NEMO SHELTER ONE

Personal Survival Capsule

A personal protected space for the critical minutes and hours following structural collapse.

NEMO SHELTER ONE is a compact individual protective module designed to preserve a survivable space around a person during structural collapse and to provide protection from falling debris, dust, smoke, and other secondary hazards associated with an emergency.

Comparable in size to a large household refrigerator or wardrobe, the module can be installed directly in an apartment, private home, office, hotel, medical facility, control room, or workplace.

The core principle is simple:

The shelter is where the person is.

PURPOSE

Most conventional shelters require time to reach.

In a sudden emergency — particularly at night or when a building is directly affected — that time may simply not exist.

NEMO SHELTER ONE is designed for situations in which a person needs access to a protected survival space **within seconds and without leaving the building interior**.

The module is primarily intended to reduce risks associated with:

- collapse of walls and floor structures;

- falling structural elements and debris;
- secondary mechanical impacts;
- construction dust;
- smoke and reduced air quality;
- loss of external electrical power;
- disruption of conventional communications;
- entrapment beneath collapsed structures.

NEMO SHELTER ONE **is not intended to replace a certified stationary shelter** when such a shelter is accessible and there is sufficient time to reach it safely.

It represents an additional, last-line layer of individual protection.

PROTECTION PRINCIPLE

At the core of SHELTER ONE is an independent spatial load-bearing structure.

Its purpose is not to make the occupant "invulnerable," but to **preserve the minimum survivable volume around the person** even if the surrounding room or part of the building is damaged or collapses.

Inside the module is an energy-absorbing seat designed to support and stabilize the occupant's body and head.

Once the occupant enters and closes the module, autonomous systems are activated:

AIR → POWER → COMMUNICATION → MONITORING → SURVIVAL

Even if external power is completely lost, critical systems continue operating from the module's independent energy source.

STRUCTURAL SURVIVAL CELL

Independent Protective Structure

The SHELTER ONE enclosure is designed as a self-supporting structural system with reinforced corner, longitudinal, and transverse load-bearing elements.

Its primary engineering objective is:

To preserve a survivable internal space during localized and progressive collapse of surrounding building structures.

The structure is intended to address vertical loading, lateral loading, localized impacts from debris, and deformation of surrounding structural elements.

Actual load limits must be established through engineering analysis, full-scale testing, and subsequent certification.

AIR SYSTEM

Autonomous Air Management

Once the module is closed, SHELTER ONE continuously monitors the internal atmosphere.

The air-management architecture may include:

multi-stage filtration → HEPA filtration → sorption filter → forced ventilation → CO_2 / CO / temperature monitoring.

When outside air remains available, the system operates using filtered external ventilation.

If primary air intakes become obstructed by debris, reserve operating modes are provided to maintain a survivable internal atmosphere.

Two independent air paths can reduce the risk of complete ventilation loss if one intake is blocked or damaged.

WATER

Emergency Drinking Water

An integrated emergency drinking-water reserve is located inside the module.

Standard configuration: 3–5 litres.

Extended configuration: up to 8–10 litres.

The water is stored in protected containers and remains accessible to the occupant without leaving the seat.

Additional protected storage can accommodate compact emergency food supplies and essential personal items.

AUTONOMOUS POWER

Independent Energy Supply

SHELTER ONE incorporates its own $LiFePO_4$-based battery system.

It provides independent power for:

ventilation, sensors, communications, emergency beacon, control systems, and internal lighting.

Target autonomy

24 hours — standard configuration.
Up to 72 hours — extended configuration.

As battery capacity decreases, the energy-management system automatically disconnects non-essential loads.

Life-support functions always receive priority.

COMMUNICATION

Connection to the Outside World

Following a structural collapse, an ordinary mobile phone may no longer provide reliable communication.

SHELTER ONE therefore incorporates the possibility of multiple independent communication channels.

Depending on configuration:

LTE / GSM · Wi-Fi · Bluetooth · GNSS · emergency radio channel · local rescue beacon.

A particularly important component is the **RESCUE BEACON**.

Once activated, the module can periodically transmit an emergency signal indicating that an occupant is inside.

The objective is not only to keep the occupant alive, but also to **help rescue teams locate the survival capsule beneath debris.**

BLACKOUT MODE

Autonomous Operation After Structural Damage

If external power disappears, SHELTER ONE automatically switches to a low-energy emergency operating mode.

The system continues monitoring:

AIR / CO_2 / CO / TEMPERATURE / POWER / COMMUNICATION

Non-essential comfort systems are disabled.

System priority becomes:

Air → Emergency Communication → Monitoring → Lighting

Critical functions are designed to include manual operation independent of the main electronic control system.

EMERGENCY ESCAPE

Independent Escape Routes

The main door should never represent the occupant's only means of escape.

The SHELTER ONE concept therefore provides at least **two independent escape directions accessible from inside the module.**

Mechanical emergency-release systems are intended to remain operational even in the event of:

- complete electrical failure;
- failure of the primary control electronics;
- partial deformation of external components;
- failure or obstruction of the main door mechanism.

SAFETY MONITORING

Integrated sensors can monitor:

smoke · CO · CO_2 · temperature · air quality · pressure · battery condition · door status · life-support system status.

Information is displayed on an internal control panel.

The system is intended to remain intuitive enough to be operated by a person without specialist training.

PRELIMINARY SPECIFICATIONS

Parameter	**NEMO SHELTER ONE**
Capacity	1 adult
External dimensions	approx. 2000 × 800 × 900 mm
Target weight	approx. 250–350 kg
Reinforced version	approx. 350–450 kg
Occupant position	Seated / semi-reclined
Structure	Spatial structural survival cell
Battery technology	$LiFePO_4$
Energy reserve	approx. 1.3–2.5 kWh
Autonomy	24 h / extended up to 72 h
Drinking water	3–5 L / optional 8–10 L
Air system	Filtration + forced ventilation
Atmospheric monitoring	CO_2 / CO / temperature / smoke
Communication	Cellular + emergency radio/beacon
Lighting	Primary + independent emergency lighting
Escape routes	Primary + independent emergency exit
Control	Automatic + manual

All specifications are preliminary design targets and are subject to engineering analysis, prototype testing, validation, and certification.

APPLICATIONS

SHELTER ONE can be adapted for residential apartments and private homes, hotels, hospitals and medical facilities, administrative buildings, offices, control rooms, energy facilities, and critical infrastructure.

Exterior finishes can be adapted to the surrounding interior — from neutral white panels to wood, metal, or other architectural finishes.

As a result, in everyday life SHELTER ONE can appear to be an ordinary piece of modern furniture.

In an emergency, it becomes a **personal survival point**.

NEMO PERSONAL SHELTER SYSTEMS

SHELTER ONE can form part of a broader family of integrated personal protection solutions:

NEMO SHELTER BED — protection while sleeping.

NEMO SHELTER ONE — individual compact survival capsule.

NEMO SHELTER DUO — enlarged module for multiple occupants.

NEMO SHELTER WALL — multiple independent protective modules integrated into a building interior.

NEMO SHELTER ONE

Not a bunker somewhere far away.

Not a shelter you still have to reach.

Protected space — only seconds away.

NEMO LABS — Technologies for Life.

NEMO SHELTER ONE™
Proprietary technology concept developed by NEMO Labs.
Technical architecture and implementation details are intentionally undisclosed.
Intellectual property protection in preparation.