

BERGEN INTERNATIONAL DIVING SEMINAR 2019

DEVELOPMENT OF SPHL'S

14 November 2019

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SPHL'S > FROM CONCEPT > TO ACTUAL PRODUCT

SPHL'S FOR THE GLOBAL SATURATION DIVING MARKET HAVE BEEN AROUND FOR YEARS, THIS IS OUR TAKE ON INCREASING PRODUCT PERFORMANCE

- The presentation will show a mix of theoretical background combined with actual product images and testing.
- The presentation will show the overall product specifics and will not go into every full detail.
- Presentation is pre-dominantly based on pictorial content rather than textual.
- Do note that data provided in this presentation are rounded numbers and are based on certain assumptions.



SPHL'S > PRESENTATION > ITEMS TO ADDRESS

CREATING A NEW EXTERNAL SPHL HULL

- Starting from a list of SPHL improvements the external SPHL hull was designed to incorporate these changes. This was followed by serious testing, as per SOLAS requirements.

THERMAL PERFORMANCE SYSTEM DESIGN

- Based on the extreme hot and cold environmental conditions to heat loss (or ingress) is improved by insulating the pressure chamber thus increasing performance.

LIFE SUPPORT, MACHINERY AND EQUIPMENT

- The life support machinery is powered independently from the main engine by redundant generator sets. Most chamber equipment is fitted to the PV as a single lift.

IMPROVED SERVICEABILITY OF THE SPHL

- Specific attention has been given to improve serviceability of the SPHL, canopy removal capability and gas buffer access. This is further aided with increased operator space.

SPHL STANDARD FITTED CSMTS SYSTEM

- As the IOGP requirement to have a Critical System Monitoring and Tracking System (CSMTS) installed the SPHL is fitted with such a system as a standard delivery.

BESPOKE SPHL DESIGNS

- Renewed attention is given to the potential use of Transfer Under Pressure (TUP) diving. A bespoke design for such a TUP capable SPHL has been prepared.

CREATING A NEW EXTERNAL SPHL HULL



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SPHL'S > SPHL GRP HULL > MANUFACTURER SURVITEC



SOURCE: SURVITEC / ROYAL IHC – IHC HYTECH

SPHL'S > SOLAS TESTING > DROPPED FROM HEIGHT



SPHL'S > SOLAS TESTING > SIDEWAYS IMPACT LOAD



SPHL'S > SOLAS TESTING > FLOODED BUOYANCY CAP.



SPHL'S > SOLAS TESTING > SELF-RIGHTING 360°



SPHL'S > SOLAS TESTING > WATERSPRAY COVERING



SPHL'S > **SOLAS TESTING** > **ENDURANCE AND SPEED**



SOURCE: SURVITEC / ROYAL IHC – IHC HYTECH

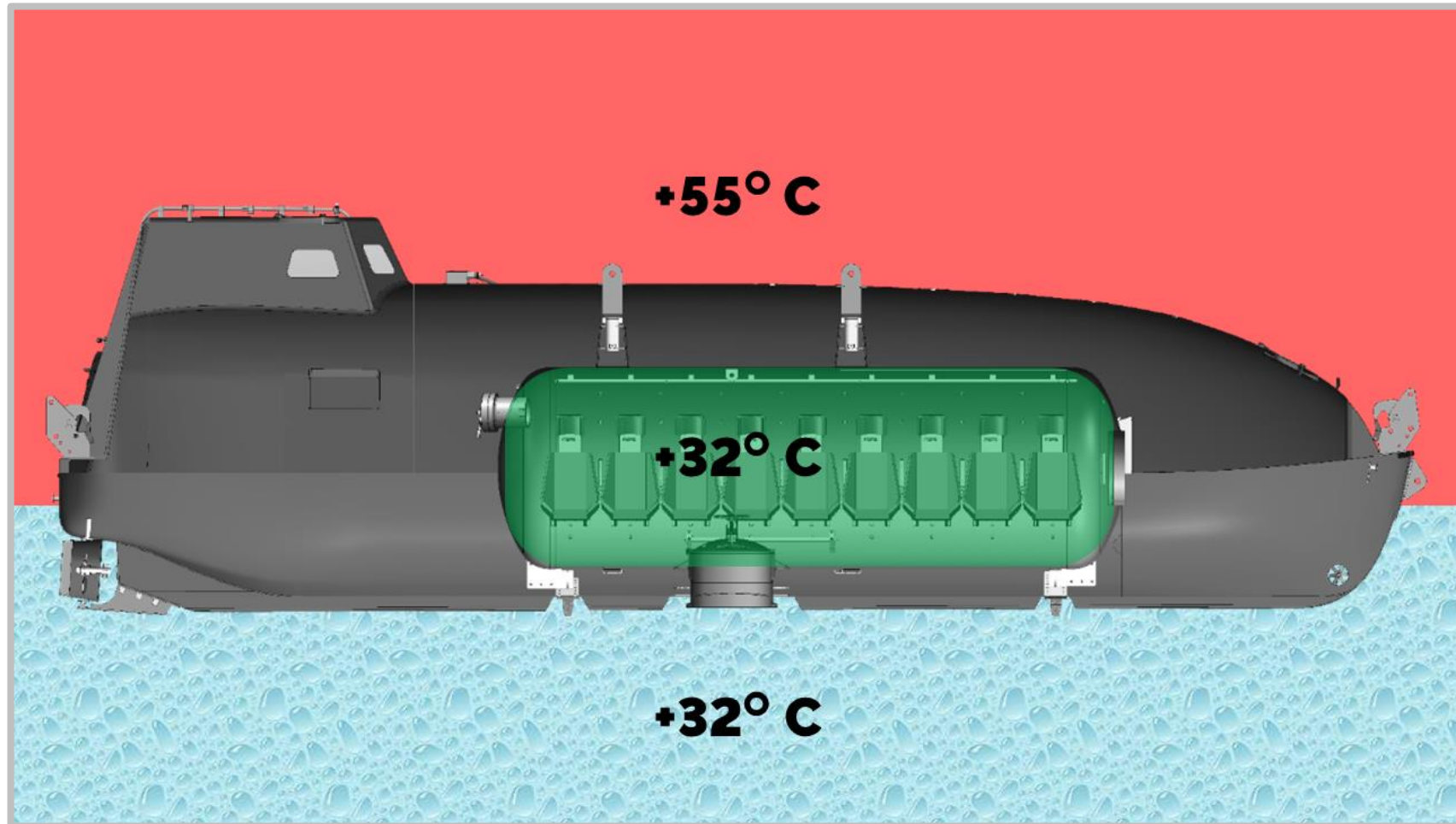
THERMAL PERFORMANCE SYSTEM DESIGN



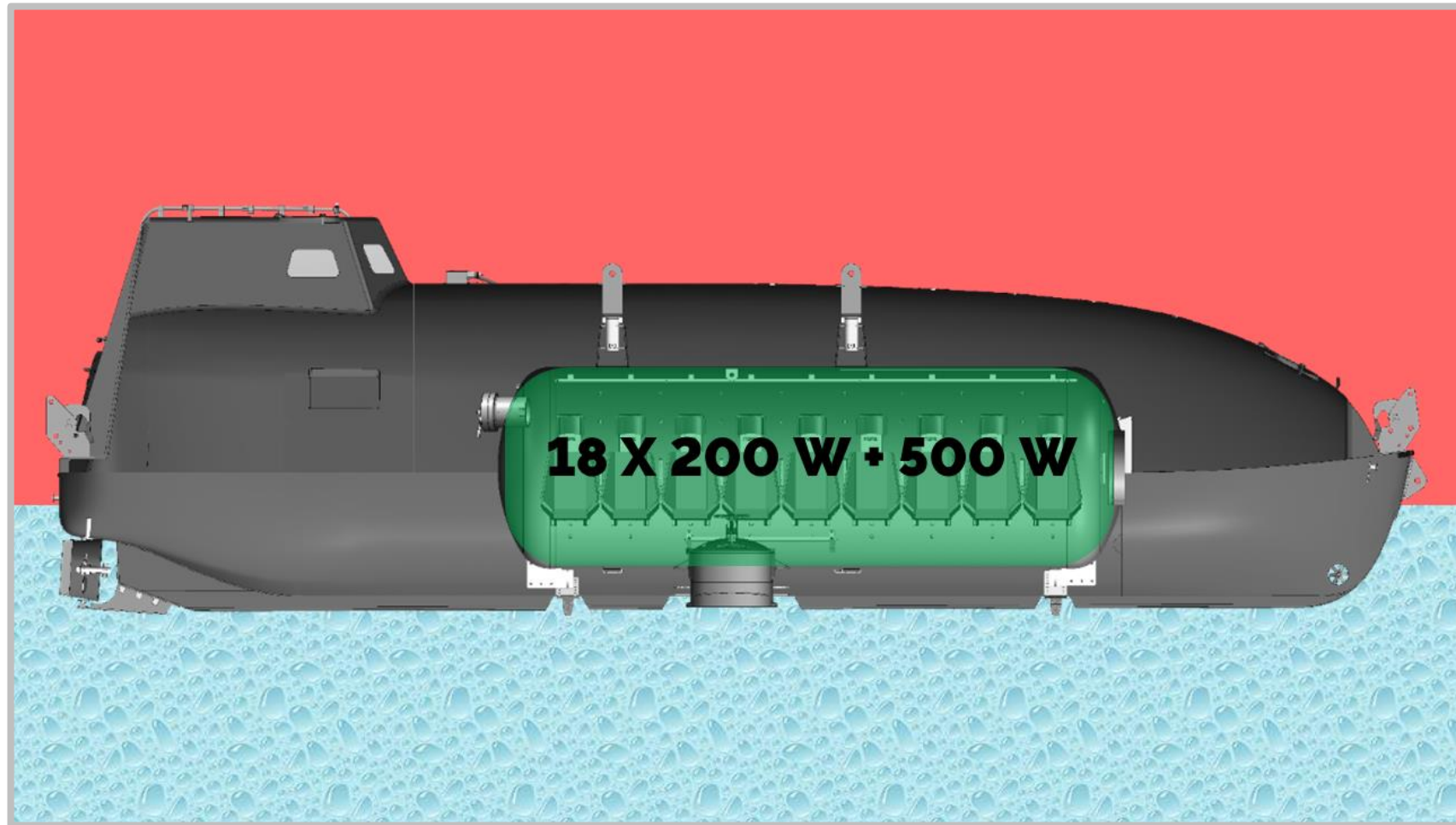
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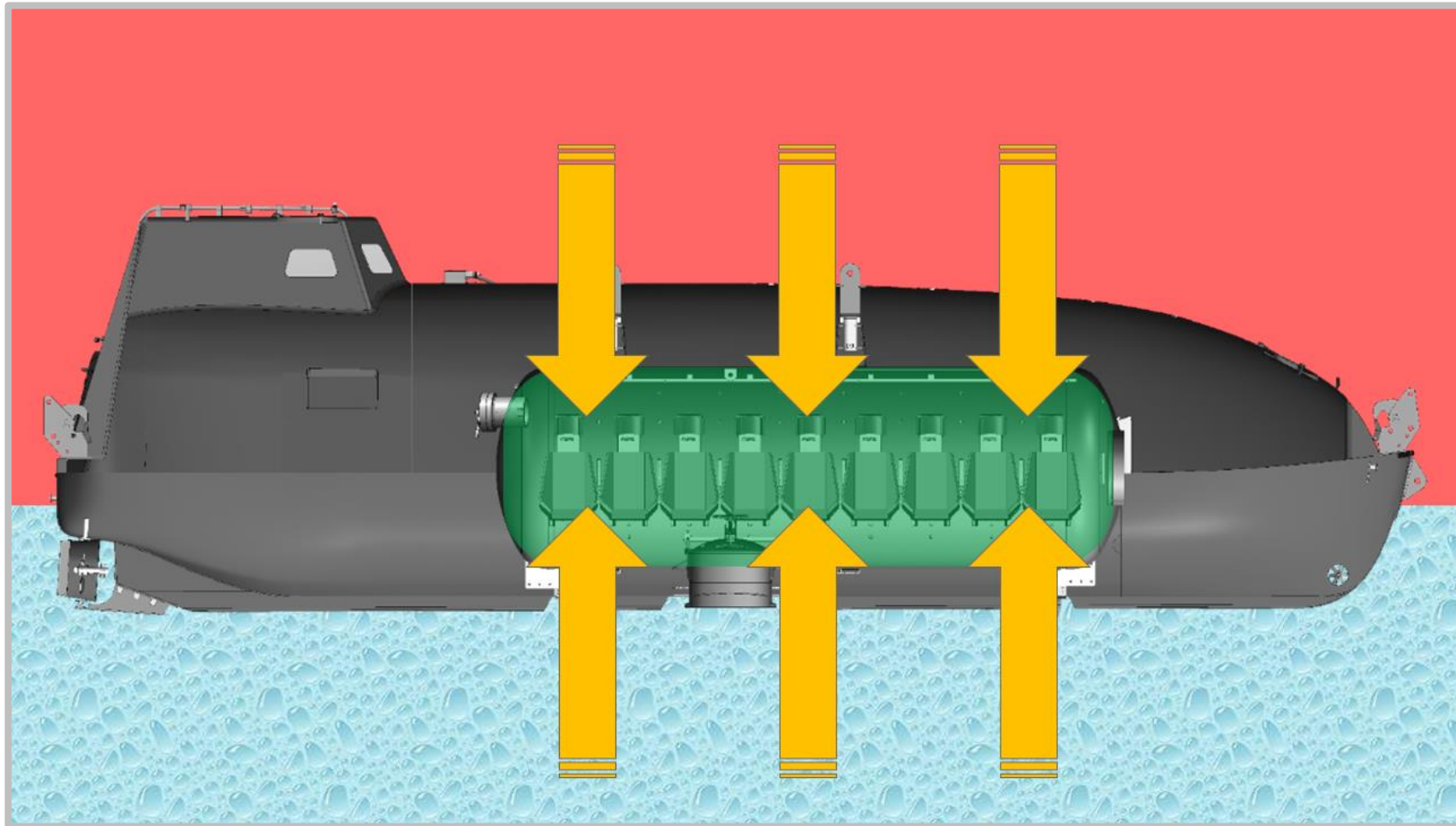
SPHL'S > THERMAL > TROPICAL CONDITIONS



