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Total water management approach in steel industry

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ABSTRACT

Water, due to its high specific heat capacity is considered to be an extremely attractive means for heat transfer (cooling) in industrial processes. A total water management plan for steel industry is presented here, taking into account local conditions, legal requirements and above all the availability of fresh water. The alternative water inlets which may also be used are presented here. Since the recovery and reuse of the discharged water from water treatment plants (WTPs) is the best practice in managing the cooling circuits at present, treatment technologies such as ultrafiltration, nanofiltration and reverse osmosis are also presented. The examination of best available techniques (BAT) showed that steel industry should establish fully automated WTPs where the water is recycled. The installation of a sewage treatment plant to treat wastewater that is produced in a steel industry during its operation time was found to be an environmentally benign practice especially when the treated sewage water was used for irrigation. It can be concluded that future efforts must be oriented towards sustainable management of water resources which will enable recycling and reuse of water to a level of 'zero discharges' in order for the industry to remain competitive and environmentally friendly.

Keywords: Sustainable water management; BAT (best available techniques); Recovery and reuse of water; Reverse osmosis; Ultrafiltration

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