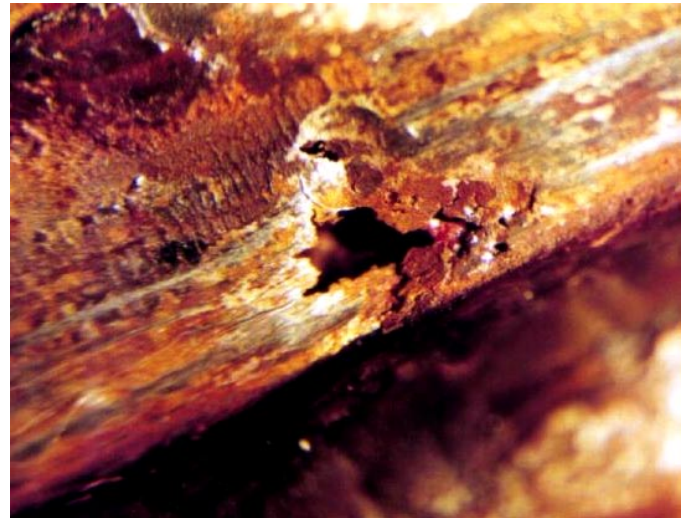


KEEP STAINLESS STEEL STAINLESS

For years now Vecom has published articles and given presentations about the correct treatment of stainless steel after the processing of this relatively expensive material. Countless examples of damage revealed as a consequence of, for example, not pickling after processing have been shown. With cost reduction having become a general trend in industry, pickling is being seen more and more as an needless expense. Pickling is considered too expensive in relation to the overall installation costs. Nevertheless many companies have learnt by experience from the many damages, e.g. following leakage of water piping, particularly in the vicinity of welds in the heat-affected zone. In this bulletin we would like once again to indicate the dangers of incorrect or insufficient secondary treatment of stainless steel.

Before starting a new project it is essential to understand the environment that the stainless steel will be exposed to during service. Also the type of stainless steel, the service temperatures and the composition of the fluids carried or stored are important for avoiding leakage at a later stage. History shows that water pipes are particularly prone to leakage shortly after commissioning. The corrosion resistance of stainless steel is significantly reduced near welds as a result of the heating cycle. This can be clearly seen from the dark blue colour of this zone after welding (see photo below). When pickling is not carried out, the risk of problems (corrosion) is at its greatest. That corrosion can lead to expensive claims, e.g. production stoppages, is well known. Even in the case of large breweries, incidents have occurred where entire water supply systems have begun to leak shortly after commissioning. It must be stated that the quality of the welding here was also partly the cause of these leakages. It is a standard Vecom procedure for large installations to carry out a final inspection that includes careful examination of the welds, e.g. using endoscopy. In cases of defective welds, such as incomplete fusion leaving a gap, leakage could occur after a few weeks or even immediately after commissioning. Of course pickling will not close the gap, but because the weld can be checked easily after pickling, Vecom considers it to be its task to report defects such as incomplete fusion. Pickling followed by measuring will ensure that the heat-affected zone surface



Example of damage to water supply piping in a large brewery - SS type 316L with a diameter of almost one metre.

that is coloured after welding is totally removed. In contrast, during forming, where, often due to haste during the project, the time is not taken to wait until the piping system is fully free of oxygen. Particularly with large diameter pipes it is difficult, even impossible, to remove all oxygen from the system. The zone nearest the weld remains more sensitive to corrosion and possibly contamination. Only by expert pickling of stainless steel following welding is it possible to return the corrosion resistance to the same level as before welding.



before pickling



after pickling



Author: J.E.H. van Duijn
Reactions and/or questions: e-mail: tb@vecom.nl