

# Mobile wastewater recycling for EHR Fahrzeugtechnik GmbH



**ROBOTCHEMIE was commissioned by EHR Fahrzeugtechnik GmbH from Austria with a plant project for mobile membrane filtration of heavily contaminated wastewater. ROBOTCHEMIE was able to successfully solve the project through a combination of extensive tests and innovative system concepts.**

EHR Fahrzeugtechnik GmbH from Austria is an expert for special cleaning vehicles, which are used in municipal technology, road construction and the airport area. The EHR team has many years of international experience in development and manufacture of cleaning vehicles. Their products are constantly optimized. In order to live up to the responsibility for the environment, EHR Fahrzeugtechnik GmbH does not use any chemical additives during cleaning.

The experiences from previous projects provided the ideal basis to further develop the existing technology. The conditions were clearly defined right from the start: The membrane filtration system should be installed in a vehicle that removes contaminants of the runways at airports. The plant had to work with high precision and availability to meet the tight cleaning periods in the narrow timeslots. The airport cleaning not only requires exact planning, the technology must also work flawlessly.

## **Active environmental protection right from the beginning**

The contaminated wastewater had to be treated in short time by the filter system so it will be fastly available for the further cleaning process in order to realize the tight time limits at all. A flow rate of up to 5000 liters per hour was a basic prerequisite, so the plant could work properly and clean the required areas. Due to this, the volume of waste water could be reduced and operating time of the plant could be extended. The concentrated waste sludge and the residual waste water can be disposed of legally compliant after the end of cleaning.

The operation system had to be programmed in such a way, less technically trained employees could carry out the cleaning cycles. Adjustment, parameterization and maintenance of the system should only be reserved for the technicians of EHR Fahrzeugtechnik GmbH.

**„There is no second chance: if the cleaning cannot be done in the given time, the cleaning operation is not successful.“**

In order to ensure the high availability of the system and meet the design requirements, various factors had to be considered in the technical planning and programming. A special challenge for the designers at ROBOTCHEMIE was the combination of very limited space with high demands on the technical performance, reliability and accessibility to the individual modules. The compact design offered only few scope

for the designers. The requirements for the software and control electronics were a final challenge.

The project process was funnel-shaped. First of all, the flow rate had to be ensured at all times, despite the existing contamination of rubber abrasion and atmospheric contamination.

***The clear specifications and the limited space already restricted the scope for the technical components right from the start.***



With the help of extensive preliminary tests, ROBOTCHEMIE found the ideal combination of ceramic membranes, pore size and pump technology which, despite its compact design, could minimize the power losses of the various resistors in the cross-flow filtration and ensure consistently high performance. For pump technology a hydraulic control could not be used. The hydraulic control turned out to be problematic and would have burst the given space due to increased requirements. The decision was therefore made in favor of electronically controlled pump systems because of safety, reliability and space.

To meet maintenance requirements, ROBOTCHEMIE designed the system in such way, pumps and modules can be easily and safely assembled and disassembled. Integrated folding control cabinets accommodate the system control and provide more space. The technical elements are well protected, but easily accessible.

The control of the system had to be fully automatic. Various parameters such as flow, pressure and temperature are automatically monitored so that the system can independently adjust to local conditions. For example, safety routines prevent clogging of the membrane pores and can initiate cleaning cycles fully automatically to prevent damage to pumps and membranes. In addition to the automatic mode, the system had to have different setting options for different user groups, e.g. manual operating options or special programs for module and pump maintenance. The control had to be done by touch panel. ROBOTCHEMIE relied on the proven Siemens technology and control elements to fulfill all customer requirements.

The project development was accompanied by numerous preliminary and intermediate tests. In all phases of conception, construction and programming, ROBOTCHEMIE included further customer requests based on the tests. The preacceptance at ROBOTCHEMIE took place without any problems, so that the final acceptance and handover at EHR Fahrzeugtechnik GmbH in Austria could follow quickly.

***Services tailored to the customer***

In addition, ROBOTCHEMIE offers further options the customer can come back to even after delivery of the system. For external monitoring, the system technology can be equipped with a remote service. The mobile visualization of the technology is another way to ensure the monitoring in standby times or to monitor the system from an external point by technicians of EHR Fahrzeugtechnik GmbH during the cleaning process. The monitoring concepts increase reliability and ensure compliance with tight deadlines.

The EHR Fahrzeugtechnik GmbH can also book various maintenance packages to ensure a parts supply within a short time. ROBOTCHEMIE also offers individual training packages for different user groups. All packages are precisely tailored to customer needs and complete the service.

The system is already in use successfully. The comprehensive tests in all project phases have paid off: all required values are achieved and even exceeded. The maintenance and cleaning concept was completely successful as well as the operating concept. The project is trend-setting for further development of similar cleaning vehicles. EHR Fahrzeugtechnik GmbH and ROBOTCHEMIE are planning further cooperation for similar projects in the field of mobile filtration technology.



 **Do you have you any questions and do you require a product consultation?**

*Our sales team and our chemistry-technical consultation service are glad to remain available to you.*

Contact us by telephone: +49(0)209/95899-0  
or by e-mail: [info@robotchemie.de](mailto:info@robotchemie.de)