



THE ENGINEERING OF THE CENTRAL TRAMWAY, SCARBOROUGH

The Central Tramway is a funicular railway, the principle of which is that two carriages are permanently attached to each other by means of steel hauling ropes, or cables. As one carriage ascends, the other carriage will descend.

The two tracks run between the top station on Marine Parade, and the bottom station on Fore-shore Road. Each track is 248 feet or 75m long. The 2 carriages are named Grand and Olympia for operational and engineering purposes. Each carriage is constructed from an aluminium outer shell on a steel frame. The triangular base frame is similar to those of the water balance railways but does not contain the water tank beneath the carriage. Access to both carriages is via sliding doors on the ends.

At Central Tramway 4 hauling cables are attached to the two carriages, these are special high strength, compacted cables, each one 19 mm in diameter, with a breaking strength of 32 tonnes, therefore the four cables are capable of carrying 128 tonnes. The two carriages, can carry up to 20 passengers seated and 10 standing, and when fully loaded each can weigh up to 8 tonnes, or 16 tonnes in total, well within the capacity of the 128 tonne breaking strength.

The driver sits in the booth at the top station with full sight of both carriages (CCTV screens also allow full view of the bottom and top stations where passengers alight and disembark). The system is powered by a 60 horsepower electric motor, the motor drives a David Brown 17 inch gear-box, which then rotates the 7ft diameter main pulley or sheave wheel. Gravity aids in the movement of the carriages making the Tramway very energy efficient.

In 2019 a new programmable logic control drive system was installed by Wheelsets UK in preparation for the 2020 season. The new system uses the latest in computer technology to monitor and control the movement of the carriages with compre-

hensive integrated safety systems to improve the smooth and safe running of the railway. New digital control panels allow clear and concise information to be relayed to the driver.

A new hydraulic disc brake mounted on the main sheave wheel was installed in January 2020.

HEALTH AND SAFETY

The regulatory body responsible for the oversight of funicular railways in the UK is HM Inspector of Mines (HMIM). The HMIM hold meetings twice per annum with all funicular operators as part of their supervisory activities, and pay periodic visits to all the funiculars. Central Tramway complies with the Lifting Operations and Lifting Equipment Regulations (LOLER), and is inspected every six months to guarantee compliance.