Thorpe PARK

SCIENCE AT THORPE PARK
KS3

FACTS & FIGURES

TIDAL WAVE

You get 2.7 bathtubs of water dumped on you in Tidal Wave

DETONATOR

During your ride on Detonator, you are dropped from the height of 7 double decker buses

STEALTH

Stealth has the world's highest acceleration on a coaster

TRUE OR FALSE

1. Most rollercoasters don't use power after reaching the top of the first slope.

TRUE

2. People sitting at the front of a rollercoaster experience the largest forces.

FALSE

3. Many rides (including drop towers such as Detonator, pictured) use magnets to slow down at the end.

TRUE

4. Rollercoaster cars have 3 sets of identical wheels to keep them on the tracks.

TRUE

COASTER CONSTRUCTION

Constructing a rollercoaster is a very long process with lots of different stages.

Mechanical & electrical engineers, and physicists are involved throughout the process.

How long do you think it takes for a coaster to be built from initial conception to opening to the public?

4 YEARS!

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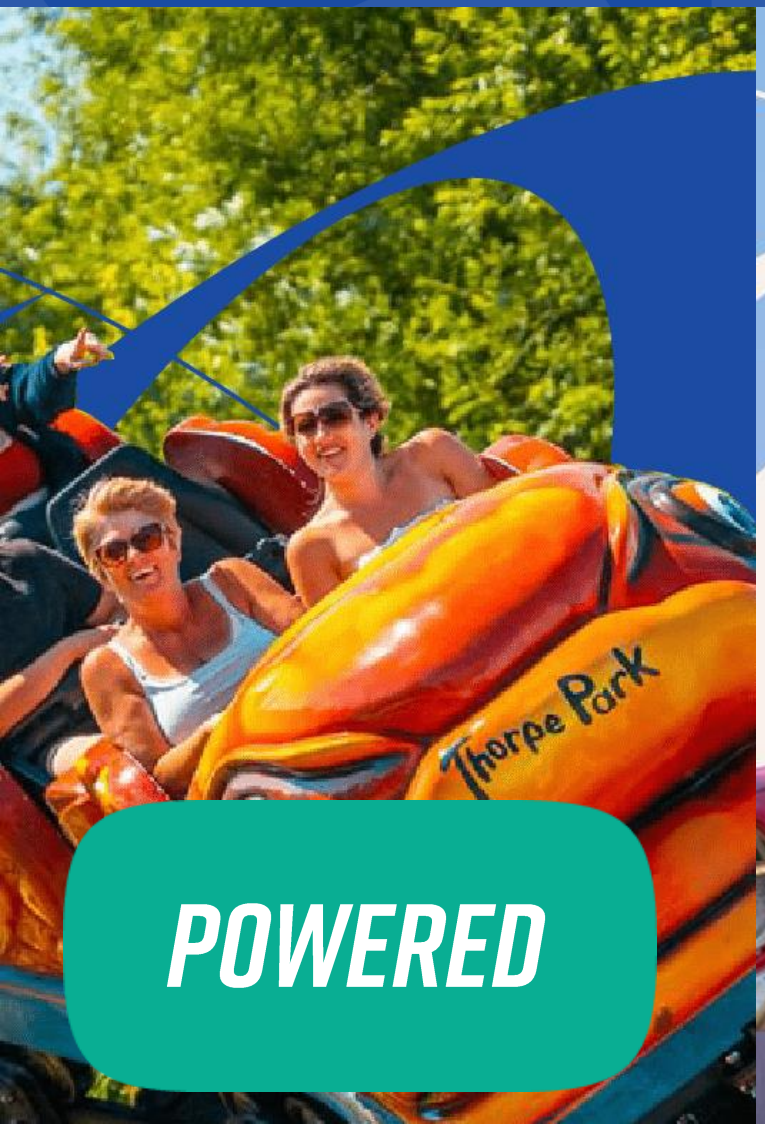
HOW ARE ROLLERCOASTERS POWERED?



POWERED

LAUNCH

TRADITIONAL LIFT

ENERGY TRANSFERS IN A ROLLERCOASTER

YOU CAN EXPERIENCE UP TO 5G ON OUR RIDES – WHAT DOES THAT MEAN?

HOW DO THE BRAKES WORK?

ELECTROMAGNETIC BRAKES

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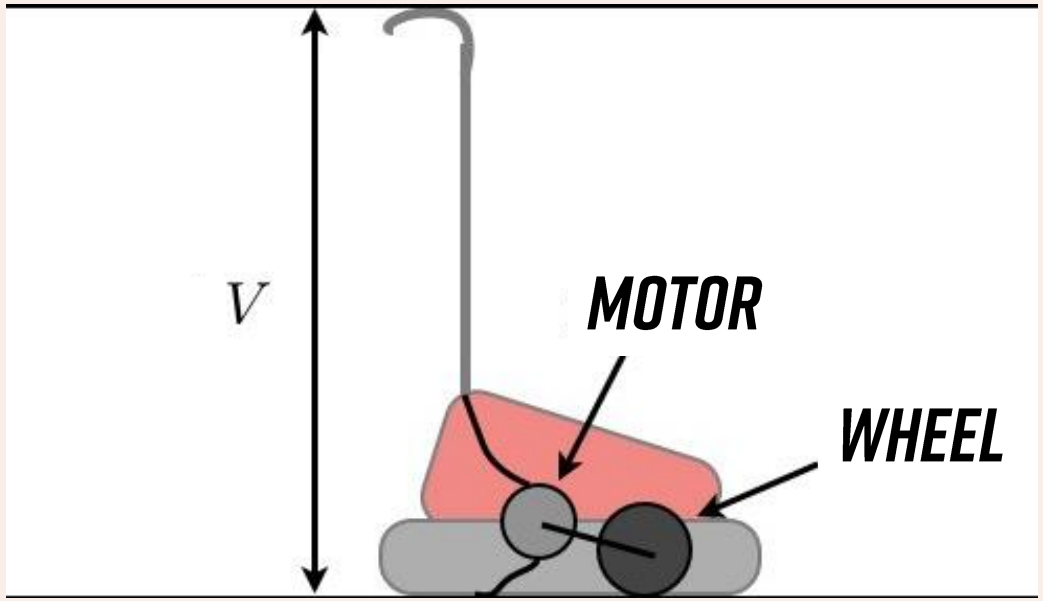
HOW TO DODGEMS WORK?



V = Potential Difference or Voltage

WHAT'S THAT HISSING NOISE?

WHAT ABOUT OTHER INTERESTING NOISES?

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HOW LONG WILL I HAVE TO QUEUE?

- Fastrack
- Speedy boarding/exiting
- Quick harness checking

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STEALTH: 0-80 MPH IN 2 SECONDS?! HOW?

The train hooks onto a ‘catch car’ which is catapulted down the track using hydraulic launch mechanism.

The force from the hydraulic system depends on the mass of the loaded train.

WHAT IS A ROLLBACK ON STEALTH?

A rollback on Stealth occurs when the train does not have enough energy to carry it over the “top hat”.

This is a video of a genuine rollback and shows how the train is brought to a controlled stop.

ALWAYS INNOVATING!

What's that smell?

TO SUM UP:

- Energy transfers: interchange between gravitational and kinetic stores
- Gravity and g-forces
- Friction braking and magnetic braking, both causing heating
- Electric current and potential difference
- Circular motion and orbits
- Pressure in liquids and gases (hydraulics and pneumatics)
- Rates and capacity

THANK YOU!