

Coil Manufacturing

Superior quality coils
for high voltage motors,
generators & traction motors



PREFORMED
WINDINGS
— A PARSONS PEEBLES COMPANY —



Accuracy that
reduces winding
times to best in
class

Global specialist with over 45 years in high voltage motor and generator coil manufacture

Experts in the re-engineering and manufacture of copper coils

Recognised quality service to motor and generator manufacturers and repair facilities worldwide

A global customer base, with half of sales outside of UK

Preformed Windings, based in Sheffield in the UK, has over 45 years' expertise in delivering superior quality coils for high voltage motors, generators & traction motors. The company has recently been acquired by Clyde Blowers Capital who have committed significant investment to grow the company. Our customers are in the power generation, electrical machinery, general engineering, oil & gas, water, transport, chemical, paper, extraction and shipping industries.

Our vast experience in international exportation sees us supply our range of products to a loyal and growing global customer base which includes OEMs, repairers and end users. Our dedicated and knowledgeable team are available 24/7 and ensure the very highest quality in production and delivery.

The aim is to provide innovative solutions and knowledge to fulfil all of our customer needs. Particular specialities include resin rich solutions, high voltage coils and hydro generator coils.

We work in partnership with our customers to inspire, educate and problem solve, while at all times considering environmental regulations and social responsibilities.

Our state of the art manufacturing facilities result in the production of highly accurate coils, substantially improving winding time and extending life expectancy. We are highly experienced in working within short lead times, thereby minimising any down time. Preformed Windings can offer bespoke coil solutions for end users, repairers and OEMs anywhere in the world.

We aim to provide the perfect solution, in a cost effective manner every time.





Preformed Windings take great pride in our product range. Rigorous checks are completed throughout production to ensure we consistently deliver top quality products to our clients

Product range

Our aim is to provide a smooth and efficient system from start to finish. We have the ability to source copper from locally approved suppliers within hours of a client request, whilst our state of the art manufacturing facilities and highly skilled team ensure that all specific product requirements are met.

In addition, our full range of products are fully traceable throughout the manufacturing process. This means that we can maintain full control of stock and keep clients informed as to production progress.

Diamond coils



We work with clients across a range of industries, covering everything from traction to power generation.

- For high voltage motor & generators
- 400-15,000V
- Resin & VPI insulation
- Sealed, NEMA, hybrid specifications
- Copper, enamel, glass conductors

Armature coils



A broad range of custom armature coils for clients in the water, transport and power generation industries.

- For AC/DC traction motors
- Up to 3,000V
- Resin & VPI insulation
- Custom & hybrid specifications
- ISO 9001:2008

Niche engineering products with an excellent reputation

Concentric & hairpin coils



Custom concentric and hairpin coils for clients in the chemical, paper making, extraction, shipping and power generation industries.

- For high voltage motor & generators
- 400-15,000V
- Resin & VPI insulation
- Sealed, NEMA, hybrid specifications
- Copper, enamel, glass conductors

Winding kits



Winding kits incorporating all essential materials for overhauling a broad range of electric motors. Winding kits include:

- All types of slot wedges
- Packing strips
- Insulation tape
- Thermistors
- HV cables

Traction coils



We work to ensure that the completed coils are extremely robust and hard wearing.

- Resin & VPI insulation
 - Class F & Class G
- Purpose built shaping formers
- Copper, enamel and glass conductors
- Quick turnaround

State of the art manufacturing facilities result in the production of highly accurate coils, substantially improving winding time and extending life expectancy

A service you can rely on

Preformed Windings can specifically design and manufacture replacement coils in the tight time-scales required to get customer's motors and generators running again. Preformed Windings are able to assist customers to fully design and redesign.

Manufacturing Capability

Preformed Windings can provide replacement windings for almost all types of AC and DC application to end users, repairers and OEMs around the world. Customers can order coils with a choice of insulation systems to bespoke designs as well as standard NEMA, Hermetic and Hybrid / Combination designs. Insulation types available include hot and unpressed resin rich and VPI with a broad selection of specialist insulating materials ranging from Mica/Film to Enamel/Dacron.

Speed of Response

Preformed Windings can manufacture replacement coils in the tight time-scales required to get your motor/generator working again. Working from diagrams or customer provided samples, Preformed Windings can manufacture both standard and bespoke windings with a fast turn around time. The Sheffield manufacturing

facility can provide all coil types at short notice. Winding kits can also be supplied incorporating all the essential materials required for rewinding a broad range of electric motors and generators.

