

BIRTLEY GALVANIZING
SERVICE GUIDE

Birtley
galvanizing
SHOT BLASTING & POWDER COATING



“
CONSTRUCTION
IS THE ART
OF MAKING A
MEANINGFUL
WHOLE OUT OF
MANY PARTS”

- Peter Zumthor (Architect)

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SUPPORTING THE UK CONSTRUCTION INDUSTRY **SINCE 1965**

Founded in 1965 in County Durham, Birtley Group began life as a small structural steel business. Originally steel fabricators for the mining industry, Birtley Group added steel lintels to its product range in 1967 and by 1979 was a credible building industry specialist, with depots across the country. In 1996, Birtley Group commissioned and built a brand new plant, establishing one of Europe’s most advanced facilities for hot dipped galvanizing which remains fully operational today. A subsidiary of Birtley Group, Birtley Galvanizing still operates on the original site providing galvanizing, shot blasting and powder coating to a variety of industries.

Birtley Group acquired the metalwork manufacturer Expamet in 2012, followed by an acquisition of Bowater Doors in 2015. All three companies now operate under the Birtley Group banner, providing a broad spectrum of products to the construction industry.

GALVANIZERS ASSOCIATION

Birtley is a member of the Galvanizers Association. The association was set up in 1949 to encourage the highest possible standards of technical efficiency in the industry and to promote the use of Hot-Dip Galvanized steel.



HOT DIP GALVANIZING, HAS GROWN ALMOST CONTINUOUSLY SINCE IT WAS FIRST USED TO PROTECT CORRUGATED IRON SHEETS 150 YEARS AGO.

Hot dip galvanizing is the process of coating iron or steel with a layer of zinc by immersing the metal in a bath of molten zinc. During the process, a bonded coating is formed which protects the steel from harsh environments.

Galvanizing is probably the most environmentally friendly process available to prevent corrosion. Data shows that galvanizing can provide between 34 to 170 years of protection for steel.

Opened in 1996, the Birtley Galvanizing plant achieves the finest quality hot-dip galvanized zinc protective coatings to BS EN ISO 1461. The "State of the Art Technology" plant processes steel products using a computer controlled, fully automated handling system which ensures accurate pre-treatment and regulated dipping speeds.

For more information about galvanizing please visit the Galvanizers Association website:

www.galvanizing.org.uk



GALVANIZING AND THE ENVIRONMENT

Galvanizing, the coating of iron or steel with zinc is probably the most environmentally friendly process available to prevent corrosion. Corrosion costs Europe in excess of 3% of GNP (Gross National Product). Effective corrosion protection is a vital means of reducing the energy demands of buildings and structures.

Galvanizing is efficient in its use of zinc to protect steel for very extensive periods - saving energy and resources with minimal impact on the environment. Galvanizing will protect steel structures for decades and minimises maintenance.



EVERY 90 SECONDS

One tonne of steel turns to rust around the world; of every two tonnes of steel made, one is to replace rust



EVERY ONE TONNE

Of steel protected by hot dip galvanizing preserves enough energy to satisfy a family's needs for several weeks



BATH LENGTH

10m, depth 3.2m, width 1.5m

COMPONENT SIZE

9.8m, depth 2.7m, width 1.3m

Exacting standards of environmental performance

Approved galvanizers for major structural steel fabricators

Preventative system to eliminate harmful substances to the atmosphere

Shot blasting facilities

Enclosed powder coating section

Capable of handling extensive range of products

BSI registered company

Members of the UK Galvanizers Association

Part of Britain's largest galvanizing group



THE PROCESS

The galvanizing reaction will only occur on a chemically clean surface. Therefore most of the preparation work is done with this objective in mind. In common with most coating processes the secret to achieving a good quality coating lies in the preparation of the surface of the iron or steel. It is essential that this is free of grease, dirt and scale before galvanizing. This type of contamination is removed by a variety of processes. Common practice is to degrease using an alkaline or acid degreasing solution into which the component is dipped.

