



## Metro and municipal railway of Paris

### VACUDEST provides clean water for train maintenance

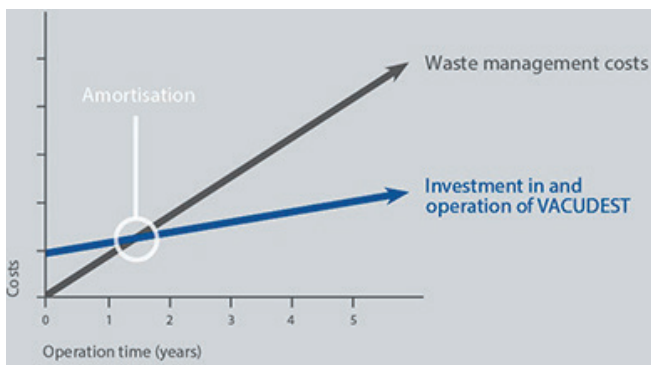
Every year, more than 3 billion passengers are travelling in and around Paris with trains and buses from RATP – the “Régie Autonome des Transport Parisiens”. This major public transport company in Paris operates divisions like the Paris Metro System, parts of the RER (trains of the Réseau express régional d’Île de France), a huge bus system and several tram lines.

All the trains and busses have to be maintained in certain time intervals. The technical revision of the trains is organised in different workshops in and around Paris. In the maintenance process, a lot of washing waters (i.e. from parts cleaning) and emulsions (cutting and drilling emulsions are produced). Because of environmental laws, these waters may not be disposed of into the public sewer system, but have to be destroyed by specialised companies, creating high cost.

Due RATP’s environmental policy, the transport operator tried to find an environment friendly, cost effective, simple and reliable treatment system for the emulsions and washing waters. After careful analyses of process based on the H<sub>2</sub>O VACUDEST different technologies, RATP decided for a process based on the H<sub>2</sub>O VACUDEST - technology. This process allows zero liquid discharge since the distillate can be recycled. Thus fresh water resources can be saved and fresh water treatment cost reduced to a minimum.

#### **Treatment concept with VACUDEST Clearcat vacuum distillation system**

The different types of polluted process waters are collected in a 10 m<sup>3</sup> storage tank prior to being fed into the VACUDEST. This size of the tank gives the possibility to compensate fluctuating process water flows because of unsteady maintenance activities in the work shop. After separation of floating oils by a



skimmer, the emulsion is fed into VACUDEST unit. This vacuum distillation system produces purified process water, which can be either reused in the washing process or disposed of into the public sewer.

The latest project in Paris includes a VACUDEST 250 Clearcat-System for treatment of up to 1.250 m<sup>3</sup> of wastewater. Because of the patented Clearcat technology, the treatment of water containing hydrocarbons is much more efficient compared to conventional evaporator combined with residual oil absorbers for distillate post treatment. The innovative Clearcat technology produces crystal clear distillate, virtually free of oils, heavy metals and salts without any post treatment. Thus space required, investment and operation cost are lower.

### Activepowerclean (APC): A milestone to reduce energy consumption

The effect that the power input into a vacuum distillation system is increasing at high evaporation rates due to scaling on the inner heat exchanger surface. To reduce this effect, H2O GmbH developed the Activepowerclean-technology. The heat exchanger of the vacuum distillation system is cleaned during operation continuously by means of small ceramic grinding balls of VACUDEST.



Activepowerclean heat exchanger

Since 1998, the approved APC system is available for middle range and large VACUDEST systems. In the new VACUDEST series, the Activepowerclean heat exchanger was generously enlarged and fluid dynamic parameters have been improved, thus chemical cleaning is reduced and energy consumption is reduced by 15 %. In addition the new Activepowerclean grinding balls act like boiling stones and thus reduce foam formation drastically.

### The new VACUDEST Vacutouch control panel

For the new VACUDEST generation H2O has developed a new, innovative control system. The new PLC control system guarantees uncomplicated handling via process visualisation and user guidance. Due to features like Profibus and Ethernet connection, the VACUDEST can be integrated flexibly in superordinated control systems or can be operated via remote access.

### Project management

In a team with engineers from H2O and RATP the complete system was designed according to the special requirements of RATP. Total project management and project execution was to the full satisfaction of RATP.

### Advantage of Vacutouch



Vacutouch Control System. Optimized system availability, highly comfortable.

- Complete transparency of plant performance due to extensive log book functions
- Optimized program functions like automatic adaption to fluctuation process water qualities
- Test run procedure, monitoring and displaying of maintenance schedules and many other
- Remote service possibilities enabling fast H2O service support
- Alarm signal transmission via SMTP to superordinated systems
- Online Program updates guarantee an up-to-date VACUDEST

### Installations all over the Ile of France

Because of all the good experience with the first installation – a VACUDEST 250 in Sucy. En Brie – four more installations have been realized in the meantime. Systems with a capacity of 200 to 350 litres per hour make sure, that yearly 6.000 m<sup>3</sup> of emulsions and washing water are processed by VACUDEST technology: An ecologically friendly process water treatment system for an environmental friendly public transport company.

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VACUDEST 250 Clearcat for the treatment of degreasing rinsing water