Quality

As an ISO 9001 quality assured company, Preformed Windings ensure that quality comes as standard with all of our products and services. We are vastly experienced in many industry sectors and are approved for Nuclear Energy in the UK.

Our finished components are manufactured to ISO 9001:2008, ISO 14001:2004, BS EN 50209:1999 and ESI 44-5 standards, as well as to individual customer specification, whilst rigorous quality testing helps to consistently maintain standards.

When You Just Can't Wait

Our very fasted coil offering is a premium service called **QualCoil-Rapid™**. In most cases this can be provided to deliver coils in 5-10 days depending on number of coils and complexity. In extreme cases we can even split delivery to provide you with an initial set of coils to begin winding.





Quality and accuracy - stringent testing helps maintain demanding standards 100% of the time

Rigorous testing in accordance with international standards

Continued reliability processes and schedules never compromised

Emergency Response - For rapid service requirements we can supply coils in most instances in days rather than weeks

Solving our customers' problems fast

Project: 8,100 HP, 13.8 kV Hydro Generator
Location: North America
Product: 170 x "B" Stage Diamond Coils
Brief: Responsible for the manufacture and supply of coils
Completion Time: 21 days

Project: 13.8 kV Gas Circulating Pump Motors
Location: Heysham Nuclear Power Plant, UK
Product: 84 x "B" Stage Diamond Coils
Brief: Responsible for the manufacture and supply of coils and complete unit rewinds
Completion Time: Ongoing

Project: 6,000 kW, 935 V, 17 Hz Motor
Location: Central America
Product: 72 x "B" Stage Diamond Coils
Brief: Responsible for the design, manufacture and supply of coils
Completion Time: 10 days

Project: 750 kW, 985 RPM, 6.6 kV Motor
Location: Australasia
Product: 72 x "B" Stage Diamond Coils
Brief: Responsible for the redesign, manufacture and supply of coils
Completion Time: 8 days



Recent investment of over £2m / \$3m has created a facility ideally suited to ultra fast runs of precision coils of the utmost quality. Coupled with a highly trained workforce you have a partner you can trust

Customer Satisfaction

"...this may be the most uniform set of coils that I have ever seen. My winders told me it is a rare pleasure to wind with such a well-made set of coils. If you continue to make a product this outstanding, you are far above your competition."



Benny Beneux,
Evans Enterprises

De-Reeler



Our de-reeler rotates through 180 degrees and can carry multiple copper reels.

- Enables coil twist transpositions to be formed consistently and accurately

Forming



We employ the latest forming machines which are fully computer controlled to produce repeatable shapes rapidly.

- Cuts coil forming time by up to 70% over alternative methods – particularly important for larger coil runs delivered quickly
- Stores coil shape in internal memory to allow future production of full or part sets of identical shape and size



Your trusted partner to deliver quality, precision coils in days not weeks

Taping



We can manufacture coils with a range of insulation systems including Hot Pressed Resin Rich, Un-pressed Resin Rich and Vacuum Pressure Impregnation.

- Optimum insulation system for your machine

Pressing



Utilising the latest pressing machines we can insulate and press to the tightest tolerances.

- Ensures best coil fit in the stator slot to give machine optimum performance
- Makes coil fitting up to 40% faster than inferior coils
- Increases coil life

Testing



Extensive tests and checks form part of our quality assurance system which is strictly adhered to and regularly audited by our customers and the British Standards institute.

- Dimensional & fit checks
- Earth testing
- Tan Delta
- Inter-turn
- Partial discharge

CASE STUDY – 48 x High Quality 9.4 MVA, 13.8 kV Upgraded Coils in 10 Days

Background

A US customer, Illinois Electric Works, needed to rewind a 9.375 kVA, 13.8 kV, 3,600 rpm turbine generator utilised in a cogen power plant quickly and efficiently. The original machine was built in 1959 and had coils of a very old design.

Preformed Windings Solution

The customer came to Preformed Windings and after a site visit the day after the initial enquiry a rapid redesign of the coils was conducted. This ensured coil fit with updated materials, an improved insulation system and coil geometry.

