

The Science of Cranes

Cranes use a combination of simple machines to make a compound machine to lift heavy objects.

The long arm of a crane acts as a **lever**. Cranes also use **pulley** systems. Both of these simple machines allow the crane to increase the force applied. Cranes use hydraulics to move the lever. Hydraulic systems use pressurised liquid to make a machine move.

If you fill the syringe with air and put your finger over the end you will be able to compress the air. This is because gas particles have more space around them and can be pushed together. Liquid particles do not have space between them, so they cannot be compressed.

When you apply a push force to the plunger of the syringe filled with water, the pressure moves through the water and causes the plunger of the other syringe to move. This is the principle of hydraulics and allows the machine to transmit (move) the force to a different place.

HYDRAULIC SYSTEMS USE
PRESSURISED LIQUID TO
MAKE A MACHINE MOVE