



REINVENTING THE STEEL

Sarah Lawton asks Stuart Whitehouse at Joseph Ash how modern galvanizing plants have incorporated sustainability into operations

Joseph Ash Galvanizing Ltd is the UK leader of steel finishing services including galvanizing, spin galvanizing, shot blasting and powder coating. With seven plants in UK, the company serves all types of customers from large construction companies and fabricators, to fencing and agricultural specifiers, government departments and even metal sculpture artists. Stuart Whitehouse, Health, Safety & Human Resources Manager, gives the inside story of this company's long-term success.

"Joseph Ash, the son of a Birmingham chemist, founded the company in 1857 with a unique vision focussed upon technical expertise allied to something quite unusual for the time: outstanding levels of customer care," said Whitehouse. "This guiding principle is one that has sustained the company since and remains at the core of everything Joseph Ash do."

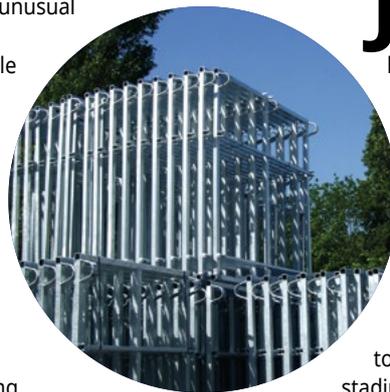
Galvanizing is a corrosion protection process for steel, in which the steel is coated with zinc to prevent it from rusting. The process involves dipping cleaned iron or steel components into molten zinc (which is usually around 450°C). A metallurgical reaction between the iron and zinc forms a series of zinc-iron alloy layers creating a strong bond between steel and the coating.

"Today Joseph Ash Galvanizing maintains its position as the leading galvanizing service provider in the UK, with seven strategically located plants providing unrivalled technical expertise, combined with industry-leading levels of customer service to meet the most exacting requirements of our customers and their end users," continues Whitehouse.

"The ethos of outstanding technical expertise and customer care are not just evident in the quality of the work we deliver, but also through the additional services we provide, which include collection and delivery, on-site storage facilities,

bundling, packing and export containerisation, a one-stop shop service for shot blasting, galvanizing and powder coating (at our Medway plant)."

"The extensive range of our galvanizing bath size capacities means that we can galvanize items from small nuts and bolts through to large structural steelwork fabrications. We galvanize steel for many industrial sectors, such as construction, transport, agricultural and infrastructure, to name but a few."



Joseph Ash has a strong trading relationship with The Structure group, experts in temporary sports structure construction, having processed steel for them on various projects. One recent project involved developing a temporary platform for the Hampden Park stadium to host the opening ceremony and athletics for the 2014 Commonwealth Games.

To make use of the city's current sports infrastructure when hosting the Commonwealth Games, Ian McKenzie, Glasgow 2014's head of development, decided to convert Hampden Park from a football stadium to an athletics venue temporarily. To do this safely and efficiently, he contracted The Structure Group, to build a temporary floor suitable for running and long jump.

To meet the size requirements of the Commonwealth Games and the International Association of Athletics Federations, The Structure Group had to build a 1.9m platform above the existing football pitch, upon which they fixed the athletics track. With 18,000sqm of heavy specialist deck, over 6000 steel stilts, and 2000 tons of steel components, the platform took over nine months to complete.

To provide long-life, low-maintenance corrosion protection ►

and to safeguard the platform from atmospheric attack, The Structure Group brought in Joseph Ash to galvanize the steel jack heads atop the steel stilts.

"The need for a first class galvanizing service delivered on time was a key requirement for this project. The Structure Group was more than happy to let Joseph Ash do what we do best," said Whitehouse. Construction was complete well ahead of schedule, ready for the Commonwealth Games to open.

Wherever you are in the UK you are never far away from a project that contains steel that Joseph Ash has galvanised. Sports stadia, retail developments, transport, infrastructure and commercial offices, they all use galvanised steel.

"Currently we are involved in projects ranging from multi-storey car parks, waste to energy plants, railway electrification and even protecting steel that will be used in the U.S. Embassy," said Whitehouse.

In June 2014, Joseph Ash became the only galvanizing company in the UK to be awarded the RoSPA Gold Award, recognising the company's health and safety standards, performance and systems.