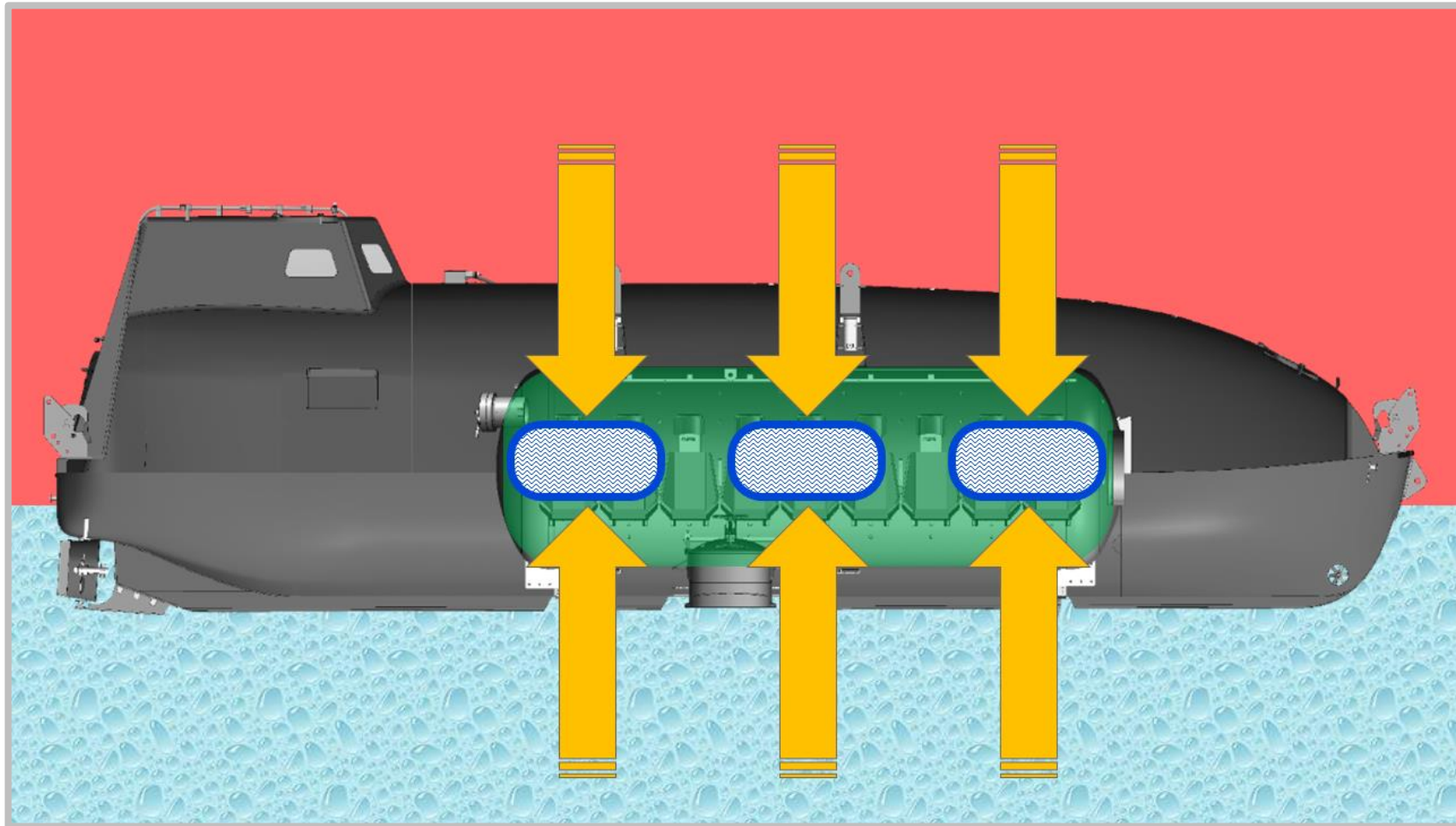
SPHL'S > THERMAL HOT > HEAT PRODUCED INSIDE



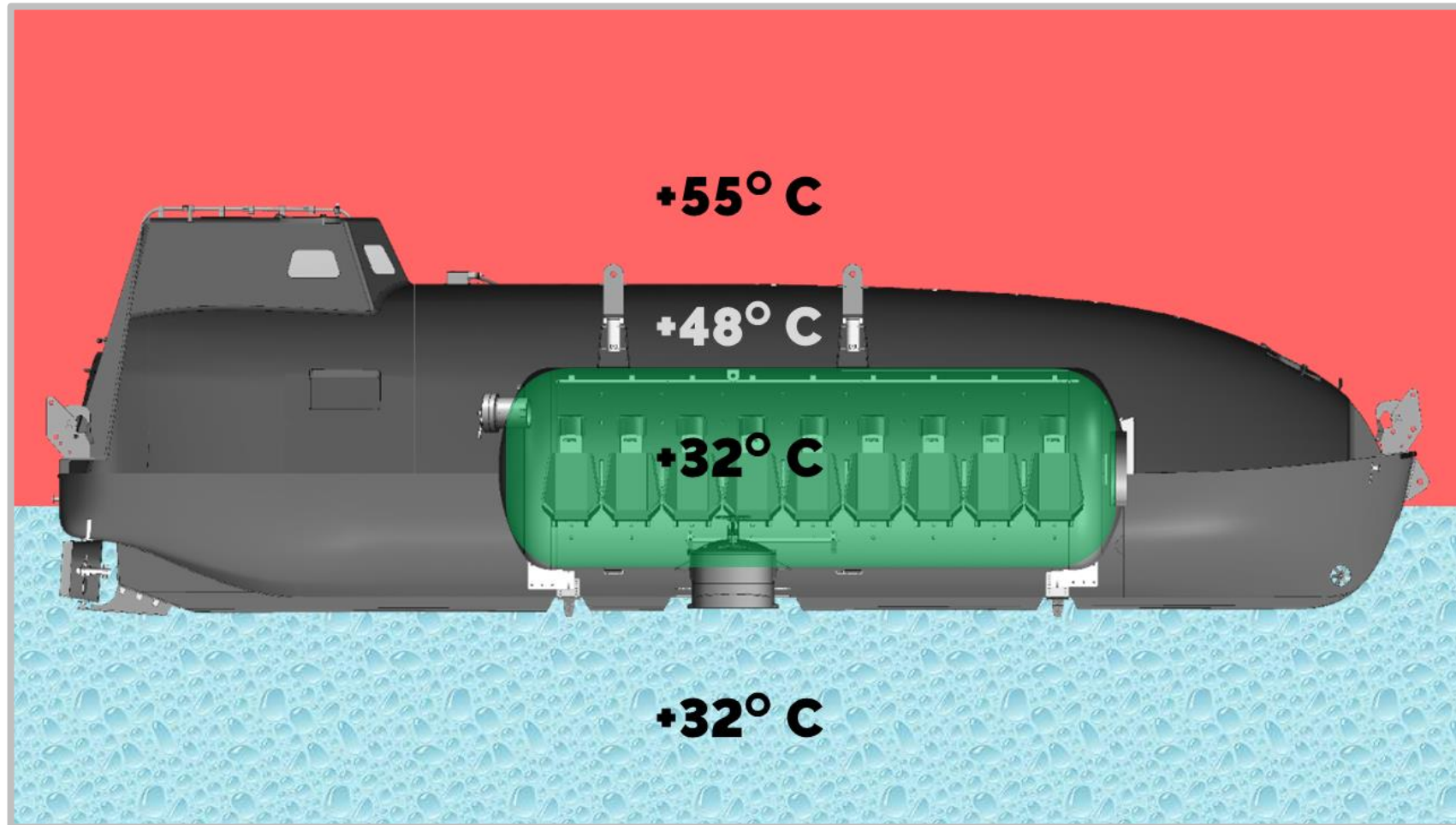
SPHL'S > THERMAL HOT > HEAT FROM OUTSIDE



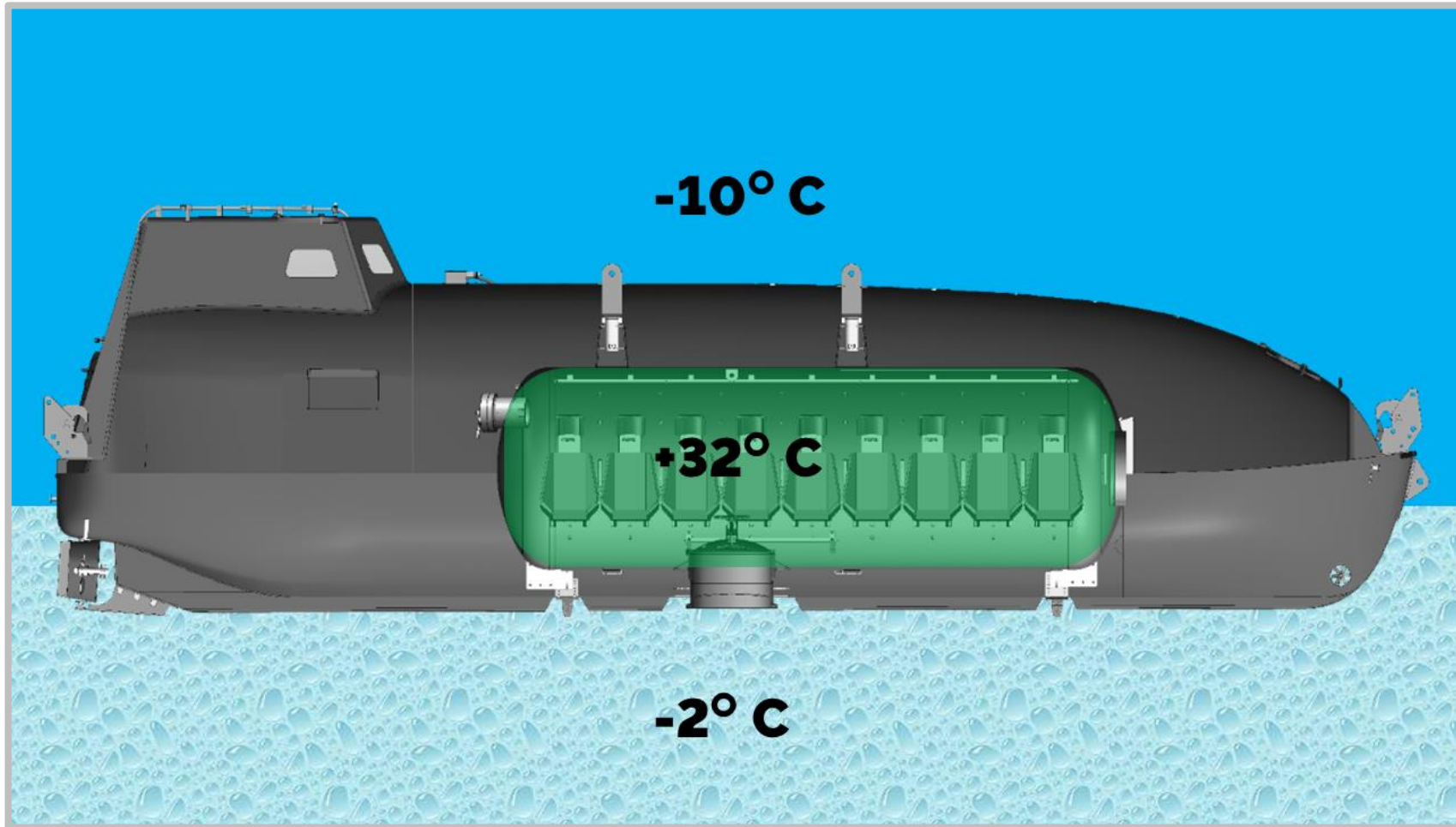
SPHL'S > THERMAL HOT > NEED TO COOL THE SYSTEM



