



The Falkirk Wheel

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DURING my recent trip to Scotland with my wife and a couple of friends, we put up three nights in Edinburgh and allocated half a day to visit the Falkirk Wheel about 37km to the west.

I first came to know about the Falkirk Wheel some time in 2007 when someone sent me a series of beautiful photos by email showing how the Falkirk Wheel works. When I was in Scotland, I managed to pick up a leaflet on the Falkirk Wheel from a tourist information centre and, right away, I decided to include it in our itinerary.

As it was winter and the days were short, we decided to travel to our destination by train because it was more direct and, hence faster, even though it was more expensive than going by bus. From the railway station at Falkirk High, we had to walk to a bus stop to take a short bus trip to the Wheel itself.

At the Visitors Centre, we bought tickets for the next boat trip to experience the operation of the Falkirk Wheel, but as luck would have it, the computer system of the Wheel went haywire and the boat trip was cancelled.

The Falkirk Wheel is the world's first and only rotating boatlift, and is claimed to be Scotland's most exciting example of 21st Century engineering. Officially opened on 24 May 2002 by Queen Elizabeth II, it reconnects the 220-year-old, 61km long Forth and Clyde Canal with the 180-year-old, 53km long Union Canal, making it once again possible to sail between Edinburgh on the east and Glasgow on the west.

The Union Canal is 35m higher than the Forth and Clyde Canal. A 1km extension and a double staircase lock lowers the Union Canal by 7m by the time the Canal ends at a 104m long aqueduct which runs directly into the Falkirk Wheel's upper gondola.

The Wheel rotates and the upper gondola, with its contents of 250 tonnes of boats and water, is lowered 25m to



a dry well alongside the lower basin at the same time that a similar lower gondola is being raised by the opposite arm to the level of the aqueduct. Once released into the lower basin, the boats sail through a single lock and drop the final 3m to join the Forth and Clyde Canal.

As the two gondolas practically balance each other, the Falkirk Wheel needs only 1.5kWh of electricity to complete a half turn in less than 5 minutes. With boats loading and unloading, however, the total journey time is around 15 minutes.

An ingenious arrangement of a series of two small cogs sandwiched between three large cogs hidden behind the arm next to the aqueduct ensures that the gondolas always remain horizontal irrespective of where the Wheel is in its cycle.

The Falkirk Wheel is indeed a very elegant design using very simple mechanical engineering principles. ■