




process water is fed to a pump sump via a pump. With an additional wear resistant slurry pump, the suspension is fed to a first AKA-SPIDER hydrocyclone classification distributor. An installed antiblocking filter, AKA-STRAINER, retains any larger particles that may be present and thus avoids blockages in the distributor, which could lead to variances in the classification. The material is classified at 10 µm by using proprietary AKA-VORTEX high-performance polyurethane hydrocyclones.

The hydrocyclone overflow <10 µm is directed into the wastewater treatment line, whereas the hydrocyclone underflow fraction >10 µm is directed to a second AKA-SPIDER hydrocyclone stage that will thicken the suspension prior to its dewatering into a marketable ultra-fine sand (10-150 µm). In parallel, the solid content being significantly reduced in the wastewater treatment line, the handling of this circuit is significantly eased and can run with a higher efficiency and ecological footprint, especially as result of a lower usage of flocculant.

The AKA-SILT system can be installed as an additional unit in existing plants. By maximising the total material utilisation yield of a quarry and optimising the overall wastewater treatment flow, it allows the customer to reach a high environmental standard without compromising on its products quality and overall profitability. 

# Fines from waste

**AKW Equipment + Process Design outlines how its technologies can help mining operators recover fines and conserve water in the form of its innovative AKA-SILT system**

**M**ining operations require large amounts of water and generate tailings that have an impact on the environment. The R&D department of AKW Equipment + Process Design has been engaged for many years in the development of technologies helping quarry and mine operators to optimise their water consumption, maximise the valorising of fines and extract value from tailings.

As not all companies face the same constraints, the customisation of treatment solutions is an element of differentiation between suppliers: key is not to over engineer a solution, but to find the right balance between the need to recycle water, the recovery of fines, the context in which the operator works and the level of investment available and required for the implementation of the different solutions.

Looking at industrial minerals, and taking the example of silica sand, it is a fact that most of the existing processing plants are not designed for ultra-fine sand recovery, and therefore a significant amount of product is lost in the 0-150 µm range. This leads to higher solid loads of the wastewater circuit which becomes more challenging to manage and operate.

In order to maximise the recovery of fines, as well as contribute to a better water management system, the AKA-SILT System – a combination of

ultrafine hydrocyclone classification with dewatering of critical fines – has been developed, tested and meanwhile realised in industrial scale at several places.

How does it work? From an existing treatment plant, approximately 200 m<sup>3</sup>/h of solids-loaded