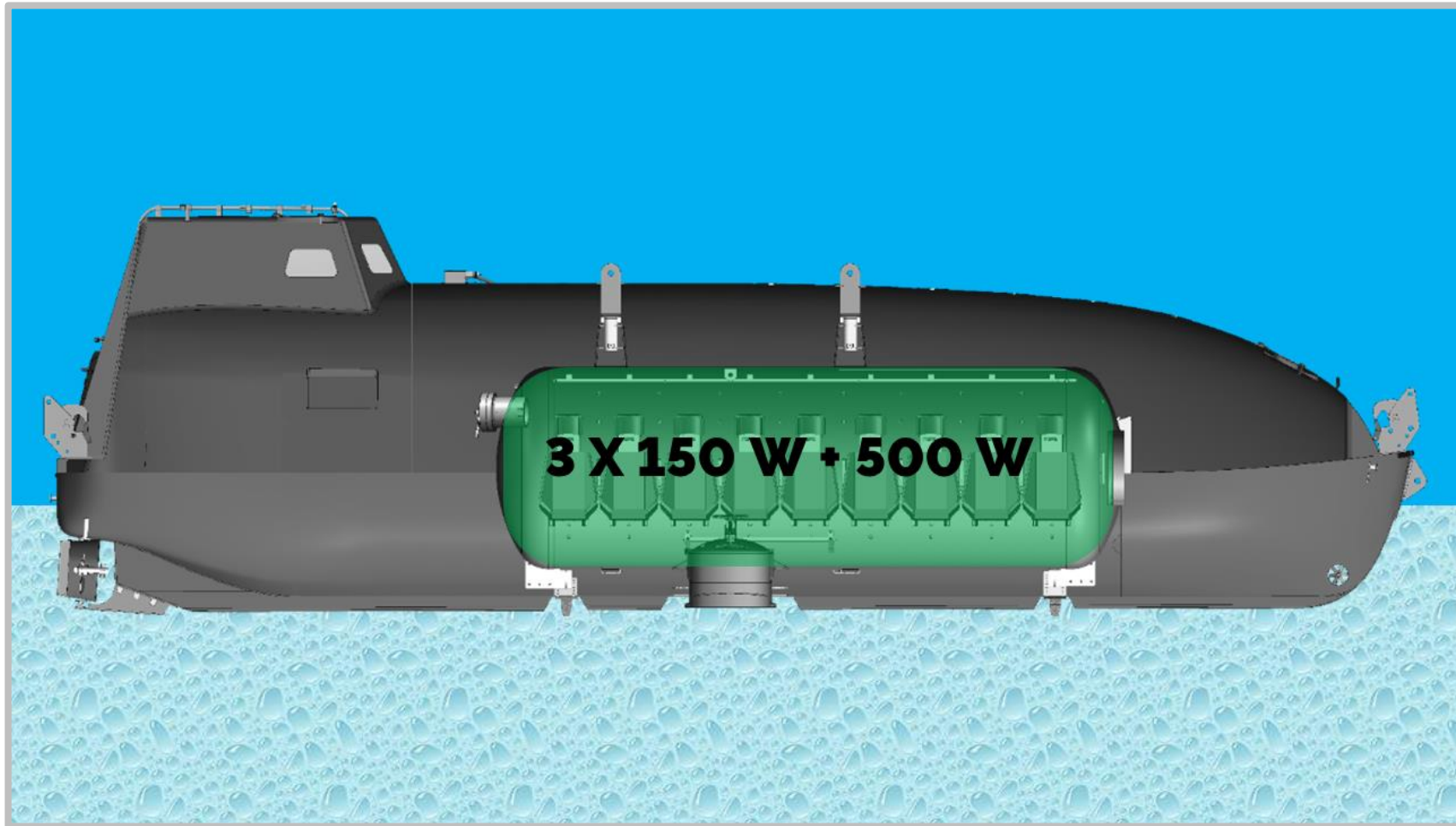
SPHL'S > THERMAL HOT > TYPICAL TEMPERATURES



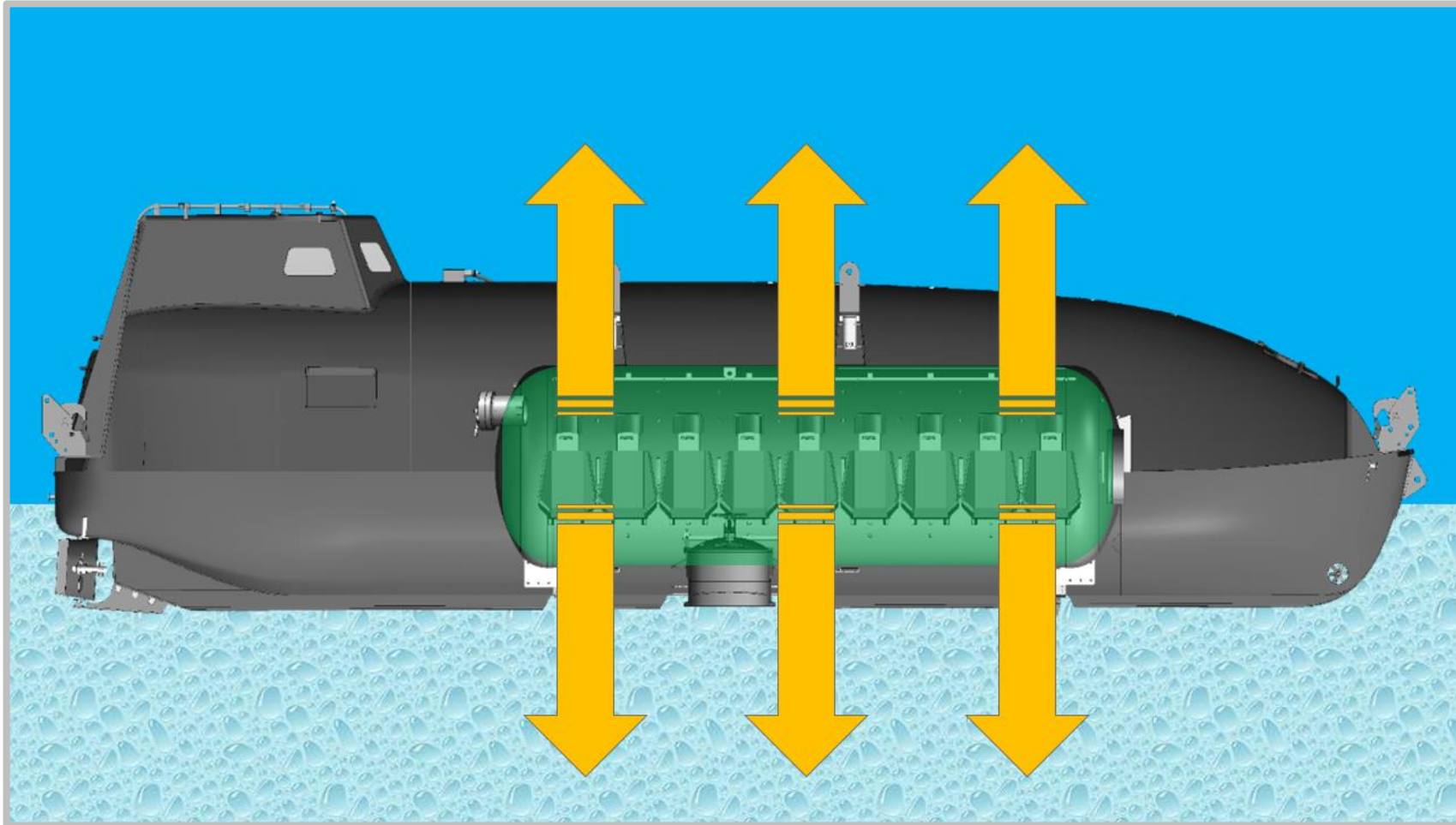
SPHL'S > THERMAL > WINTER CONDITIONS



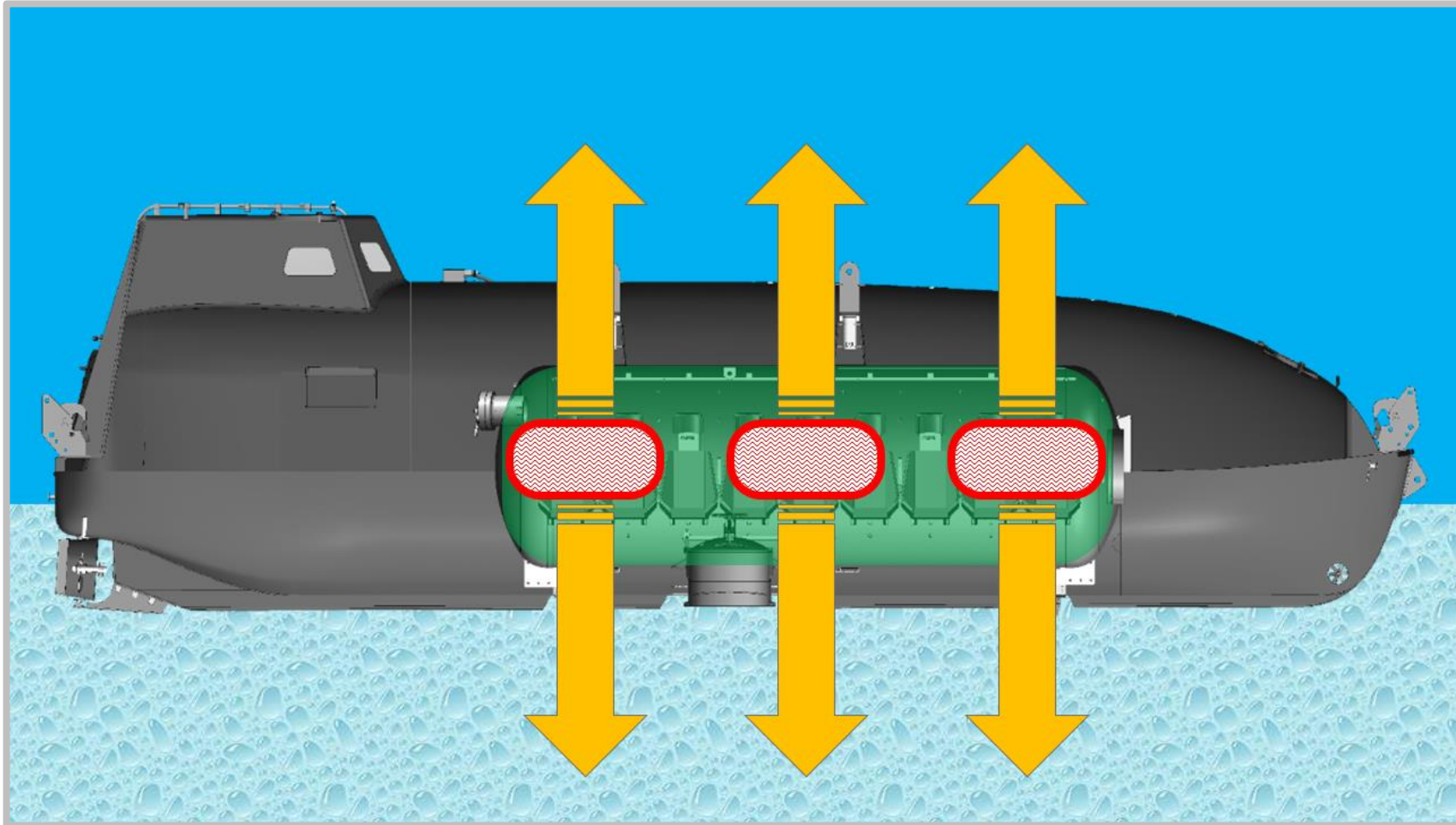
SPHL'S > THERMAL COLD > HEAT PRODUCED INSIDE



