

# When the going gets tough,

# copper gets going

#GOCOPPER

Photo credit: CERN

*The Large Hadron Collider at CERN, the world's largest and most powerful particle accelerator – Geneva, Switzerland*

**copper**  
gets going to  
the origin of  
the universe

**Super-  
conducting  
wire for  
the CERN  
particle  
accelerator**

 @Go\_Copper

**Cu** European  
Copper Institute  
Copper Alliance

### Going to explore the nature of matter

Unlocking the unsolved mysteries of the universe... That's what the CERN particle accelerators aim to achieve. By recreating the conditions right after the Big Bang, scientists are studying the building blocks of matter and forces of nature. And right at the heart of this powerful construction are superconductor strands made of high-tech copper-based filaments.

### Going to collide at the speed of light

The Large Hadron Collider is the largest science apparatus ever built. Located in a 27-kilometre tunnel between France and Switzerland at CERN (the European Organisation for Nuclear Research), the particle accelerators project particle beams to near the speed of light. When the particles collide, the scientific magic happens, giving physicists clues to the formation of the universe.

### Going to the moon and back – 684 times

Luvata Group provided the superconducting wire for the dipole and quadrupole magnets, which steer and speed the light-speed particles around the tunnel to their collision. It required 2,280 kilometres of superconducting cable, with 36 strands per cable and 6,400 filaments per strand. That's over 525 million kilometres of superconducting filament delivered to exact specifications – equalling 684 return trips to the Moon!

### Going beyond the boundaries of science

CERN and the Large Hadron Collider (LHC) continue to search for answers to unsolved questions of the cosmos. The next discovery of rare physics phenomena might just be powered by LHC's copper niobium-titanium wires.