Joseph Ash excels in health and safety by investing in their

people through the delivery of in-house bespoke health and safety training courses aligned to the company's business operations. Company directors, managers and supervisors all hold formal health and safety qualifications, and by embedding health and safety in to the company culture and introducing an occupational health scheme to protect and maintain a healthy workforce, Joseph Ash has ensured ongoing best practice in health and safety management policies, procedures and systems, and an industry leading safety record.

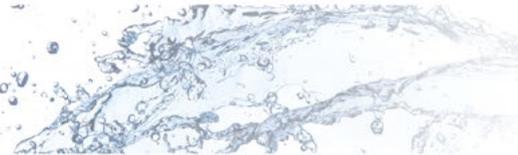
Joseph Ash has a keen sense of responsibility for the world around it. It meets or exceeds statutory or best practise environmental standards applicable, works hard at minimising waste and energy usage and is scrupulous in its regard for the health and safety of its employees and visitors. It also takes particular pride in the long life (100 years can be achieved) and environmental credentials of its galvanizing when combined into steel building products, which have been proven to offer substantially lower lifelong environmental impact than other building materials.

Pioneers in their sector, Joseph Ash is a founding member of the Galvanizers Association (GA), an industry association providing members with technical and product support through a highly qualified full time team based in the West Midlands. Joseph Ash experts are active on every committee, helping to mould best practice within the galvanizing industry and support sustainable construction in terms of a holistic life cycle approach.

The GA Sustainability website (www.sustainable-galvanizing.com) was set up to provide the public with information about how the galvanizing industry is playing its part within the context of sustainable construction. Galvanizing is energy efficient throughout its production and whole life cycle. The

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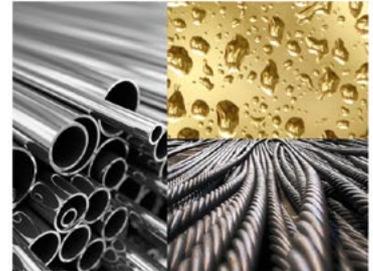
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galvanizing process uses natural resources considerably to ensure a relatively low environmental burden.

The hot dip galvanizing process, to EN ISO 1461, involves a number of stages required to achieve the final finish. Omitting the interim rinse stages, these include the following immersions:

- Degreasing uses acid or alkaline-based proprietary products, either heated or at ambient temperatures, to produce a clean, oil- and grease-free surface.
- Pickling in dilute hydrochloric acid dissolves rust and scale to produce a 'chemically clean' surface that will react with the molten zinc.
- Fluxing, using a standard fluxing agent such as a zinc chloride and ammonium chloride mix, at temperatures between 50°C and 70°C to help the steelwork dry after it is withdrawn. Drying is important as it helps prevent zinc splash. A separate drying stage is sometimes included.
- Zinc Immersion involves dipping the clean steel into a special bath holding molten zinc at 450°C. During submersion, the zinc alloys with the iron in the steel to form zinc/iron alloy layers. As the steel withdraws from the galvanizing bath, a final free zinc layer is laid over the top of this layered base coat.

The life of a zinc coating is directly proportional to its thickness. Hot dip galvanizing results in a coating that not only has great abrasion resistance but one that, according to the most recent exposure tests, lasts between 34 and 170 years before the base steel is exposed.

According to the GA website, zinc's resistance to corrosion depends primarily on a protective film (patina) formed on its surface. For atmospheric corrosion, atmospheric contaminants affect the nature and durability of this film. The most important contaminant affecting zinc is sulphur dioxide (SO₂) and it is the presence of SO₂ which largely controls zinc's atmospheric corrosion rate. As experts expect the atmospheric SO₂ levels to continue to decline, the life of galvanized coatings should extend even further in the years to come.

The initial investment of using galvanized steel for long-term protection in construction can provide cost benefits for decades. Galvanizing protects against corrosion and prolongs the life of steel, greatly lowering the environmental and economic cost. ►

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Galvanizing plants are self-contained, with steel going in at one end and the final product coming out the other. Galvanized steel is easily recycled, re-galvanized and reused. It can also be recycled with steel scrap. Modern galvanizing plants also use zinc very efficiently throughout the galvanizing process. Excess metal from the dipping process deposits back into the galvanizing bath. Zinc that oxidizes on the surface is removed as ash and recycled, and dross from the bottom of the bath is routinely removed and has high recycling value.