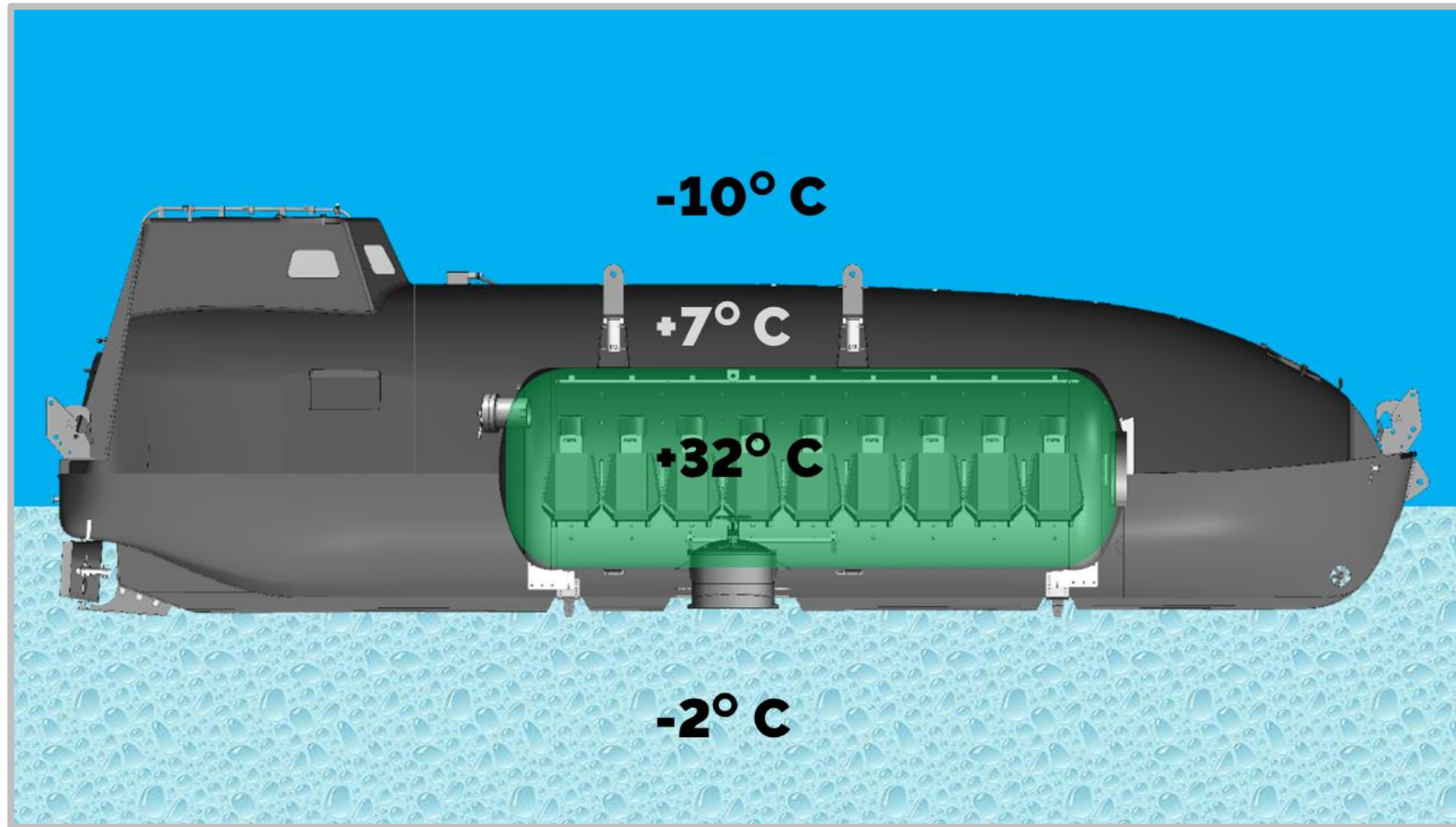
SPHL'S > THERMAL COLD > HEAT LOST TO OUTSIDE



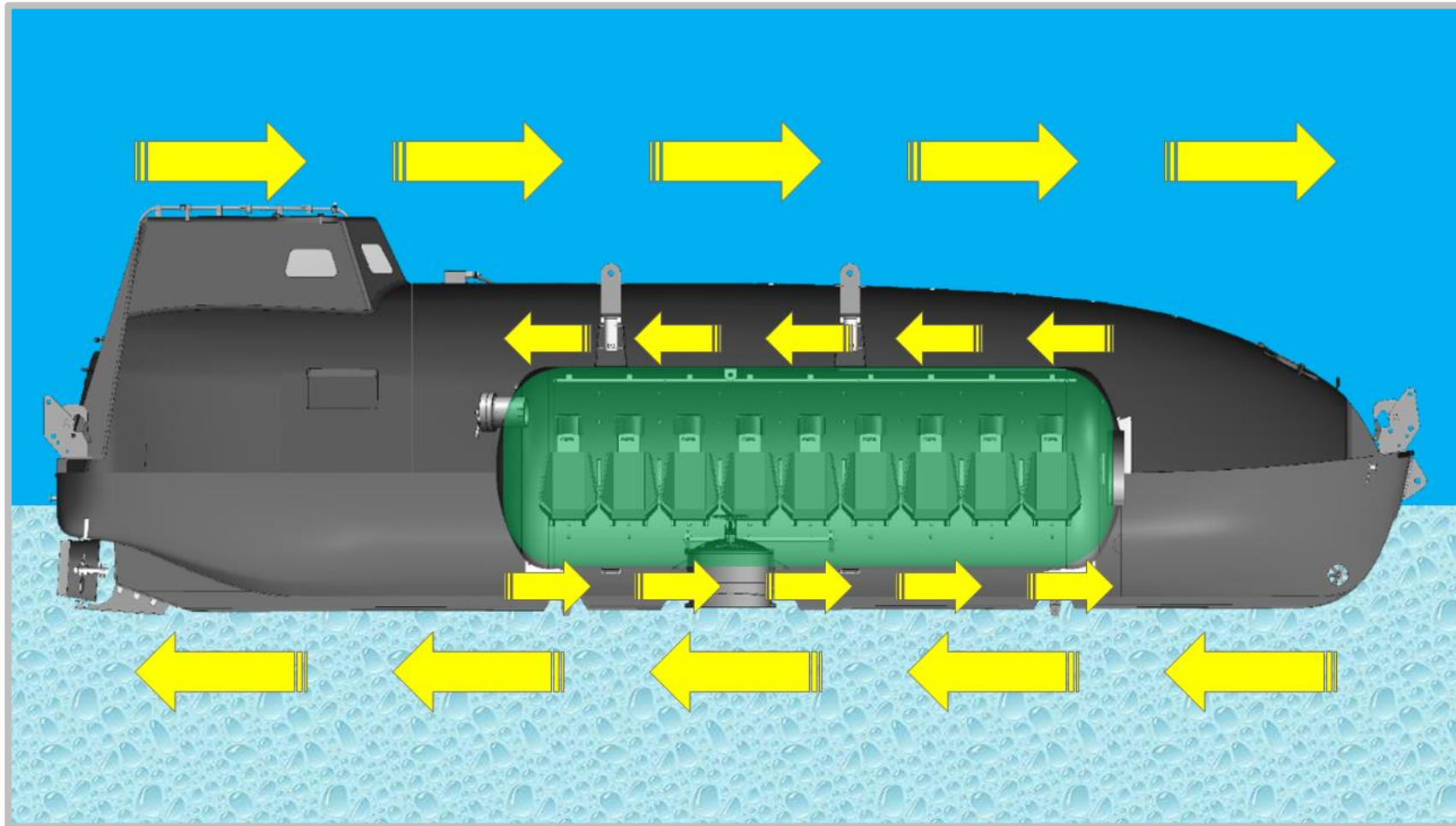
SPHL'S > THERMAL COLD > NEED TO HEAT THE SYSTEM



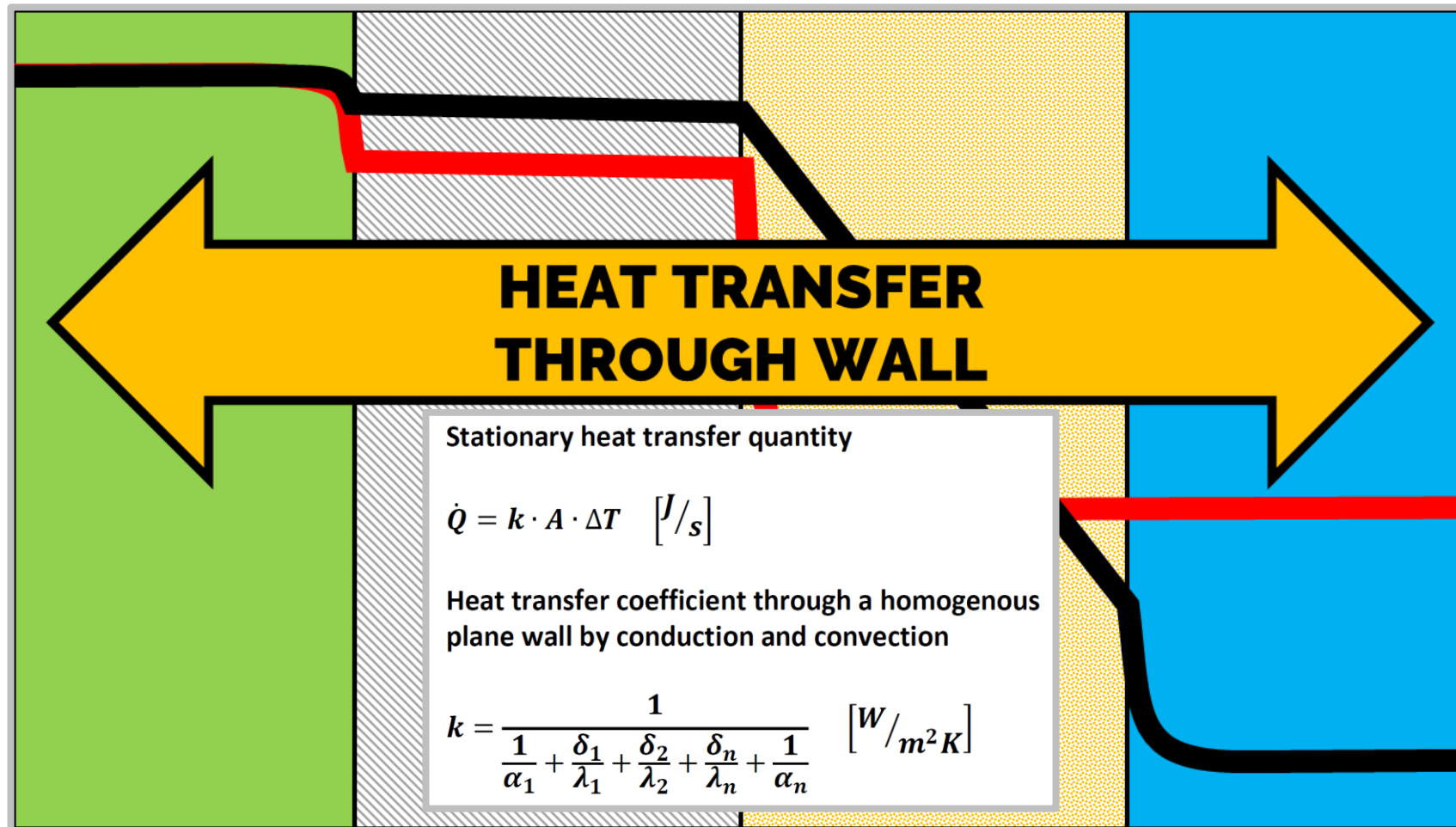
SPHL'S > THERMAL COLD > TYPICAL TEMPERATURES