The article is then rinsed in cold water and then dipped in hydrochloric acid at ambient temperature to remove rust and mill scale. Welding slag, paint and heavy grease will not be removed by the above cleaning steps and should be removed before the work is sent to the galvanizer.

After a further rinsing operation, the components will then commonly undergo a fluxing procedure. This is normally applied by dipping in a flux solution - usually out 30% zinc ammonium chloride at around 65-80°C. The fluxing operation removes any of the last traces of oxide from the surface of the component and allows the molten zinc to wet the steel.

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SHOT BLASTING

Shot blasting enhances the microscopic surface profile of metal so that it holds a coating even more effectively as it increases zinc deposition. A package of shot blasting and galvanization from Birtley Galvanizing will maximise the rust-free life of any piece being treated.

Our on site cabinet blasters have capacity for shotblasting smaller articles. Shotblasting will remove contaminants prior to galvanizing and will increase the surface profile of the base metal to achieve a heavier galvanized coating, thus increasing corrosion protection.

There are several national and international standards which define the visual assessment of surface cleanliness of steel before application of paint and related products.

The equivalence of the standards is summarised in the following table:

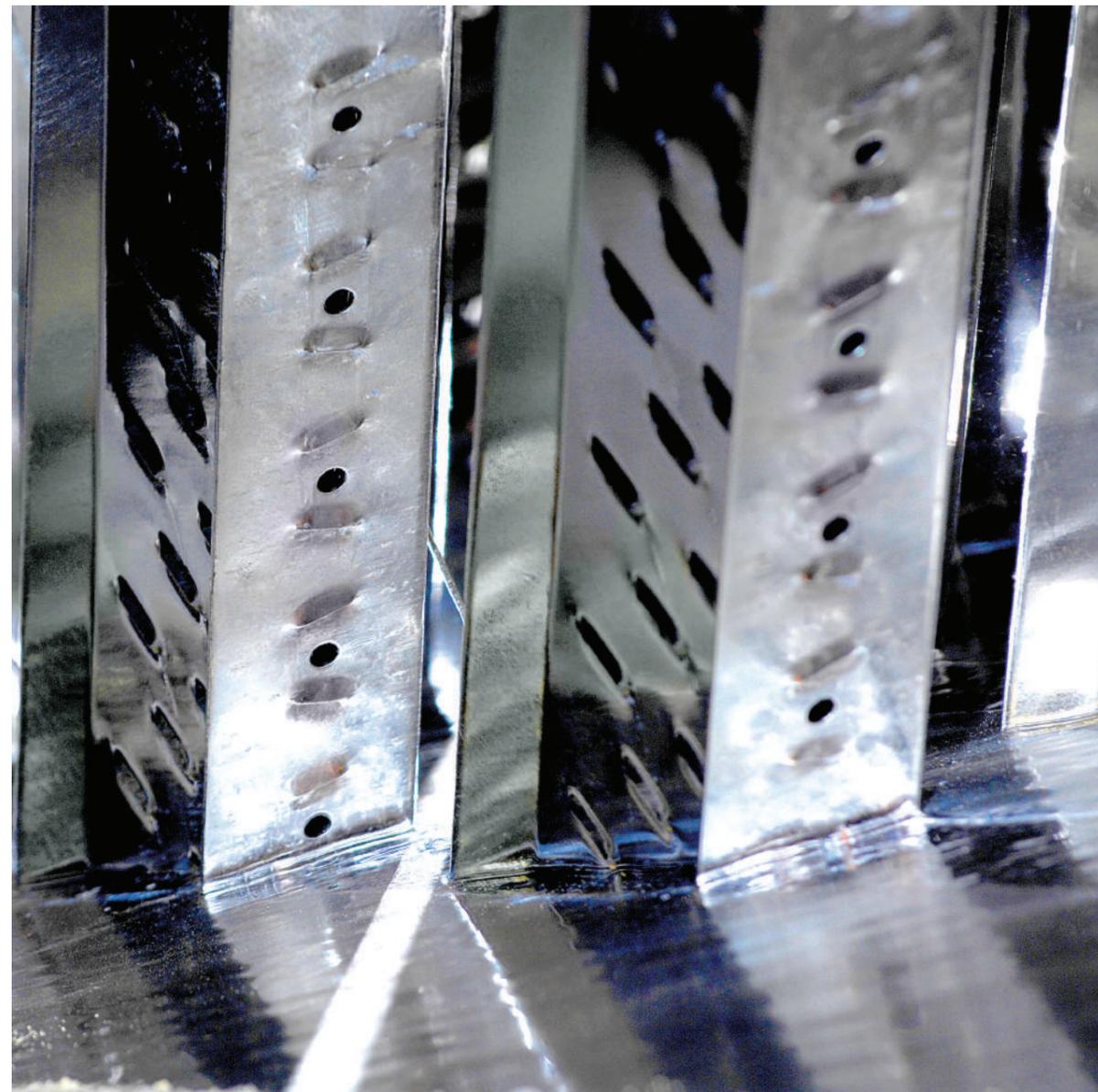
	White Metal	Near White Metal	Commercial Blast	Brush-Off Blast
ISO 8501-1 (1988)	Sa3	Sa2.5	Sa2	Sa1
BS7079:A1 (1988)	Sa3	Sa2.5	Sa2	Sa1
Swedish Standard SIS055900 (1967)	Sa3	Sa2.5	Sa2	Sa1
SSPC (1982)	SP5	SP10	SP6	SP7
NACE	SP1	SP2	SP3	SP4

