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Megacities and their problem with construction waste Example: Shanghai

Beside Beijing and Hong Kong, Shanghai is one of the most important industrial locations and market places in the People's Republic of China. In the recent years, the city has had a remarkable growth spurt. Fifty years ago, about seven million people were living in the metropolitan area Shanghai, today the city has more than 26 million inhabitants. Along with the city's growth came considerable building projects with huge amounts of construction waste and other waste products. Large amounts of such material inevitably ended up also in



Fig. 1: Coarse material with a high amount of construction waste from the sewer system in Shanghai

the sewer system where it settled and started to cause problems.

As a preventive measure, the sediments in the sewers, such as debris and grit, are removed several times a year by suction trucks and transported to the sewage treatment works. But this procedure leads to batchwise overloading of machine components in the mechanical sewage treatment stage, such as screens or grit traps, which significantly impairs the function of these components. Ultimately, coarse particles end up in the primary clarifier with further negative impacts on the complete sewage treatment works.

To avoid these problems, the raw material delivered by the suction trucks can be treated centrally in a decoupled grit treatment plant to remove undesired coarse particles, wash out the mineral fraction and discharge the pre-treated raw material into the inlet to the sewage treatment plant. This offers the plant operator several benefits:

- Reduced solids load within the sewage treatment plant
- Avoid operational problems caused by solids load peaks
- Reduced disposal volumes due to the organics being washed out from the raw material

The fact that quite a number of such projects have been executed in a wide range of cities proves that it makes perfectly sense for megacities to use external grit treatment systems. In Shanghai city alone, and in the last five years, one or several such systems have been installed in each of the districts Pudong, Minhang, Yangpu, Chongming and Jinshan to reduce the loads on the sewage treatment



Fig. 2: Grit treatment plant in Kunshan, China

plants. The concept of these projects is always based on the same principle:

- Continuous and dosed acceptance of raw material by a grabber and HUBER grit acceptance tank with integrated HUBER Grit Dosing Screw RoSF7
- Coarse material separation and washout in a HUBER Wash Drum RoSF9
- Grit washing in a HUBER Coanda Grit Washer RoSF4
- Organics removal by a 2 mm screen (different types of screens are used for different specific local conditions)
- Removal of fine grit by a hydrocyclone
- Diverse conveying systems, such as HUBER Screw Conveyor Ro8, etc

Due to the enormous growth of many cities in China, but also in other countries like India for example, it is only a question of time until grit treatment will have to be considered as a solution also in these regions. With more than 20 years of experience in the treatment of external sewer grit and grit from sewage treatment plants, HUBER is the right partner for planning, executing and supporting in such projects.

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