

## **Aqueous cleaning of all kinds of pump components**

**At the company Lutz Pumpen GmbH, manufacturer of pumps, located in Wertheim, the processing oils and emulsions have to be eliminated from the pump components without any residue prior to the electrochemical polishing process. This is done at the full satisfaction of Messrs Lutz by means of the aqueous single-chamber cleaning plant manufactured by Messrs Karl Roll GmbH & Co. KG.**

The medium-sized family business Lutz Pumpen GmbH in Wertheim sells pumps all over the world. The basic competences are the fabrication of pumps for barrels and receptacles, flux metres, double diaphragm- and centrifugal pumps. Since September 2004, for the removal of oil and emulsion residues, Messrs Lutz operate an aqueous single-chamber cleaning plant type REFT from the company Karl Roll GmbH & Co. KG, Mühlacker.

The cleaning of the in-house pump pipes made of stainless steel, motor housings of aluminium as well as further pump components of different material composition is effected in a working chamber which was designed for the special basket dimensions (1400 x 480 x 300 mm). The working chamber is equipped with several laterally placed spraying pipes and a spraying duct at the front for the cleaning of the outside and the inside of the pipes. In order to ensure that the components will be absolutely free from grease and oil, prior to the electrochemical polishing the cleaning takes place depending on the kind of workpieces to be cleaned with different programmes. Altogether 9 programmes are used.

“The cleaning in an altered aqueous immersion plant up to now was very complicated because the workpieces to be cleaned had to be transferred from cleaning tank to cleaning tank by means of a crane. This need not be done nowadays owing to the fact that the new cleaning plant is equipped with a roller conveyor and a lifting system”, the works manager, Mr Helmut Lutz said.

With a maximum load weight of 150 kg the throughput capacity is approx. 5 loads per hour. The working chamber is filled with cleaning liquid coming from storage tank 1. In order to enhance the cleaning effect it is possible to rotate or swivel the basket around the longitudinal axis. Also, through nozzles, the cleaning liquid is pumped into the working chamber by means of the pressure liquid circulation system. Due to the high pressure and the large quantity, turbulences are created ensuring an optimum cleaning of the pump components.

During this process cleaning liquid gets onto the pipes of the pumps from outside via the lateral spraying pipes and inside in longitudinal direction by means of the spraying pipe which is mounted at the front side. Now rinsing by flooding with hot aqueous solution coming from the

second storage tank takes place. By this, the cleaning solution which is still on the components, is rinsed off.

The water steam will be sucked out of the working chamber after passing a vent condenser.

After completion of rinsing, the pump components are taken out while they are still warm and wet. It is not necessary to dry the components in the cleaning plant because they will be polished electrochemically afterwards.

### **Working chamber sealed safely**

The decisive advantage of cleaning with a ROLL cleaning plant is that it was designed according to the safety regulations. By means of a double O-ring sealing of the working chamber door which is locked by means of a pneumatically actuated cylinder with a toggle lever, an operation free from leakages is ensured. Even if there is a failure in compressed air while the plant is operated the working chamber will remain closed and thus any pouring of cleaning or rinsing agent is prevented.

### **Lifetime of bath prolonged**

The measures for the prolongation of the lifetime of the baths are also decisive advantages the cleaning plant offers. By means of a gravitational oil separator the entrained oil is removed from the cleaning plant more efficiently than it would be done by means of a simple oil Skimmer.

The storage tank 1 is equipped with a bath flushing which guides the entrained floating oil as well as cleaning fluid into an overflow bag and then to the gravitational oil separator which is incorporated in the system. There, in the area free from flow, the oil and the cleaning agent will separate from each other. The oil will be discharged into a separate tank while the cleaning agent is returned to the storage tank by means of a pump.

Furthermore, while the cleaning agent is pumped back from the working chamber to the storage tank 1, a full stream filtration unit will effect the separation of particle impurities. In order to avoid to a great extent that the different fluids will mix, the cleaning plant is equipped with two separate medium circulations. In those areas, e. g. in the spraying pipes in the working chamber, where a double use happens inevitably, an optimum discharge of the pipe is provided for by means of a constructive solution and a minimization of the entrainment is guaranteed.

By these measures a lifetime of the bath of approximately 6 months could be achieved.

### **Easy operation and maintenance of the plant**

The cleaning programmes can easily be made up and selected by means of an LC control with clear text indication. It is possible to store 99 different programmes. Both the operation and the maintenance of the plant are easy. "The maintenance of the plant is very easy and well described in the operating instructions. The accessibility of the individual components of the

plant is also very good”, Helmut Lutz explained. The clear marking of the hand slides serves as additional support and help for the personnel when servicing the plant as well as while the plant is operated.

The cleaning plant has been operated for 18 months now without problems and at the full satisfaction of the company Lutz. “Since the commissioning of the Roll-cleaning plant the lifetime of the bath has considerably prolonged and the throughput doubled”, Helmut Lutz remarks. “We are very satisfied with both the cleaning results and the whole plant technique”.

**Zum Bildmaterial:**



**Picture 1: Loading of the working chamber by means of the roller conveyor**



**Picture 2: Pump pipes in a special basket prior to cleaning**