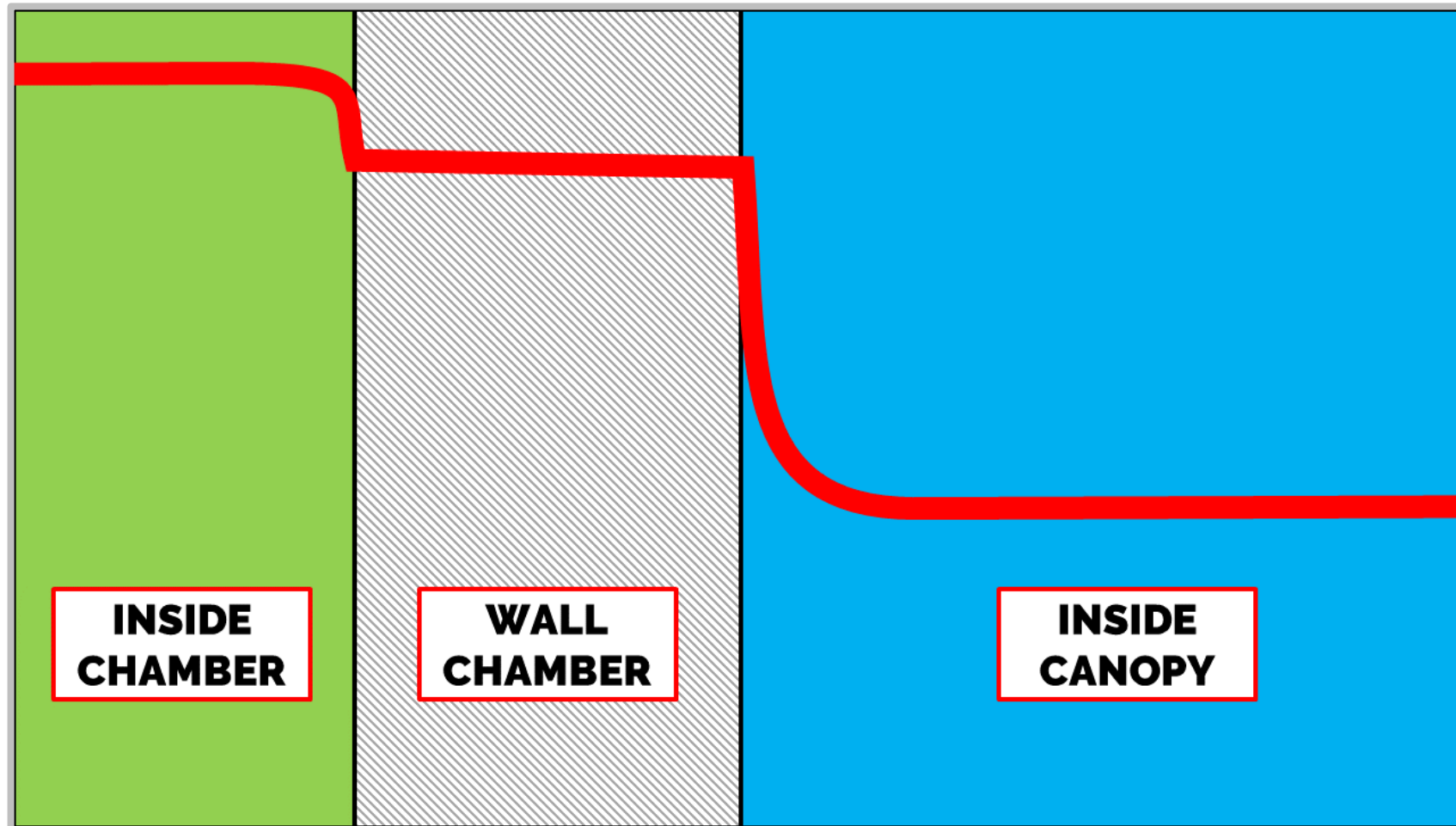
SPHL'S > THERMAL > CIRCULATION OF AIR & WATER



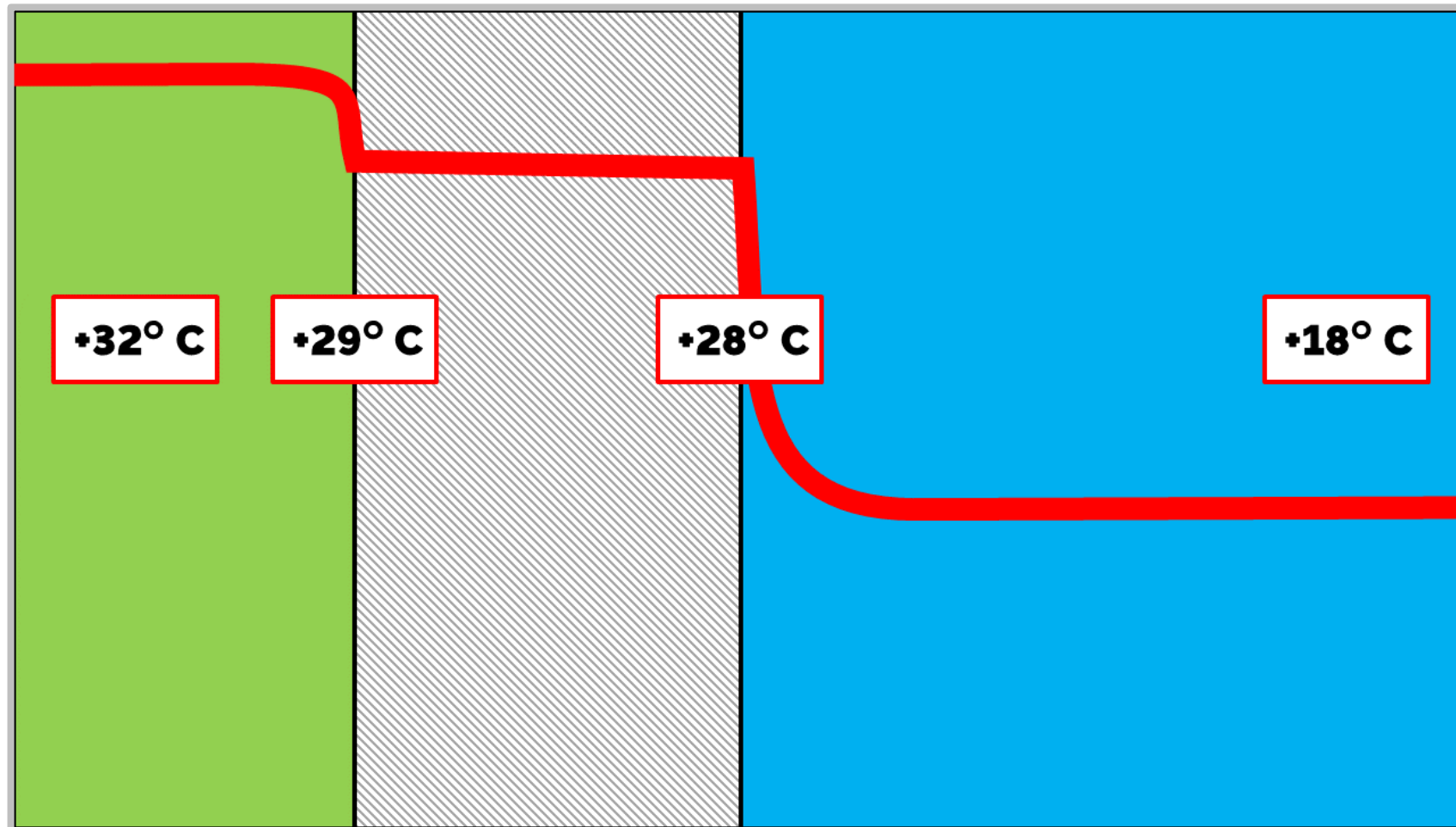
SPHL'S > THERMAL > HEAT TRANSFER THROUGH WALL



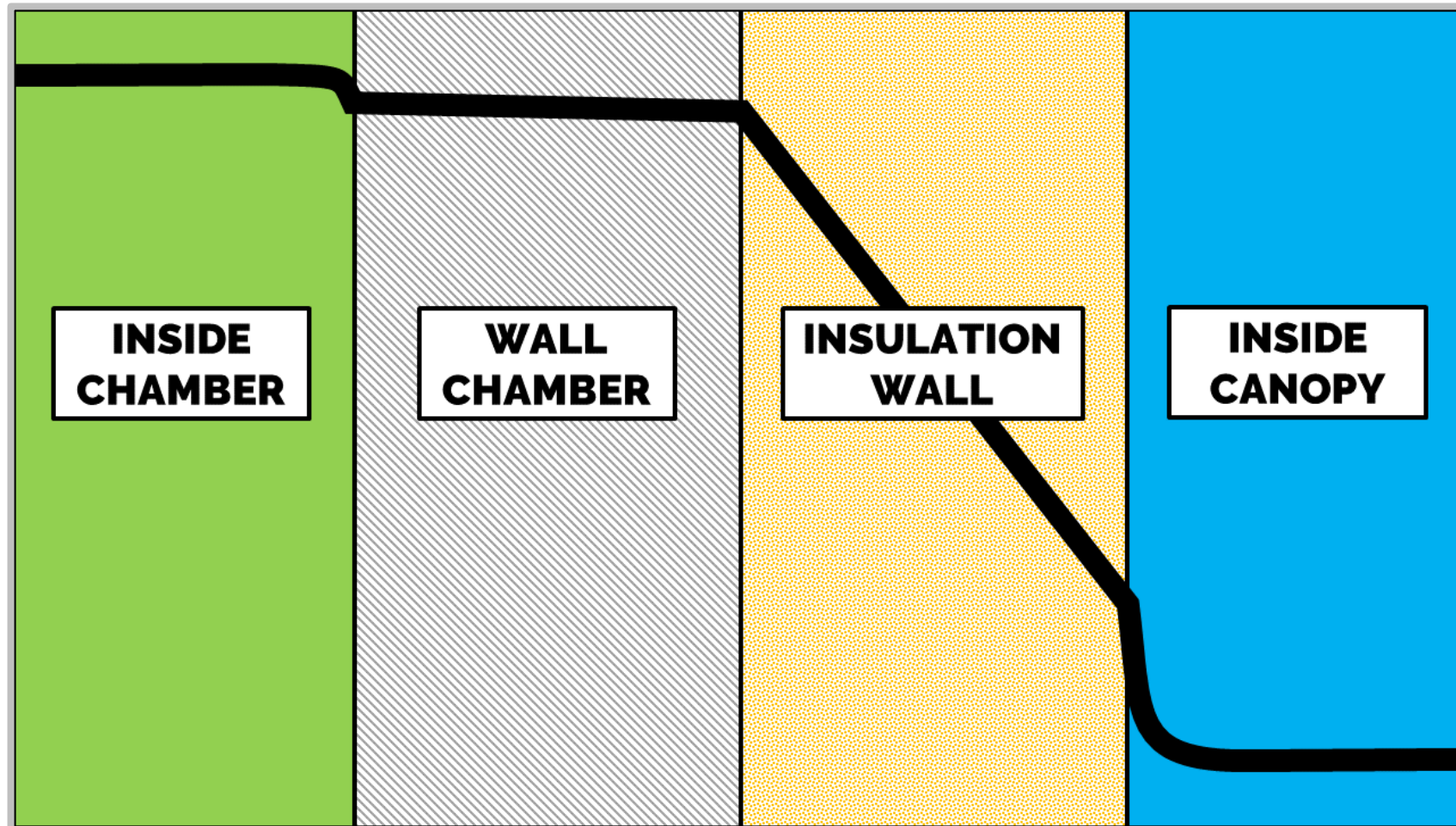
SPHL'S > THERMAL > HEAT TRANSFER SINGLE WALL