Other process consumables such as hydrochloric acid and flux solutions also have important recycling or regeneration routes. Spent hydrochloric acid solutions can be used to produce iron chloride for treating municipal wastewater, for example. Closed-loop flux recycling is also used in many plants and improved monitoring and maintenance of flux tanks reduce the volume of sludge for disposal.

When compared to other coating technologies galvanizing uses low volumes of water, with plants rarely discharging wastewater. Any wastewater generated can be treated and reused, with only small volumes of stable solids requiring external disposal.

While not considered a particularly energy-intensive sector, the galvanizing industry has also set targets for energy efficiency and improved energy management. New technology has seen improvements in burner efficiency, bath lid efficiency, and reuse of waste heat to warm pre-treatment tanks. Plant emissions are also carefully controlled to ensure neighbouring communities are not adversely affected.

“All of our plants are regulated to Integrated Pollution Prevention Control (IPPC) permits,” explains Whitehouse. “This requires each installation to have a permit containing emission limit values and other conditions based on the application of Best Available Techniques (BAT). These are set to minimise emissions of pollutants likely to be emitted in significant

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quantities to air, water or land. Permit conditions also have to address energy efficiency, waste minimisation, prevention of accidental emissions and site restoration.”

Joseph Ash works hard to protect the environment through an ever-growing list of recycling activities with processes supported by both an Environmental and Sustainability policy.

The company works hard to enhance galvanizing's contribution to society and to ensure that the services it provides are in harmony with the natural environment, now and in the future. Operating within a framework of a self-imposed Environmental Management System based on internationally recognised standards, a set of firm sustainability principles guides all company activities. They are ▶





fully committed to the Energy Policy and Energy Management System.

The Joseph Ash Quality and Environmental management system ensures all products and services provided consistently meet or exceed customer and regulatory requirements, as well as international standards. The system also ensures operational impact on the environment is minimized. All practical steps are taken to ensure product is 'right first time' and direct and indirect environmental impact is given due regard and appropriate measures taken.

Employee engagement is also important. Quality and environmental policy is communicated to all employees via notice boards and inductions and clear quality and environmental objectives are set. All employees familiarise themselves, and comply, with the quality and environmental procedures in operation and bring to the attention of the relevant manager any opportunities to improve environmental or quality performance.

Joseph Ash advocates the safe use and responsible management of galvanized steel. The company believes

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all decision-making should be based on good science and therefore supports research and monitoring to advance understanding of the impacts of the production, use and recycling or disposal of galvanized steel products. The company encourages and supports waste minimization through recycling and the recovery of zinc from the waste stream. They value public consultation and employee participation. They promote transparency and openness in relationships and treat employees, business partners and the communities in which its plants are located in a fair and respectful manner.

When asked why customers should select Joseph Ash, Whitehouse replied, “Simply because we are the UK’s premier hot dip galvanizer. Our guiding principle of providing outstanding levels of customer care has sustained the company for over 150 years and remains at the core of everything we do. We maintain our position as the leading UK provider by offering unrivalled technical expertise, industry-leading levels of customer service, treating every customer as an individual to service their most exacting requirements. We really are ‘the best!’”


WORKFORCE HEALTHCARE
Company Registration Number: 7923471

Spirit Occupational Health Service Ltd

Spirit Occupational Health Service Ltd would like to congratulate Joseph Ash Galvanizing on their achievement on gaining the RoSPA Gold Star Award for Health & Safety in the work place.





Spirit Occupational Health Service Ltd has worked closely with Joseph Ash Galvanizing over the last six years to provide a bespoke occupational health service.

Spirit Occupational Health Service are specialists in providing workforce healthcare across a broad spectrum, of industry. Spirit assists employers in preventing, controlling and managing work related illness and injuries. Primary services include, health promotion, pre-employment assessment, occupational health examinations/ surveillance to include, audiometry, spirometry, skin, Hand Arm Vibration Syndrome, drug and alcohol testing, return to work programs and sickness absence referrals.

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Depending on your unique needs and budget, your on-site health program will be staffed by any of the following, to ensure the correct level of delivery by health professionals such as: occupational-health nurses, occupational health technicians or occupational health physicians. We will work closely with you to determine the ideal balance between level of care and cost.

For more information, please visit: www.spiritoccupationalhealth.co.uk
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