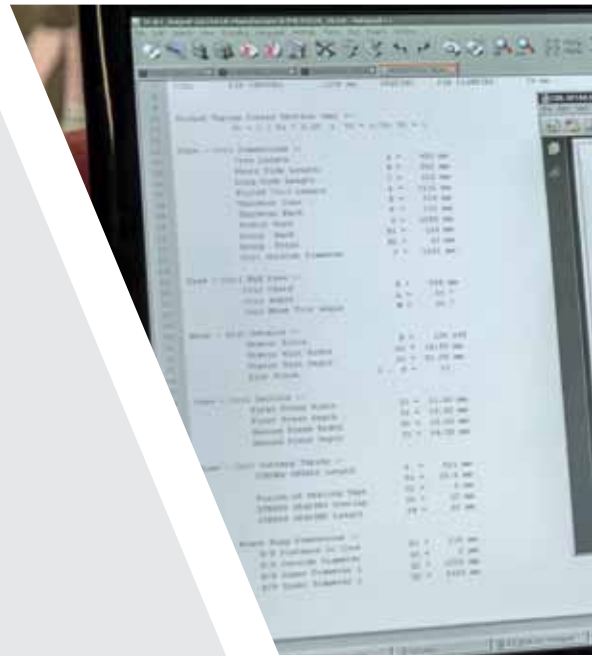
Outcome

The coils were delivered from enquiry to shipment in just 10 days and the machine put back into service 5 days earlier than anticipated.

Customer Advantage

Our customer was able to benefit from various advantages by choosing Preformed Windings as their coil partner, including:

- Redesign allowed a diamond coil to be fitted as opposed to a more expensive stator bar
- New design incorporated increased copper to allow the generator to run more efficiently
- Upgraded insulation further enhanced the coil design extending its longevity and performance in service
- Coil flexibility allowed easier and faster winding on site
- Fast delivery and installation meant a very happy end user!

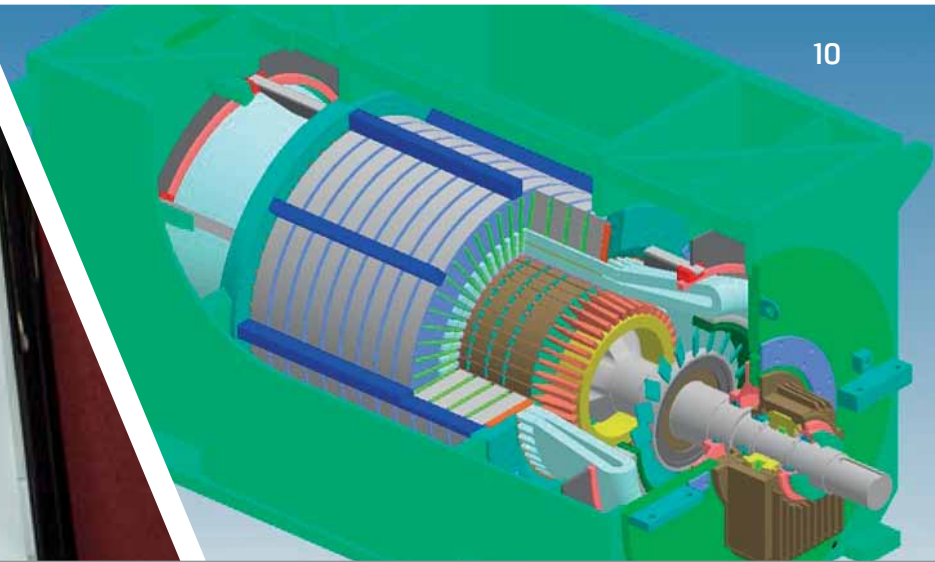
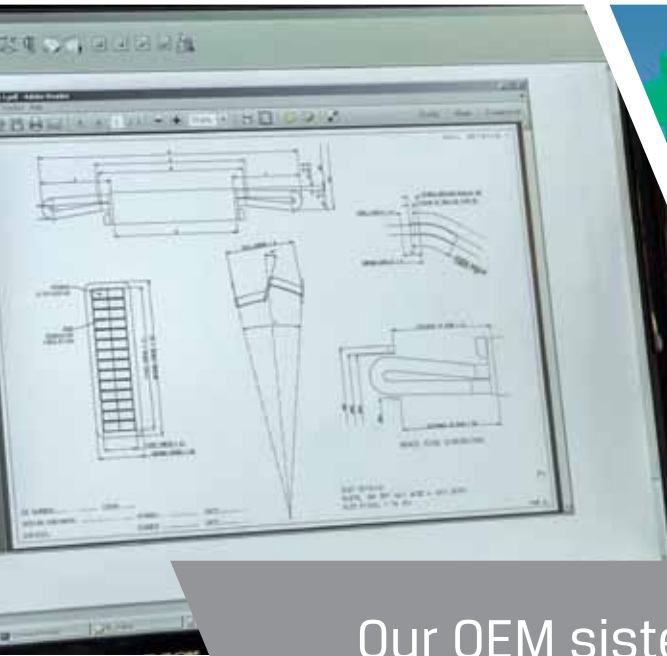


