

How To Build...

Unprecedented access to some of the world's most advanced engineers and designers.



How To Build...

Programme running: 3 x 59 mins Production: BBC

How To Build... A Satellite

Millions of people around the world watch live sports events on TV. The images you see make a round trip of 72,000 kilometres via satellite to your screen in just one second. Satellites have allowed us to see and hear the world as it happens.

Engineer Astrium's order books are full; producing payloads for multi million pound satellites, assembling precision equipment that will boost broadband, HDTV and mobile communications across the world.

Over 15,000 engineers in bunkers and 'clean rooms' across Europe work in three shifts, 24 hours a day, developing precision components that work perfectly in burning heat and icy cold; perform a sling shot around Venus and offer a perfect signal for up to 20 years.

How To Build... A Super Car

What does it take to build the kind of racing cars which win 163 Grand Prix? We go behind the scenes at one of the world's most secretive companies, McLaren.

Formula One Racing cars can reach speeds of 350kph and hit 160kph in under four seconds. Their drivers experience greater g-force than the crew of a Space Shuttle and the gearbox will reach temperatures of 150°C. To counter these extremes every centimetre of the car must be engineered at a microscopic level.

Top Formula One constructors McLaren are taking this F1 technology, experience and expertise and are applying it to a road car, the MP4-12C. Hand built from carbon fibre, this \$270,000 super car will be one of the most cutting-edge and glamorous machines ever built. Yet it's a massive gamble – the unique factory designed to create the new car has cost over \$60 million alone.



How To Build... An Aircraft Wing

The wing defines the aircraft. Engineers are constantly pushing the frontiers of quality design and manufacture, enabling bigger aircraft with ever greater capacity to be built through increasing the efficiency of the wing. In this film we follow 'the world's biggest commercial aircraft wing' as it's constructed; including the new technologies for manufacture and new production techniques.

Light composite wings are the key to big savings - reducing an aircraft's bulk by only 1kg will save an airline \$100,000 in fuel costs over the 30-year life of a plane. Cutting edge laser technology turns raw materials into the huge wings which need to perform perfectly every time.

Images: car © Patrick Gosling and Paul Barshon, aircraft © Swiss Air Force

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