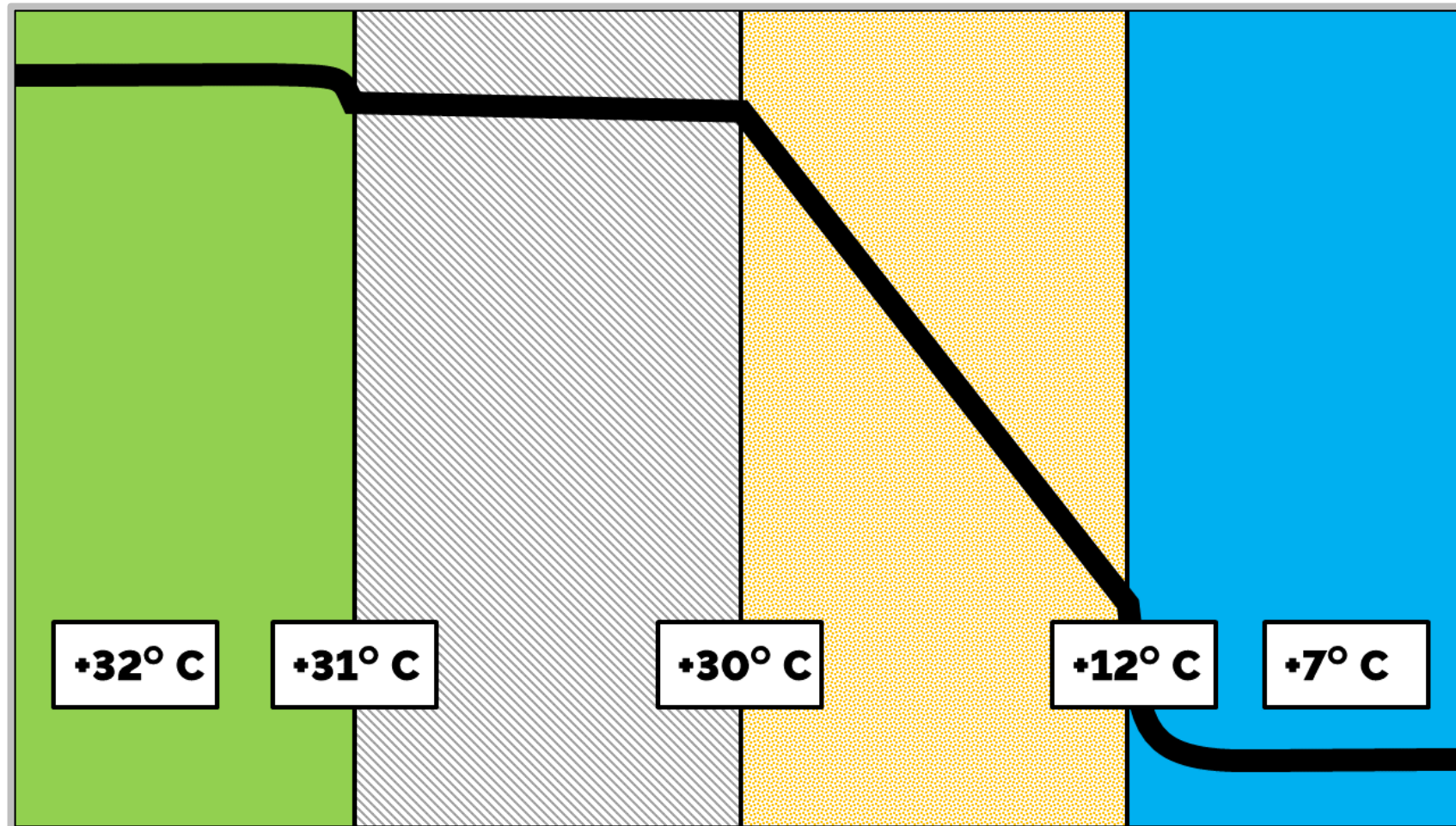
SPHL'S > NOT INSULATED > TYPICAL TEMPERATURES



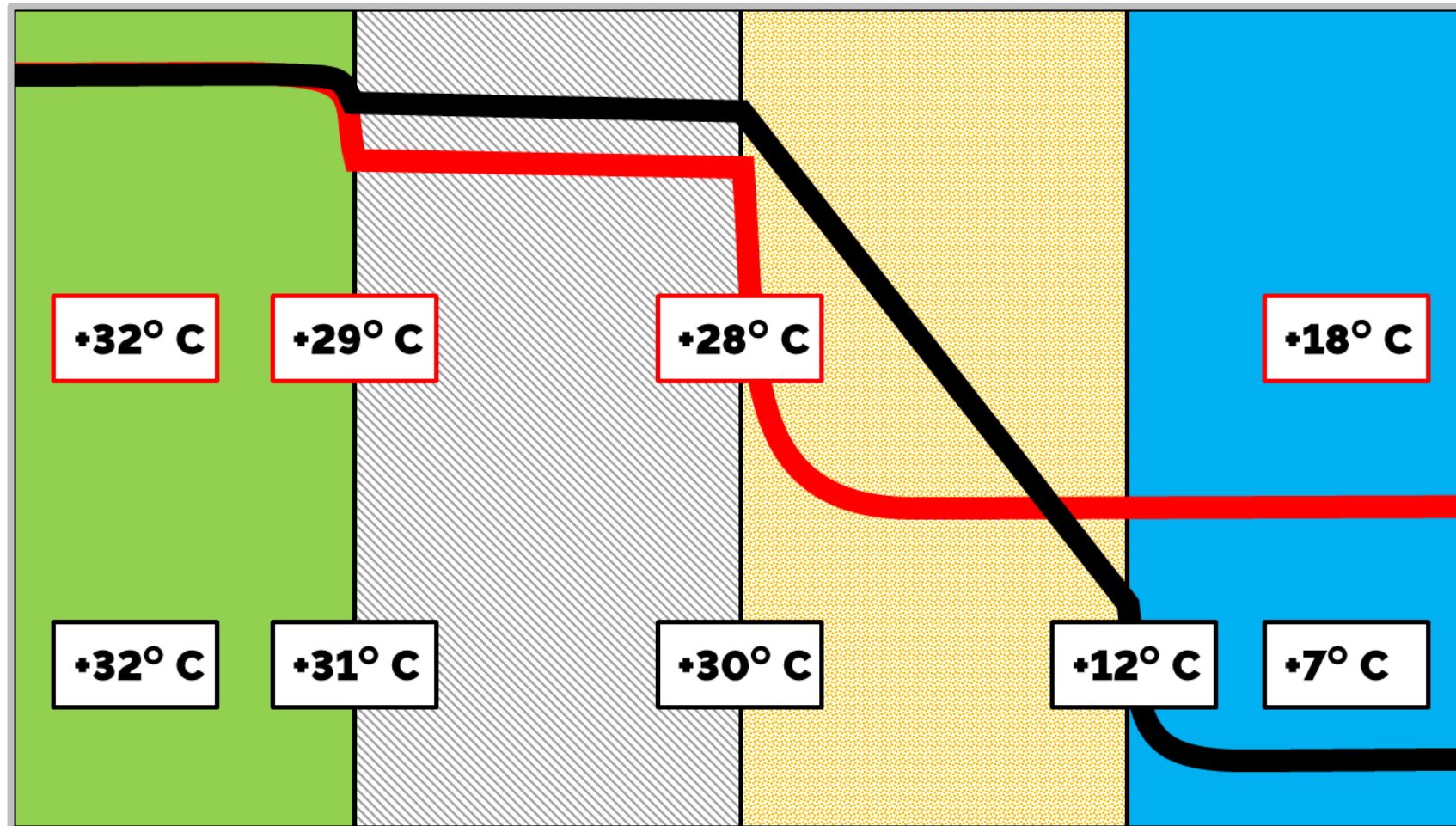
SPHL'S > THERMAL > HEAT TRANSFER INSUL. WALL



SPHL'S > INSULATED > TYPICAL TEMPERATURES



SPHL'S > THERMAL > TYP. COMBINED TEMPERATURES



SPHL'S > THERMAL > CHAMBER INSULATION FITTED



SPHL'S > THERMAL > CHAMBER INSULATION FITTED



LIFE SUPPORT, MACHINERY AND EQUIPMENT



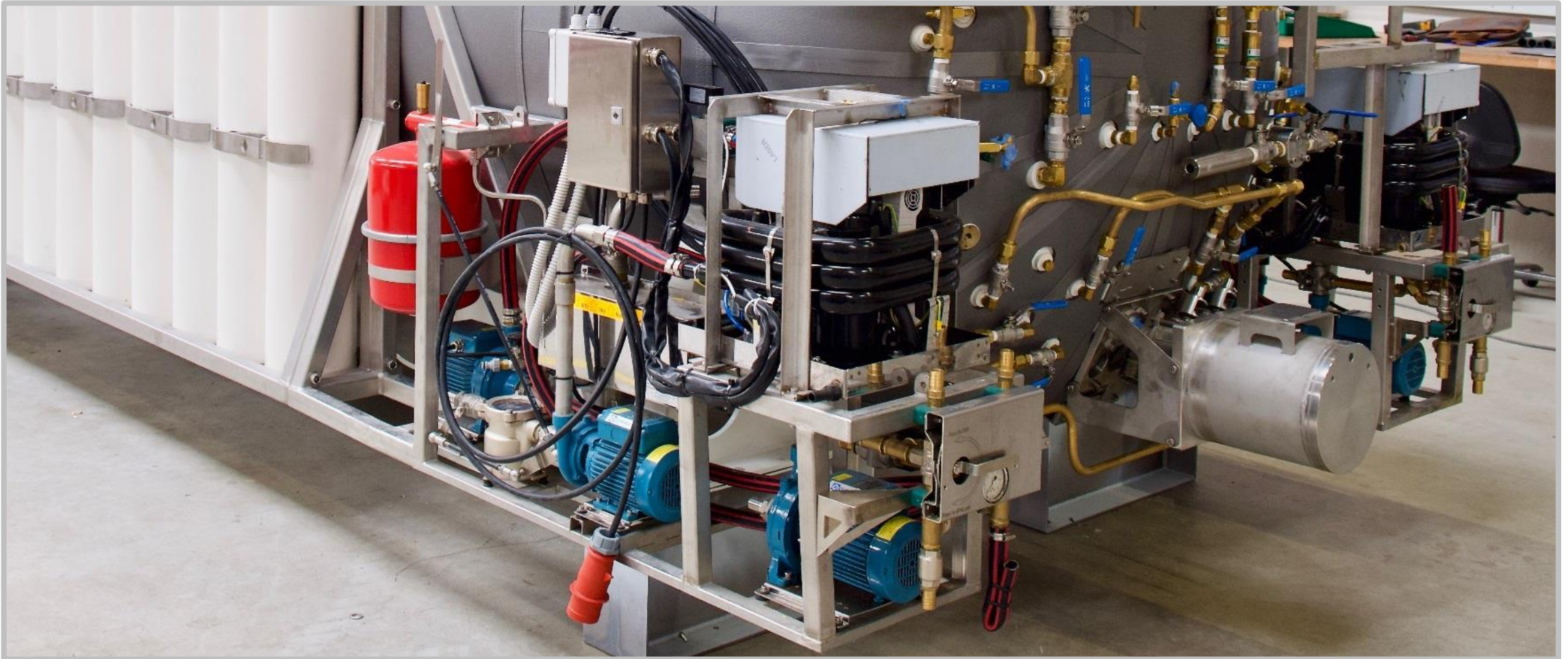
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SPHL'S > MACHINERY > PRE-MOUNTED GAS BUFFERS



