**NEWS ARTICLE**

The critical role of zinc to protect and futureproof wastewater treatment plants

**15 January 2024**: Zinc coatings are an effective corrosion protection method for wastewater treatment plants as they are compatible with a range of metal materials when coated onto steel. It is resistant to various corrosive agents present in wastewater, provided it is duplex coated with a powerful organic coating.

Zinc can withstand high temperatures and pressures and mechanical stresses and vibrations. Easy to apply and maintain, galvanizing or zinc thermal spray requires minimal surface preparation. However, a duplex coating with an organic coating gives years of life to the steel in a wastewater treatment plant, highlights explains **Simon Norton**, Executive Director of the [International Zinc Association (IZA) Africa](http://www.zinc.org).

Zinc is a sacrificial coating that can be used to protect the primary base steel from corrosion in wastewater treatment plants. It corrodes preferentially to the base steel to protect it from corrosion. Specialised coatings can reduce or prevent corrosion.

Traditionally, there are two types: Physical barrier coatings act as a barrier between the material to be protected and the environment, while sacrificial coatings such as zinc galvanizing corrode preferentially to protect the primary base steel.

A protective layer known as a zinc patina is formed on galvanized steel. It consists of zinc oxide, zinc hydroxide, and zinc carbonate. The zinc patina, which is a dark grey colour, acts as a barrier to prevent further corrosion by stopping oxygen, water, and other corrosive agents reaching the underlying metal. Zinc also acts as a galvanic electrochemical protector to steel so where there are scratches the zinc galvanizing still protects the steel.

Zinc is a useful corrosion protection method for wastewater treatment plants provided it is duplex coated in the wastewater liquor, which can be very corrosive and aggressive. Corrosion is the deterioration of metal materials due to chemical or electrochemical reactions with the surrounding environment. It can cause serious problems for wastewater treatment plants in particular, such as reducing the structural integrity and performance of pipes, tanks, pumps, valves, and other equipment.

This, in turn, increases the risk of leaks and spills and most importantly mechanical equipment failure which adds to maintenance and replacement costs. Corrosion can also pose health and safety hazards for workers and the public and have a significant environmental impact.

Zinc coatings contribute to sustainability and resilience by their reusability. A natural and abundant element that can be recycled indefinitely without losing its properties or quality, zinc galvanized steel recycling reduces the demand to mine and refine new zinc.

“This saves energy and resources and reduces greenhouse gas emissions and waste. Zinc recycling also creates jobs and economic value in various sectors, such as metal manufacturing, construction, transportation, and waste management,” highlights Norton.

Zinc based corrosion protection enhances the durability and reliability of wastewater treatment plants, reducing their vulnerability to equipment failure, stoppages and costly repairs, that local authorities can ill afford.

“Widely used in various industrial applications such as zinc rich paints, galvanizing steel, concrete rebar galvanizing, precision die casting of engineering components, zinc is increasingly essential for the corrosion protection of wastewater treatment plants, which is critical infrastructure to ensure public health and environmental quality,” concludes Norton.

***Ends***

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**About the International Zinc Association**

The IZA is the only global industry association dedicated exclusively to the interests of zinc and its users. Operating internationally and locally through its regional affiliates, the IZA helps sustain the long-term global demand for zinc and its markets by promoting such key end uses as corrosion protection for steel and zinc as being essential in human health and crop nutrition. IZA’s main programmes are Sustainability & Environment, Technology & Market Development and Communications.

In South Africa, the IZA plays a vital role in establishing the basis for the successful revitalisation of the zinc industry by increasing awareness of zinc and its applications and benefits in key sectors and markets, which will ultimately translate into the increased uptake of zinc.

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