NUI AS has developed NCCD, a small, compact and lightweight chest compression device that can substitute manual chest compression during CPR for use in diving bells and hyperbaric chambers.

A sudden unexpected cardiac arrest (SCD) is a major global public health issue, accounting for up to 20% of deaths in Western societies. Rapid and good cardiopulmonary resuscitation (CPR), combined with a defibrillator (AED) are essential, and improve the chance of survival. Without good CPR after a cardiac arrest, brain damage will occur after just 5 minutes, and the chance of survival decreases by about 10% per minute from the onset of cardiac arrest without treatment. There is often a lack of both good CPR knowledge and an availability of a AED in the workplace. Statistically, we see that only 10-15% of patients with a cardiac arrest survive.

Saturation divers live and work in small compact compartments, under hyperbaric pressure, using diving bells and hyperbaric chambers. There have been reported cases of fatal SCD during saturation diving. The space in the diving bells and chambers is very limited, and manual CPR is challenging, and in some situations, impossible. There is a need for mechanical chest compressions during CPR in general, as well as in hyperbaric compartments.

NCCD is powered by compressed gas already available. It contains no electrical parts and has been function tested in a helium atmosphere to a depth of 300 msw. The NCCD (piston unit) will also function while submerged in water.

The NCCD has been developed with support from GASSCO, Equinor, Vår Energi, AkerBP, Subsea7, TechnipFMC and Innovation Norway.

Specifications
Operating temperature: -5°C (41F) to 60°C (140F)
Sound: max 80 dB at operating distance
Storage temperature: 5°C (41F) to 40°C (104F)
Maximum ambient pressure: 30 bar (435 psi)

Dimensions
Chest belt: L1500 mm, W110 mm
NCCD weight: 2100 g (4.63 lbs)
Case with NCCD weight: 3350 g (7.39 lbs)
Case size: W265 x D240 x H174 mm

Requirements
Gas drive pressure: 10 bar (145 psi). Hanson 600 series, 1/4” female coupling
Chest circumference: 90-125 cm (31-49 in).
Compression depth: 60 mm (2.36 in).

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