


# GOING UP IN THE WORLD

## THE MACHINES THAT DO CONSTRUCTION'S HEAVY LIFTING

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 Cranes simulate the human knuckle by lifting and placing items into position. Cranes were originally powered by humans and other animals. Ninety per cent of the world's trade takes place on the water. Most items we acquire in Bermuda are craned. The Crane Operators Association of Bermuda was formulated to standardise and regulate crane education, inspections and certifications.

Cranes were originally made from wood, from ancient times through the medieval periods. The earliest archaeological findings of cranes were in Greece, where cranes were used for the building of homes and tall buildings.

Evidence of the change from wood to metal came during the Industrial Revolution in Britain which developed the use of iron and steel metals for manufacturing plants, the production of goods and shipbuilding with the use of steam power in the 19th century.

From the early 1900s, steam was gradually superseded by electric and diesel power beginning in the late 1930s, becoming more prominent in the United States, which further developed the use of cranes.

**Mobile cranes and tower cranes** are commonly used in Bermuda for their ability to off-load cargo and to help build buildings. Mobile cranes are usually classified under crawler, truck crane, rough-terrain and all-terrain.

**Truck-mounted cranes** have two parts: the carrier, often referred to as the lower, and the lifting component which includes the boom, referred to as the upper. These are connected together through a turntable, allowing the upper to swing from side to side.

**Crawler cranes** can be seen on the docks and are used to offload goods being shipped to Bermuda from abroad.

**Rough-terrain cranes** generally have four wheels, four-wheel drive and four-wheel steering, a boom mounted on an undercarriage and

outriggers used for stability. Mobile cranes are good for getting into small areas and commonly have a single diesel engine.

**All-terrain cranes** are versions of a mobile hydraulic crane. All-terrain cranes are essentially a hybrid between a mobile truck crane and a rough-terrain crane. They are used to build other cranes.

**Tower cranes** are fixed to the ground on a concrete slab, the base is attached to the mast which is erected to give it its height. The slewing unit is attached to the mast for rotation. The operator's cabin and jib are attached to the top of the slewing unit. The crane rotates on its axis before lowering the lifting hook. Tower cranes are also a common feature when building commercial buildings, and they often use electrical power.

**Riggers** communicate with the operator to control the crane by radio remote control from the ground. They are most often in radio contact, and always use hand signals. The rigger directs the schedule of lifts for the crane and is responsible for the safety of the loads. For more on crane operator certifications contact PACE at the Bermuda College.

Cranes are made of welded metal structures, whose life can often be extended for many years by after-treatment of welding. The loads they can lift can be significantly increased by proper welding. For more on welding, look up the Bermuda Government's National Certification Programme. ■

