICAL SPRAY ARCH

The locomotive after passing the previous operations stop in front of the movable chemical arch. The chemical arch moves over the locomotive spraying chemical on the full length and stops after passing the vehicle.

## MOVABLE HYDROWASH HIGH PRESSURE WASHING UNIT

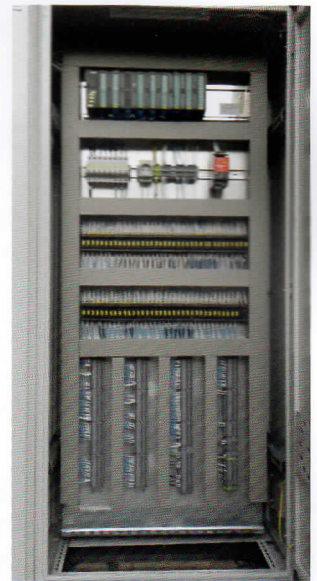
This unit begins moving 10 meters behind the movable chemical arch and sprays high pressure at 100 bars over the surface of the locomotive. At the end of the locomotive returns back still spraying high pressure water. The top high pressure spray is by following the profile.





## COMPUTER AIDED AUTOMATION AND CONTROL SYSTEM

The train wash plant is controlled through a programmable logic controller (PLC) that sequences all the automatic events. However the plants can be controlled manually inside the shop and automatically from the depot control room. SCADA system provides the possibility to see all the unit phases while washing action takes place. The command, control, working phase, failure diagnostic and feedbacks can be provided by the use of this system. Water pumping, re-cycling, critical level monitoring of the water and the chemicals, water temperature, air and water pressure, energy consumption of the system, the current values that the electrical motor are fed, the phase and timing of the electrical switches, the actual position of the nose wash system can be seen on the scheme of the plant on the monitor of the main command and control desk. The system feeds back with warnings for the critical levels of the water and chemical. From the PC computer daily reports and washing information can be seen. Diagnostic system is installed in the system.



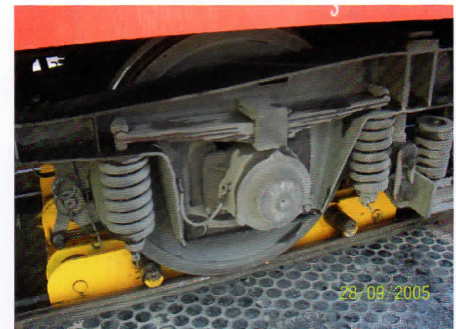
## CCTV SYSTEM

The Close Circuit TV (CCTV) System can be design and installed by our own personel. All the phases of washing, view of the units from different angles while working, interior, entrance and exit of the depot can be monitored and recorded by those camera systems.



## TRAIN PROGRESSION PULLING SYSTEM

The Train Progression Pulling System is desgined to move the trains and wagons at speeds lower than the speeds that can be driven by its own engines. With some special mechanical without electrical equipment the wheels of the train are trapped by the system and after the pulling by wire rope action is completed, the wheels are released. The equipment speed is under the control of an invertor. It can also be controlled by the washing systems main computer.



## TURN KEY SYSTEMS

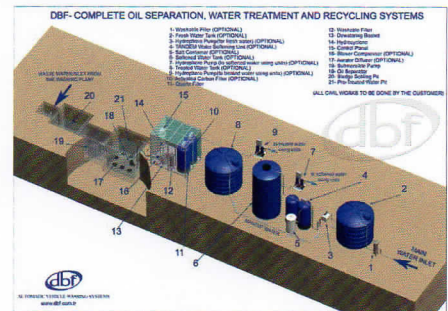
We not only manufacture and market systems for washing the vehicles but with all the knowledge we have, we can design, manufacture and install custom designed, complete turn-key systems due to our customer requirements in several industries.





## WASTE WATER TREATMENT AND RE-CYCLING SYSTEM

The Waste Water Treatment and Re-cycling System are used to maintain the local regulation for water drainage and to save water used during washing operations. The oil, carbon dust, mud, detergent, drying agent wax and similar dirt remains in waste water are treated in the system. We can build Physical, Chemical and Biological Treatment systems for different purposes. Those systems are designed to work sequentially and efficiently with the train washing plant units. We are, also incorporation with various companies who are the World wide suppliers for Biological Waste Water Treatment and Re-Cycling Systems. Water filtration, softening, de-mineralisation, reverse osmosis system can also be installed.



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