HOT DIP GALVANIZING

In the galvanizing process, iron or steel articles are dipped into a bath containing molten zinc just above the melting point. Any zinc that does not form a coating on the metal remains in the bath for further re-use. Galvanizing residues that are recovered from the zinc are recycled for further use. As well as zinc recovered from these residues, recycled zinc from other sources, such as zinc scrap, is often used in galvanizing. Galvanized steel can be recycled easily with other steel scrap in the steel production process.

Improvements in gas burning technology have also greatly improved energy efficiency in heating the galvanizing bath. Exhaust heat is not wasted and is used to heat pre-treatment chemicals or dry work prior to immersion.

The galvanizing industry is committed to understanding and improving the life-cycle environmental performance of its process and products. Galvanizers Association has recently helped establish a Pan-European Life Cycle Inventory database for general galvanizing. This LCI data will allow Environmental Product Declarations and other life cycle assessments to be made on structures involving galvanized steel.



Need technical advice?

Call the Birtley Galvanizing team direct:

0191 410 4421 | galvanizing@birtleygroup.co.uk

POWDER COATING

Powder coating is an advanced yet simple way of spray-painting a very fine, dry plastic powder onto a metal surface. Removal of oil, soil, lubricant greases, metal oxides, welding scales and other substances is essential prior to the powder coating process. It can be done by a variety of chemical and mechanical methods depending on the size and material of the part to be powder coated. As the powder paint cloud gently leaves the front of the spray gun, it is charged with static electricity. The charge attracts the powder paint to the part that requires coating. The part is then placed in an oven, where it bakes at 220 degrees centigrade for 10 minutes. While in the oven, the powder paint melts and flows into a beautiful and durable finish. Primers are not necessary.

There are no unsightly runs or drips, as often results with the use of wet paint. Powder coating is environmentally friendly because the over-spray is reused, with no solvents, powder paint does not pollute the air.



