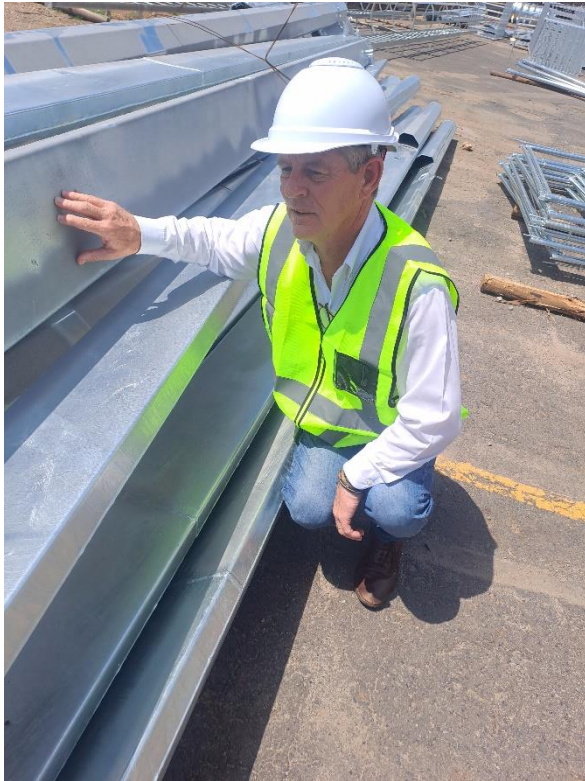


Safety and risk mitigation in the galvanizing sector: 'hot topics' for the HDGASA



The Hot Dip Galvanizers Association of South Africa (HDGASA) plays an important role in ensuring safety and risk mitigation within the galvanizing sector and champions best practices amongst its members and the steel value chain in general, according to Executive Director, Robin Clarke.

"The galvanizing process is relatively straightforward, and the industry is not regarded as high risk. It has a good safety record. Nevertheless, safety is an enduring operational imperative, and as such, the HDGASA urges constant vigilance and compliance with existing regulations and best practices," Clarke says.

Passing on the steel safety baton

Safety begins before the item reaches the galvanizer, with fabricators required to remove any excess oil, grease, and deburr holes – and, crucially, to drill the appropriate vent and drainage holes.

Clarke explains that these vent and drainage holes are critical for the efficient and effective galvanizing of internal and external surfaces: "Proper venting and drainage allows for the ingress of molten zinc – while also facilitating the venting of

any air and moisture trapped in internal cavities. Evacuation of fluids prevents a flash-over to steam and a potential explosion. Such an event may damage the articles or even the zinc kettle itself. Of greatest concern, naturally, is the potential of harm to the kettle operators, Clarke advises.

In terms of the ISO 14713 standard, the responsibility for venting and providing correctly placed and sized vent and drainage holes lies with the fabricator. The HDGASA is therefore committed to educating fabricators about the preferred design parameters for drainage and venting.

"We provide technical literature in the form of i-wall charts and case studies, found on our website to enable fabricators and designers to know where to drill the holes, how large to make them and how to adopt best welding practices," he adds.

The danger lies in inadvertently creating a pressure vessel: "One risks having a small amount of liquid entrapped in the enclosed article which goes into a molten bath. The quick and instant super heating of that liquid turns it into steam that can potentially cause an explosion. An uncontrolled emission of steam can not only damage the article but cause burns, injuries and even fatalities to those in the immediate vicinity," he warns.

Safe suspension

This is not the only part of the galvanizing process where safety is paramount. After pre-inspection and clearance, the material which is to be galvanized is jiggered – or suspended on a hanger bar.

"Since the articles are generally strung onto the hanger bar using wire, there is great emphasis placed on eliminating the risk of falling. Product jiggering requires robust but simple processes and rules - and our galvanizers are generally very mindful of using the correct equipment for safe suspension of heavy loads," he continues.

It is here that the Occupational Health and Safety (OSH) Act - which regulates the maintenance of cranes and stipulates the use of well-trained operators and licensed forklift drivers - applies.

Once safely suspended, the material goes through several cleaning processes. The cleaning tanks contain acidic and alkaline solutions and all tanks are consequently fully banded. Clarke explains that tanks must be enclosed to contain splashing and ensure that fugitive materials do not escape, as this could result in groundwater contamination.

In addition to having banded process tanks, galvanizers also need to comply with air emission regulations, with single-point measurements taken from the stacks of extraction fans.

Throughout the process, all OSH Act safety protocols for working with molten metals must be followed, including the provision of appropriate safety and personal protective equipment (PPE).

Strong safety record

Clarke notes that HDGASA members have implemented induction courses for both employees and visitors at their plants which cover key safety protocols.

"The galvanizing sector takes the health and safety of all on site exceptionally seriously. It is furthermore recognised that any - potentially negative impact on the environment will not make for sustainable businesses," he emphasises.

As a result of the strong safety and environmental ethos of the Association, membership of the HDGASA comes with an inherent safety endorsement.

However, Clarke acknowledges that there is always the danger that somewhere in the steel value chain the so-called 'safety ball' may be dropped, such as drilling of critical safety holes.

"As the HDGASA, we bring the steps stipulated in ISO 14713 to the forefront of industry awareness, as far back as the initial design of an article. We create a platform for people to understand the importance of safety and risk mitigation," he stresses.

Clarke adds that the HDGASA also plays an important role in the clarification of safety and environmental policies and measurements, assisting both galvanizers and local authorities.

"We have lobbied government for the exclusion of zinc, ash and dross from the waste stream, to promote responsible handling thereof and therefore, environmental risk mitigation," he elaborates. The application has been lodged and we await the response.

Investing in safety

As the majority of South Africa's galvanizing plants were constructed during the 1950s and 1960s, many do not mirror contemporary plant layouts which are aimed at the most effective facilitation of air emissions capture and control. On such older plants a degree of compromise was required in terms of approximating best practice, Clarke acknowledges.

He adds that the HDGASA is constantly engaging with authorities to arrive at an appropriate degree of safety and risk mitigation, without threatening the viability of the business concerned:

"Galvanizing process plant footprints have evolved, with safety and risk regulations changing and becoming far more onerous than in the past. However, the capital investment requirement to rejig these to meet modern-day standards is very challenging in the current economic climate, as there are not sufficiently sustainable volumes to provide an adequate return on investment."

Clarke believes unlocking national infrastructure projects could provide a potential solution: "We are waiting with bated breath and with excess capacity across the steel value chain for these! We can solve the dilemma of producing finished steel products 'cleaner, better faster' if the sector as a whole can benefit from a more stable and supportive economic environment. The key to this is infrastructure investment and spending," he concludes.