"Preformed Windings quality of coils and speed of response enabled us to complete the rewind 5 days ahead of schedule.

We were delighted with their response and professionalism throughout the project."

Dale Hamil, President,
Illinois Electric Works Inc





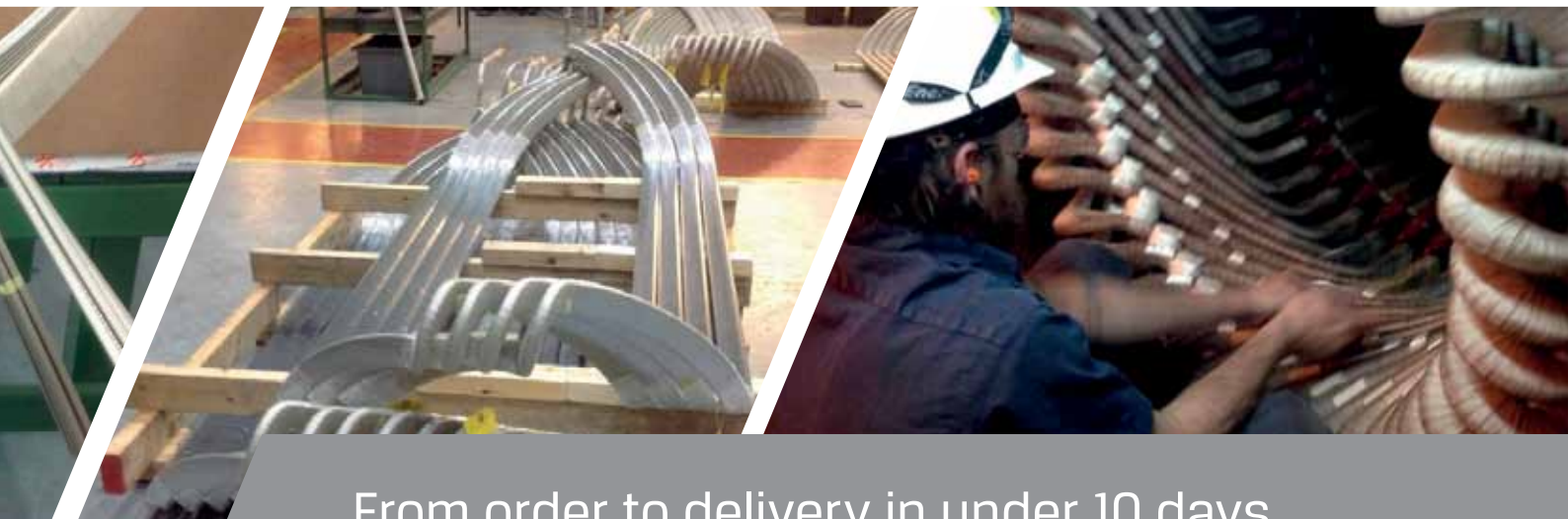
Our OEM sister company provides us with a full technical design capability

Coil Upgrade Expertise

Unlike many manufacturers that will simply copy previous coil designs resulting in similar machine performance, Preformed Windings are different. In many cases we will upgrade the coils used for the rewind. Using our collective experience and OEM sister company we can where appropriate modify designs as follows:

- **Increased copper cross section** – to improve heat transfer, reduce I²R loss and winding temperature, which ultimately improves motor efficiency
- **Improved coil insulation materials** – allows for better heat transference which can lead to enhanced machine performance
- **Reduced coil drop** – can make the coil easier and faster to fit and in some cases allow for diamond coils rather than more expensive bars to be used

In summary the coils used for your rewind will normally be superior to those being replaced.



From order to delivery in under 10 days inclusive of design upgrade

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