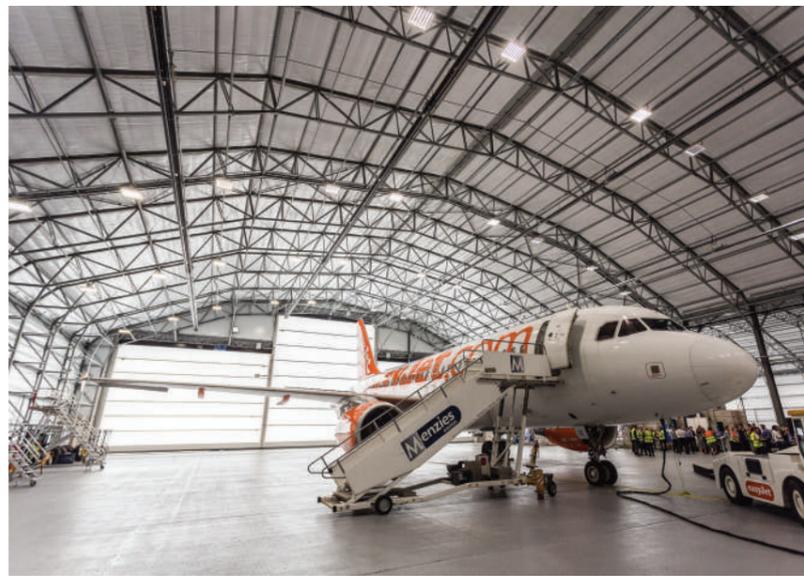
KEY BENEFITS

- Polyester Powder Coating
- Duplex Coating
- Hot Dip Galvanize - Total Corrosion Protection
- Full Fine Fettle - To create smooth surface
- Etch Galvanized Surface - To create key for coating
- New Electrostatic Powder Spray - To give even surface coating
- Modern Gas Fired Curing Oven - To give even temperature control throughout oven
- Special Packaging - For safe transportation of product
- Transport Savings - One stop metals finishing

EASYJET

In June 2016 Birtley Galvanizing were approached by metal fabricator Rubb to fulfil a project for Easyjet. Based at Gatwick airport, Easyjet required the build of a new service hangar to allow aircraft to undergo maintenance in an controlled environment while at the airport.

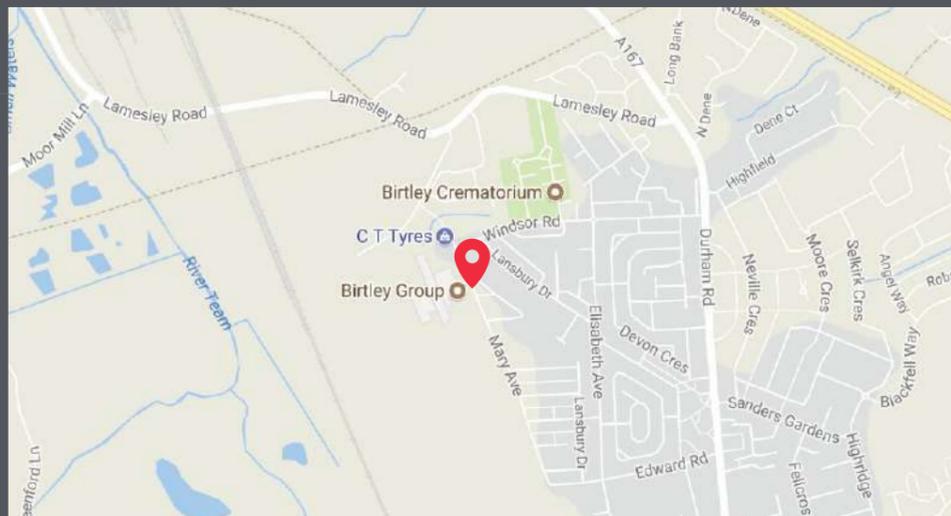
Birtley Galvanizing took the fabricated frame of the building and put it through the galvanizing process. This is the first hangar of this type and Rubb expect Easyjet to see an increased benefit in service schedules and for more hangars of this type to be built and deployed in airports around the UK.



LYNEMOUTH BIOMASS PLANT

Birtley Groups Galvanizing division has supplied a number of North East Fabricators for the new Lynemouth Biomass project. The old coal fired plant is being converted into a Biomass fuelled power plant in order to reduce greenhouse gas emissions, thus supporting the UK government's climate change targets. The biomass power station is expected to produce 2.3TWh of low carbon electricity that will be sufficient to power approximately 700,000 homes and is set for completion in early 2018.

To view more of our projects please visit
www.birtleygalvanizing.co.uk



GET IN TOUCH

For any enquiries or questions, please call:
 0191 410 4421

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www.birtleygalvanizing.co.uk
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Birtley Group

STRENGTH THROUGH QUALITY

One Group. Three Outstanding Brands.



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