

MAKE-OR-BUY PROBLEMS – WASTE WATER TREATMENT IN PICKLING AND PASSIVATION PROCESSES

When making constructions of stainless steel, it quickly becomes necessary to neutralise the negative effects related to the corrosion resistance of the material by means of various treatments. When this is carried out by means of pickling and passivation, a decision must be made whether to carry out this process under own management or to subcontract it. If it is decided to carry out the pickling and passivation under own management, then soon the choice arises whether to remove the released waste liquids formed during the pickling process, or to treat them on site in a physical-chemical wastewater plant.

Apart from including the plant in the Environmental management Act, a request must also be submitted within the scope of the Pollution of Surface Waters Act for the treatment of waste liquids. This permit is issued by the Water Control Board. In this discharge permit, requirements are set for the quality of the water to be discharged in order to protect the environment .

One of the regulations that is usually part of the discharge permit is a provision for sampling the waste water. It can be important to record the volume of the discharged waste water by means of installing a separate meter. The sampling and the subsequent analysis of the waste water stream has two objectives. On the one hand it is to determine whether the company remains below the requirements as laid down in the Pollution of Surface Waters Act permit and on the other hand to simplify the calculation for the amount of annual pollution tax that must be paid. In order to know whether the installation functions properly, a sample must be taken periodically. For most companies, the analysis of the parameters as described in the permit has to be subcontracted to an external laboratory. When the competent authority, usually the Water Control Board in the region concerned, observes a deviation of the permitted parameters, the Board imposes a sanction, usually in the



form of a fine. Repeated or serious deviations result in a summons with a subsequent legal procedure. Hence, control procedures are important in order to make sure the installation works properly.

When the concentration of metals in a pickling bath is too high, its action will be unsatisfactory. On the average, depending on the degree of pollution of the parts and the number of square meters treated, the bath must be completely replaced once a year. The metal concentrations in the pickling bath tax the capacity of a purification installation to a large degree and this implies that the installation must have a considerable overcapacity to effectively treat this pickling fluid under own management. Hence, a good alternative is to have a specialised and recognised company remove and treat the pickling fluid.

The operation of a physical-chemical wastewater installation requires a considerable number of man-hours. Besides cleaning of the filter press, keeping stock of the required requisite chemicals and the removal of the released filter cake, most time is taken by the necessary checks of the installation. The reliability of the whole plant, the operation as well as the state of maintenance, is vitally important in order to prevent unexpected maintenance problems.

When a choice is made for the removal of the released wastewater, only a storage facility is required. Depending on the scale of the production, a choice can be made for storage in multiboxes (900 L) or in a buffer/storage tank.



Make-or-buy problems – wastewater treatment in pickling and passivation processes

Pickling and passivation under own management	Subcontracting
Investment pickling installation	-
Depreciation and costs of interest	-
Space taken up by the installation	-
Storage facilities acids	-
Housing costs	-
Exhaust pickling room	-
Extra energy costs heating the room	-
Changes Environmental Management Act	-
Inspection liquid-proof floor	-
Baths above 30 m ³ the company falls under the IPPC regulation	-
Training of personnel handling chemicals	-
No costs of services by third parties	Costs services by third parties
Man-hours operations	-
Maintenance costs	-
Processing waste liquids under own management	Subcontracting
Investment for a physical-chemical wastewater plant	Smaller investment for intermediate storage
Provisions for measurements	-
Depreciation and costs of interest	Lower depreciation and costs of interest
Space taken up by the purification plant	Less space taken up intermediate storage
Housing costs	Lower housing costs
-	Transport costs
Application Pollution of Surface Waters Act permit	-
Operation of the installation	-
Maintenance costs	-
Training personnel	-
Purchase costs requisite chemicals	-
Lease costs transport container filter cake	-
Dump costs filter cake	-
Costs of analysis	-
Monitoring	Level intermediate storage before transport
Counter-sample procedure	-
Determination of tax	-
Risk of exceeding discharge standard	-
Reliability of total operation	-

In short, a list of the most important points of interest:

1. For equipping a pickling installation under own management, a permit for the new pickling department must be obtained in accordance with the Environmental Management Act. For this purpose, a procedure for changes must be carried out.
2. Certain basic requirements for a pickling department are: a liquid-proof floor, exhaust, disaster emergency relief and a lockable corrosion-proof space.

Tip:

The pickling bath could be made with double walls so that it becomes possible to fit a liquid detection system between these walls. This provides the possibility to detect any leakage at an early stage and take effective measures to prevent possible soil pollution. All of this is within the scope of the Soil Protection Act.

This article was written by Jan de Vreede, Director Waste Water Treatment for Vecom. Vecom offers advice regarding pickling, passivation and wastewater treatment, chemicals, pickling baths, wastewater treatment plants and also has 8 medium to large pickling locations both at home and abroad. You can find more information on: www.vecom.nl

Reactions and/or questions: e-mail: tb@vecom.nl