SPHL'S > MACHINERY > PRE-MOUNTED H/C WATER



SPHL'S > MACHINERY > COMPL. CHAMBER INSTALLED



SPHL'S > MACHINERY > DUAL LSU GENERATOR SETS



SPHL'S > MACHINERY > AUX. SYSTEMS INSTALLED



IMPROVED SERVICEABILITY OF THE SPHL



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SPHL'S > SERVICE > SPHL HULL CAN BE SPLIT



SPHL'S > SERVICE > SPHL HULL CAN BE SPLIT



SPHL'S > SERVICE > SPHL HULL CAN BE SPLIT



SPHL'S > SERVICE > EASY ACCESS TO GAS BUFFERS



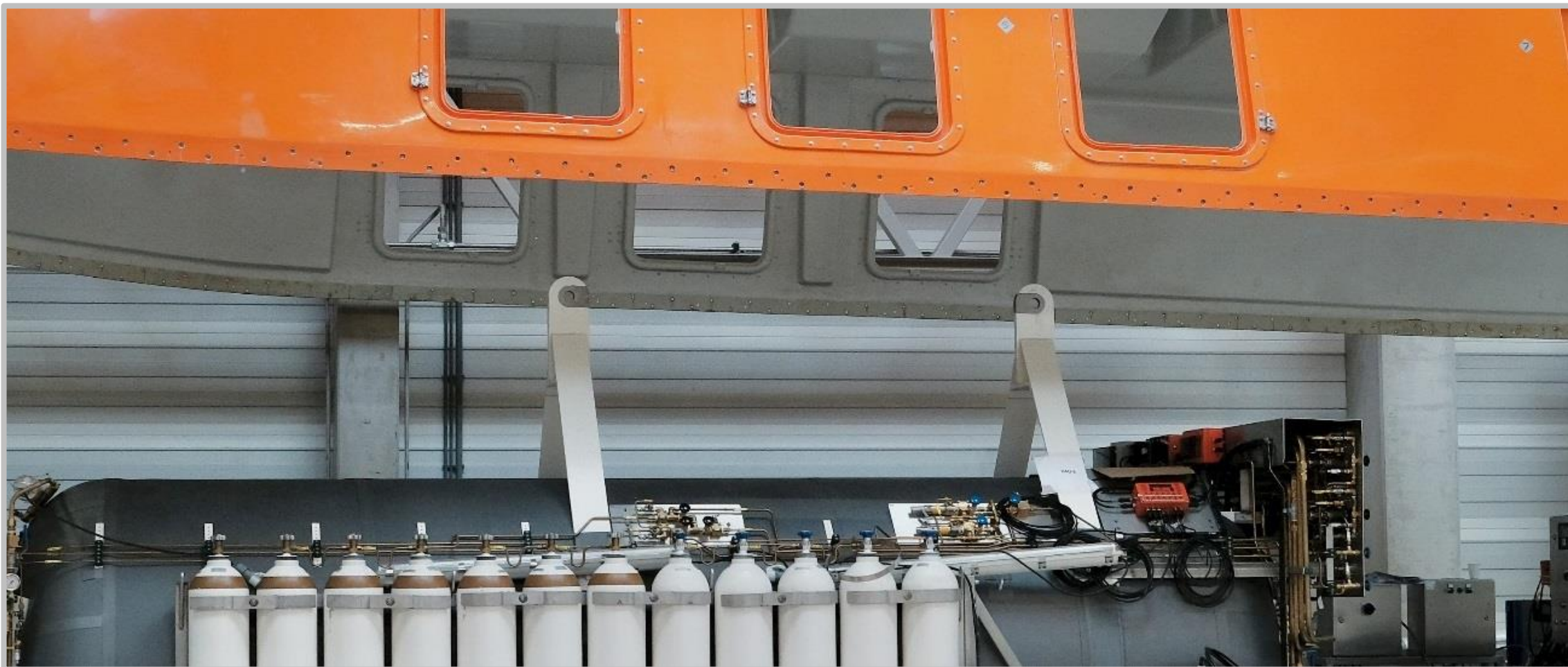
SPHL'S > SERVICE > EASY ACCESS TO GAS BUFFERS



SPHL'S > SERVICE > AMPLE SPACE FOR EQUIP. ACCESS



SPHL'S > SERVICE > EASY ACCESS FOR INSPECTIONS



SPHL STANDARD FITTED CSMTS SYSTEM



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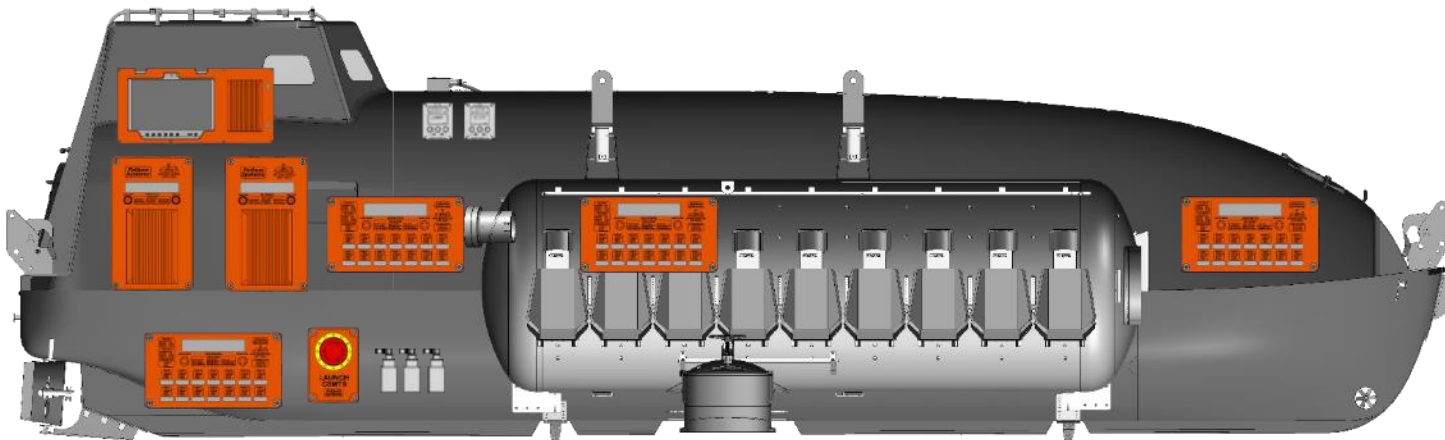
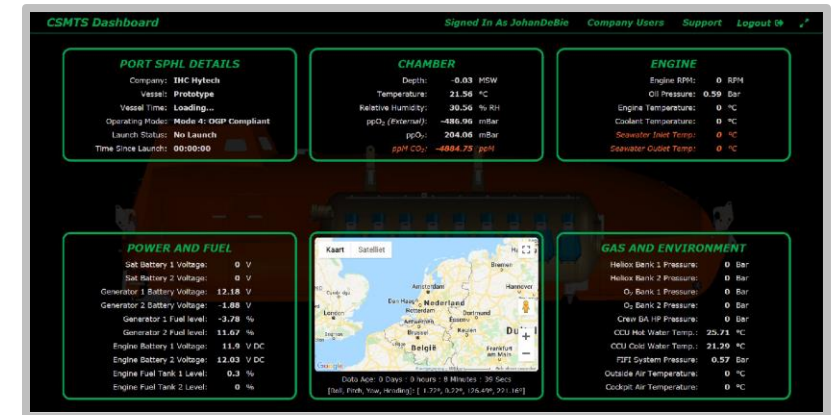
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EQUIPMENT > IOGP 478 CSMTS STANDARD INSTALLED

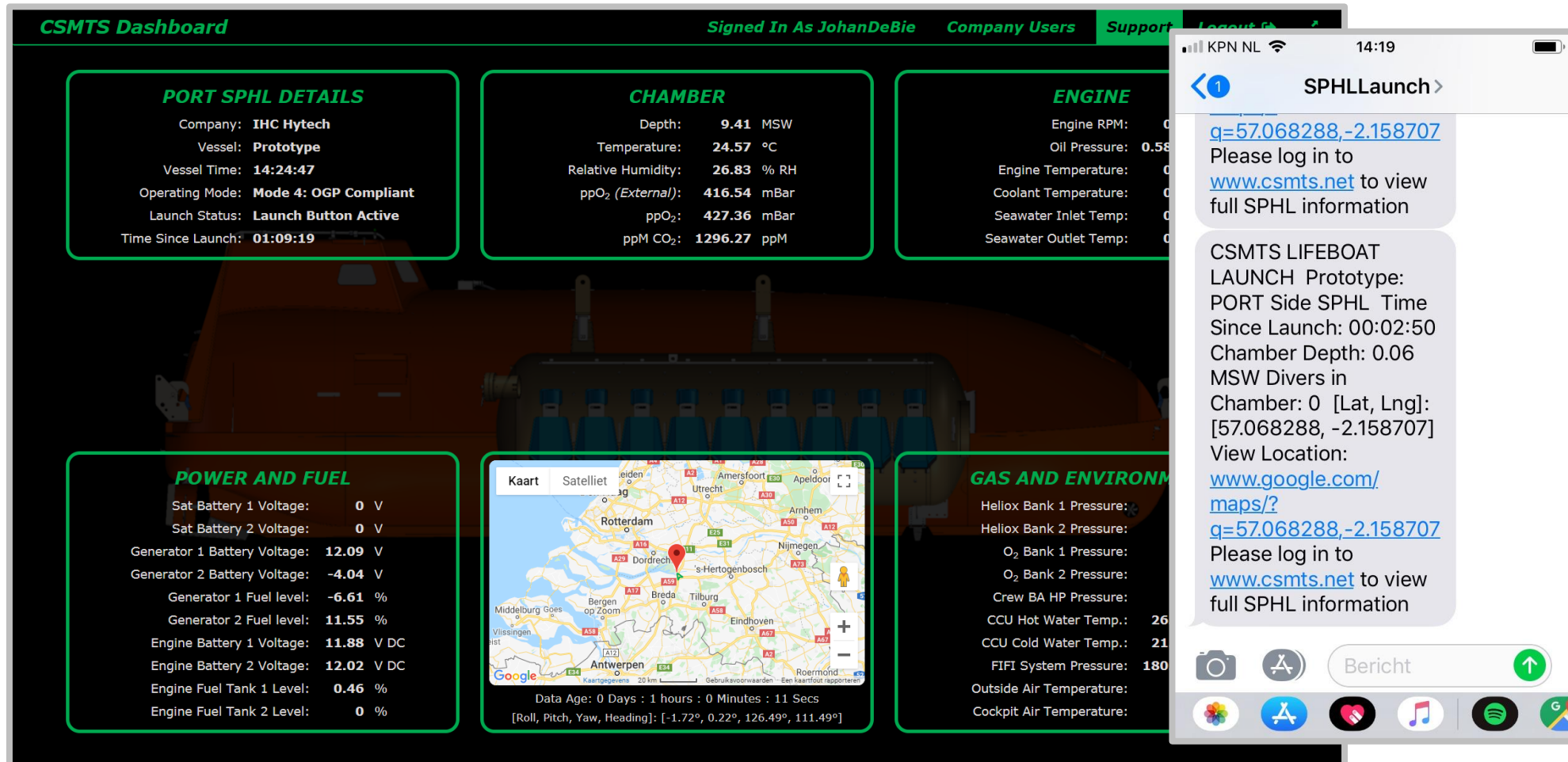
FOLLOWING THE PUBLICATION OF IOGP 478 EQUIPMENT HAS BEEN CONCEIVED AND FIRST CSMTS SYSTEMS HAVE BEEN INSTALLED ON SPHL'S

NOW STANDARD EQUIPMENT ON IHC HYTECH SPHL'S

- System installed in the new line of IHC Hytech – Survitec SPHL series, fitted as standard equipment.



