

Reels & Drums

JDR Cable Systems Power Core Reel Design

To develop a verifiable process to measure the Scope 3 tCO₂e emissions of every product manufactured by SEA

Enabling Cabling

Case study

sea-reelgood.com

Location
TFKable
Poland,
Onshore

Delivery schedule
June 2024

Total quantity
6 transport reels and
cradles

summary

Design, manufacturing, and delivery of steel reels

This project required SEA to build a reel capable of being used for three purposes. The first stage required 6 transport reels to be built and delivered to JDR Cable's parent company TFKable in Bydgoszcz, Poland for the spooling of Power Core cables. In the second stage, the loaded reels would be delivered to JDR Cable in Hartlepool, UK to be mounted as production reels on a lay-up machine to pay-off of the power core. Thirdly, because the reels were polyurethane (PU) coated, the reels could be reused to spool stainless steel products such as super duplex stainless steel (SDX) hollow tubes

objective

Optimize reel design to provide a multi purpose reel with a lower tCO₂e emissions

Key requirements:

- Verify the reel design with Solidworks® stress analysis for all required use scenarios;
- The drums had to be designed to withstand a 12 rpm twisting motion when mounted on a lay-up machine;
- Each reel had to be certified for a 25 ton capacity;
- Build and deliver 6× 2,950mm flange steel reels including cradles;
- The inside of the reels had to be future proofed and coated with PU to allow their later use for spooling SDX steel hollow tubes;
- Provide a full MRB package;
- To prioritize steel purchase from low emissions steel mills with lower tCO₂e emissions;
- Develop a carbon emissions certificate providing the client with guaranteed proof of the carbon footprint of the reels;
- To arrange client FAT prior to transportation;
- Safe delivery of reels and cradles to the client facility in Bydgoszcz, Poland.

solution

Optimize reel design and develop a product certified emissions certificate

An account manager was assigned to support the customer through the entire project.

Our engineering and design department reviewed the original JDR Cable reel design and work collaboratively with JDR engineers to design a cable reel that met all of their technical requirements.

One of the SEA sustainability objectives in line with the Science Based Target Initiative was to develop product based targets. To achieve this, our supply chain department researched all our company steel suppliers to determine appropriate emissions coefficients. SEA worked with the steel mills and the World Steel Association to access steel life cycle assessments (LCA). Once our supply chain



completed the research SEA was in a position to assign emissions coefficients to each steel supplier and each steel product based on published verified data.

Using the steel database developed by supply chain SEA was able to target steel purchases from lower emissions suppliers, e.g., those using an electric arc furnace using >85% recycled steel.

Once the steel for the JDR order was selected and delivered to SEA the reels were manufactured by expert SEA welders qualified according to ISO 9606-1:2012. Production, testing, and audits carried

out following the mutually agreed ITP and quality control and NDT were performed by certified personnel.

Product reel dimensions were verified using a 3D laser scanner. Once manufactured the reels were painted and coated according to client requirements with PU coating and paint thickness was verified by DFT. During FAT a JDR inspector visited SEA and verified the reels were suitable for release and delivery. SEA used its own truck fleet and expert drivers to safely deliver the 6 reels and cradles to the TFKable plant in Bydgoszcz.

Reel Drum characteristics:

Reel Drum details	Dimensions	Reel Drum details	Dimensions
Reel type	Power core	Width internal (mm)	1,800
Quantity of reel	6	Weight empty (kg)	2,015
Reel type Steel	S355JR	Total width (mm)	2,120
Flange diameter (mm)	2,950	Max load (ton)	25
Barrel diameter (mm)	1,000	Surface treatment	According to ISO 12944:2018 (PU)



Power core reel undergoing FAT at TFK

SEA emissions certificate developed for JDR power core reels

results

Delivered a high-quality reel good solution with lower tCO₂e emissions

SEA was able to build and deliver the reels as per the PO and ITP on time in order to meet the client's strict power core manufacturing schedule. The reels were designed to take advantage of the circular economy and be used for multiple different functions

- a) as transport reels for power core cables
- b) as production reels capable of multiaxial stress for use on lay-up machines, and
- c) as transport reels for spooling and transport of stainless steel products.

The SEA initiative to pre-select steel from mills with lower emissions led SEA to develop a certified emissions certificate that proves the provenance of the products used to build any order and clearly demonstrates our ongoing commitment to fully monitor Scope 3 emissions and provide full cradle to gate transparency to our clients. The emissions certificate is rapidly becoming a regular component of the material record book requested by our clients. Together, Today, Tomorrow we can do our part to continuously drive down global emissions.

sea-reelgood.com

contact us for cost effective solutions
sales@sea-reelgood.com

0924-01