

How technology conquered the “death zone”

Oxygen systems used in Everest's death zone – above 7,600 metres – have developed from solid steel cylinders used until the 1960s to today's light aluminium-carbon fibre bottles. Electronic delivery systems also reduce the amount of oxygen used during hard climbing

1924: Each cylinder used by **George Mallory** weighed 3.5kg and held 535 litres of oxygen – enough for four hours. Rubber delivery pipe clenched between teeth

1953: Cylinder set used by **Edmund Hillary** weighed 18kg and held 800 litres – about 6 hours of oxygen

Modified Royal Air Force pilot's mask

Pressure up to 300 bar.
306kg/square cm

Seamless, thin-walled, aluminium alloy cylinder wrapped in layers of carbon fibre

2003: Luxfer cylinders used during British **Royal Navy-Royal Marines** bid on Everest's North Ridge weigh 1.9kg and hold 900 litres of oxygen

Plastic cannula fits into nose

EDS on-demand oxygen system delivers pulses of oxygen as climber inhales. Reduces oxygen use by up to 85 percent