EQUIPMENT > CSMTS LIVE DATA DIRECT FROM SPHL



Mode 4: OGP Compliant

Status: **No Launch**

Prototype PORT Side SPHL



Chamber



Environment



Gas



Analysis



Engine



Power & Fuel



Divers



Medical



Settings



Position

SPHL Location



Data Age: 0 Days : 1 hours : 8 Minutes : 44 Secs

Latitude: **51.713748**Longitude: **4.878276**Roll: **-1.72°**Pitch: **0.22°**Yaw: **126.49°**Heading (GPS): **221.16°**

Mode 4: OGP Compliant

Status: **No Launch**

Prototype PORT Side SPHL



Chamber



Environment



Gas



Analysis



Engine



Power & Fuel



Divers



Medical

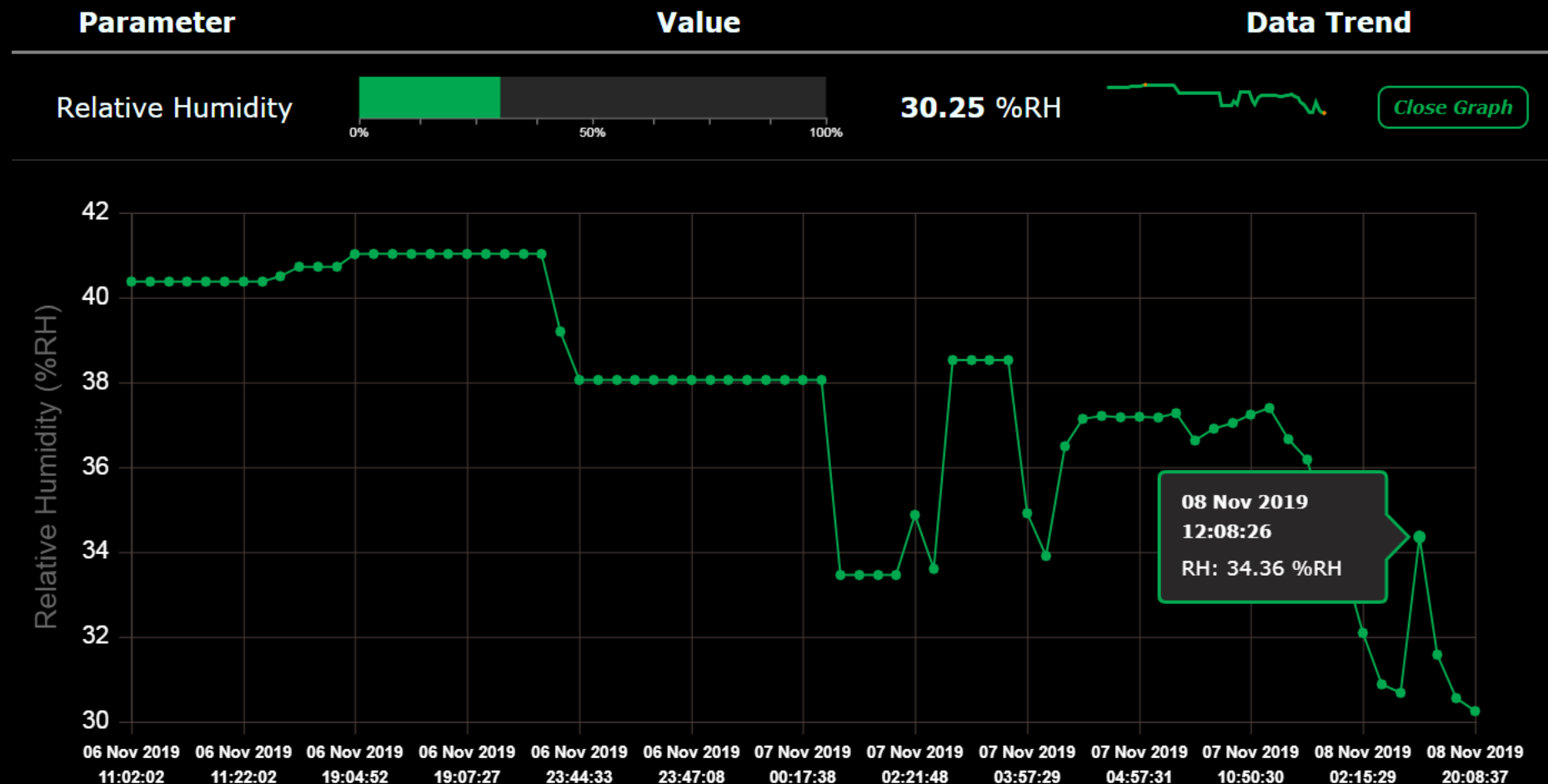


Settings



Position

Chamber Parameters



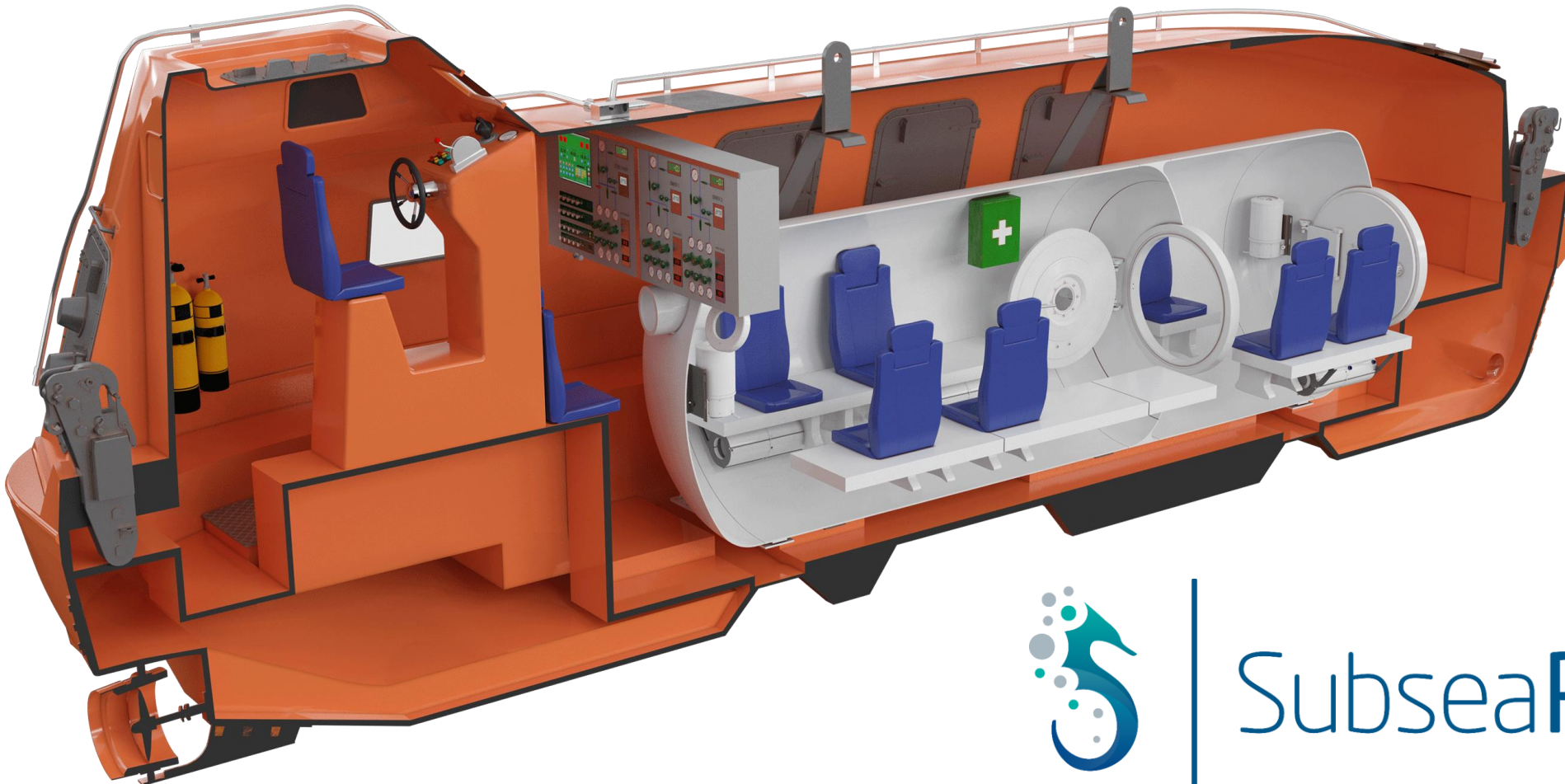
BESPOKE SPHL DESIGNS



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SPHL'S > BESPOKE DESIGNS > TUP SPHL VERSION

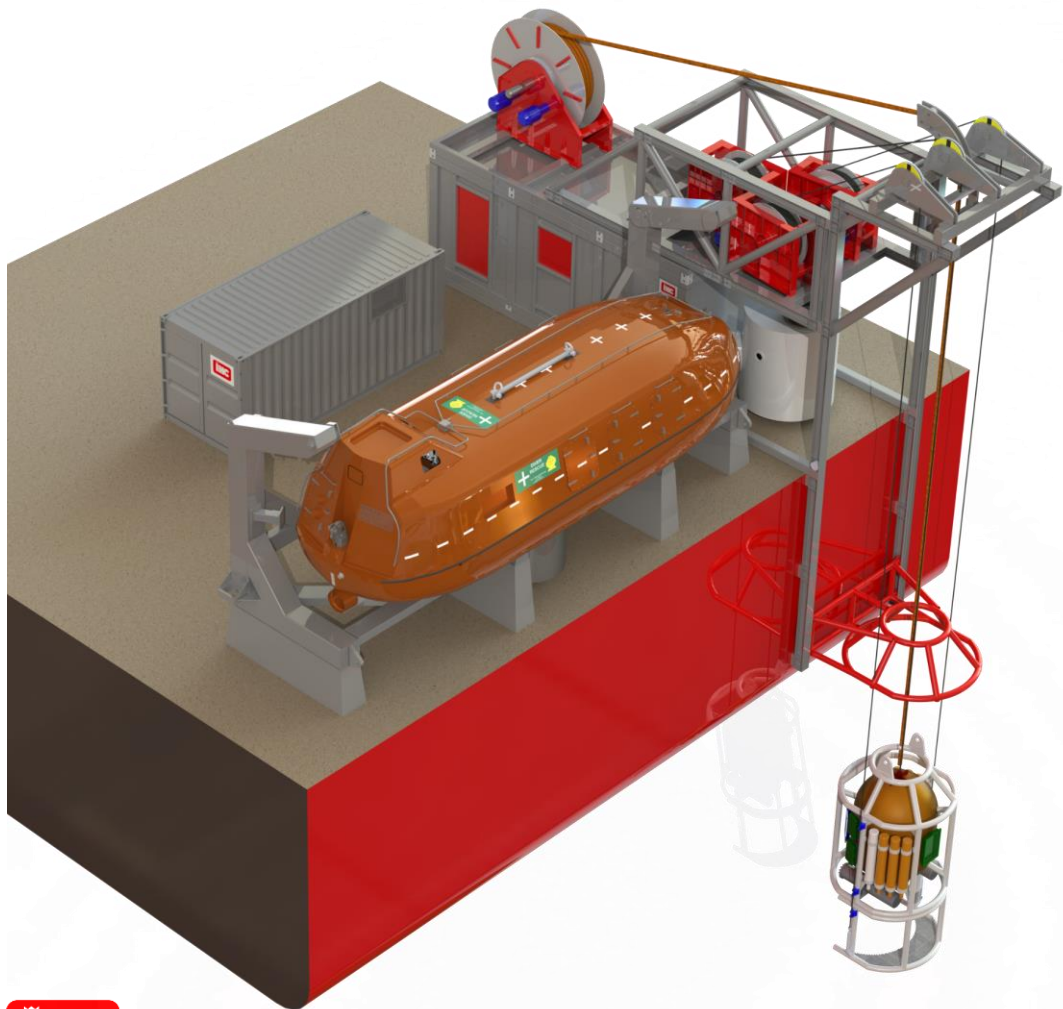


SubseaPartner



SOURCE: SUBSEAPARTNER / ROYAL IHC – IHC HYTECH

SPHL'S > BESPOKE DESIGNS > TUP SPHL VERSION



SOURCE: SUBSEAPARTNER / ROYAL IHC – IHC HYTECH

DEMONSTRATION CSMTS

We keep you breathing



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