



Case Study: Castings at the heart of one of the world's leading bike share schemes

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Sean O'Dwyer
Director, Telfourth

The Background

Ireland has one of the world's leading bike share schemes with rental sites set up and successfully operating in Dublin, Limerick, Cork and Galway. Telfourth Limited, trading as An Rothar Nua, was appointed to operate all the Irish regional bike share schemes outside of Dublin City Centre by the National Transport Authority in May 2014. Multi-Million Euro funding for the scheme has been provided by the Irish Department of Transport, Tourism and Sport. The scheme operates as TFI Bikes (www.bikeshare.ie).

Telfourth operates a total fleet of 800 bikes through 73 rental stations with more in the pipeline.

Telfourth provides a comprehensive “one-stop-shop” for municipal authorities to help them develop and implement bike share schemes. Their service includes everything from civil works planning, implementation and project management to billing, customer card fulfilment, customer services, asset management, data analysis and fleet control.

The Requirement

As part of this service, Telfourth is responsible for providing the kiosks, which house the card payment systems, telemetry and maps, as well as the locking bollards to which the rental bikes are secured.

These elements need to be robust, secure and durable as they enclose

sophisticated electronics and cabling, and must provide problem-free self-service release and return of bikes for the general public.

The initial requirement was for 8 cast aluminium kiosk assemblies comprising several component parts within which the electronics and cabling would be housed. In addition, 250 sand cast aluminium bollards were required, each with additional cast stainless steel fittings to form the precision locking mechanism into which the bike frames would be secured.

To complicate matters further, the locking mechanisms also had to be designed to allow the same parts to be retro-fitted to existing bollard installations as all the electronics were being upgraded to the new standard. This is the first planned stage of a roll-out of the bike share scheme across Ireland.

NovaCast was the foundry selected by the Telfourth team. As Sean O'Dwyer, Director at Telfourth confirmed, “Right from the very first meeting it was clear to us that we could work with the guys at NovaCast. They obviously knew their business inside out but it was their willingness to understand our technical challenges and the needs of the project as a whole that really impressed us.”



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**Sean O'Dwyer
Director, Telfourth**

The Solution

Having selected NovaCast as their casting partner, the design team at Telfourth worked closely with the production team at the foundry as the designs evolved and electronics/cabling requirements changed but the deadline didn't.

Design solutions were created and tested using NovaCast's Casting Simulation software. This enabled the design team to test design options, identify potential casting issues and solve them before any prototypes were created or tooling committed to. This avoided many expensive and time consuming casting geometry iterations which saved both time and money.

The main kiosk and bollard components were sand cast at NovaCast's UK foundry in re-cycled LM25M Aluminium as this provided the optimum combination of price and performance for this project while also enhancing the scheme's environmental credentials.



The precision Stainless Steel components for the locking mechanism were investment cast and machined at NovaCast's partner foundry in the Far East.

Following extensive quality checking in the UK the components were assembled and shipped to Ireland for installation.



From the start of the initial design process to delivery of the castings, including design, re-design from scratch, pattern production, casting, machining and delivery took just over 4 months.

During that time the casting geometry had to be completely re-worked as the cabling requirements changed. A fact that didn't go un-appreciated by Sean O'Dwyer; “NovaCast just worked with our guys to find a way through the difficulties. Everyone was committed to the same goal so they just took responsibility and got the job done.”

The Result

From a production point of view, this was a challenging project. Evolving design requirements are not ideal when a deadline must be met and tooling committed to but the positive, “can-do” attitude adopted by the design and production teams ensured that the project was a success.



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The investment in getting the design and production process right has paid off as the finished castings are technically more advanced than their predecessors and the quality of the castings is far superior.

A final word from Sean O'Dwyer; “All I can say is that we have been delighted with the way that the NovaCast team supported us and were committed to a successful outcome. They accepted from the outset that changes would be needed along the way and never made an issue of that. I can't fault their technical expertise or their willingness to help.”

To date, NovaCast has delivered 32 kiosk assemblies and over 1,110 cast aluminium bollards complete with stainless steel locking mechanisms.

About NovaCast Limited

NovaCast has over 45 years of ferrous and non-ferrous metal casting experience extending into markets as diverse as transport, utilities, offshore and general engineering. The company's non-ferrous foundry, based in Melksham, England, is supported by a fully risk-managed supply chain that extends out to the Far East allowing NovaCast to provide a single source solution for precision cast and machined components. NovaCast has particular expertise in the production of pressure-tight valve and industrial pump components, complex non-ferrous castings and a wide range of precision castings for many engineering applications. Metals cast include alloys of Carbon and Stainless Steel, Copper, Aluminium, Nickel and many others with a full range of testing, machining, surface treatment and finishing options.