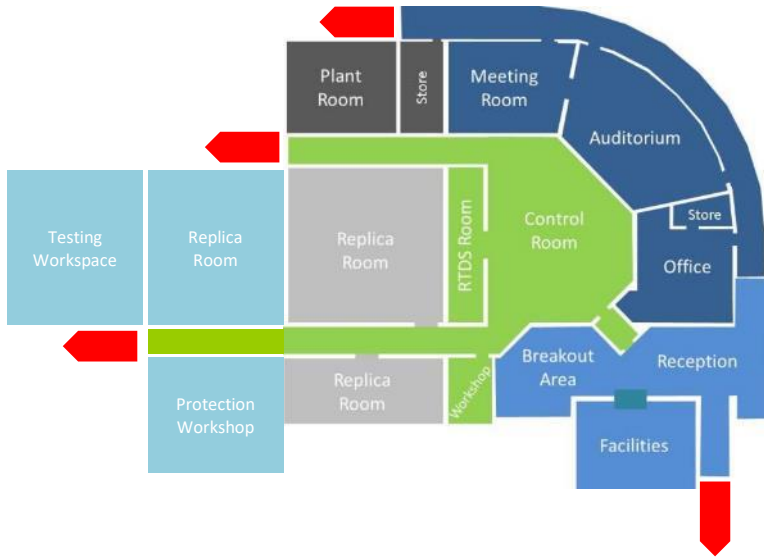


The National HVDC Centre Operators' Forum: Day 2

13 June 2024



Fire Safety

- **Exits:** Familiarise yourself with the nearest exits.
- **Assembly Point:** The fire assembly point is on the pavement outside the main gate.
- **Call points, extinguishers & blanket.**



Note: Weekly Fire Alarm Test is every Thursday at 9:00am

Caution: Hot Water

Please take care with our:

- Boiling water tap; and
- Kitchen sink tap is also very hot.



First Aid

- There are first-aid kits, burns kits and a defibrillator on site.
- Simon Marshall, Asif Khan & Fabian Moore are trained first-aiders, please contact them for assistance.

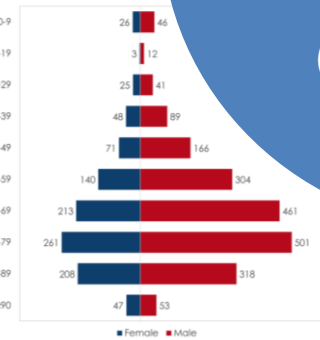
Safety Rules

- Reverse Park
- Sign-In & Out
- Assess Risks
- Report All Incidents/Hazards
- Accept Challenges

Out-of-Hospital Cardiac Arrests Survival Rates*

30,000

Cardiac arrest in UK every year (outside hospitals)



**Overall
7.5%
Survival Rate**

**No CPR
or Defib**

3.5%

Survival rate with no bystander CPR or Defib

CPR Alone

11%

CPR doubles-> quadruples the Survival rate

CPR & Defib

70%

Survival rate with CPR & Defibrillation within 3 minutes

* Note: These are approximate survival rates to hospital discharge; about double these rates survive the initial cardiac arrest but die later in hospital.

Sources:

<https://cks.nice.org.uk/topics/cardiac-arrest-out-of-hospital-care/background-information/prognosis/#:~:text=Defibrillation%20within%203%E2%80%935%20minutes,to%20hospital%20discharge%20by%2010%25>

<https://emj.bmj.com/content/33/7/448>

<https://www.bhf.org.uk/what-we-do/our-research/heart-statistics>

Chain of survival



Heart Attack Warning Signs

Symptoms of a Heart Attack

Heart attack symptoms vary but the most common are:

- Crushing pain in the centre of your chest (pain may spread to jaw, and down one or both arms).
- Breathlessness or gasping for breath.
- Sweating profusely.
- Pain similar to indigestion.
- Dizziness and Collapsing without warning.
- Panic Attack.

If you think you're having a heart attack:



1) Call 999 immediately for an ambulance

Don't worry if you're not completely sure whether your symptoms are a heart attack, it's important to seek medical attention as quickly as possible.



2) Sit down and rest

Best position is on the floor, with their knees bent.

If the patient become unresponsive at any point; prepare to start CPR.



3) Take a 300mg aspirin and chew it slowly

AND take your own angina medication.

*Do not take aspirin if under 16, if allergic to aspirin or if a **Stroke** is suspect.*



Stay calm and wait for the paramedics.

How to Give CPR

1 Quickly Check Breathing



If you find someone collapsed, check if they respond. If they don't respond, **Shout for Help** and open their airway.

Look, listen and feel for **Normal Breathing**; for up to 10 seconds (*ignore occasional, irregular gasps - these are common in the early stages of cardiac arrest*).

2 Call 999 (& put on Loudspeaker)



If they are not breathing normally: call **999**

(*or ask a helper to call*), put on loudspeaker **AND** start chest compressions.

Ask a helper to find a **Defibrillator**; do **NOT** leave the casualty to look for a defibrillator yourself.

3 Start Chest Compressions



Kneel by the casualty, put the heel of your hand on the middle of their chest, interlock your fingers, push down **Hard and Fast** (*100-120 compressions a minute*), and don't stop.

If able to do **Rescue Breaths**: 30 compressions then 2 breaths; and repeat.

If you have a **Defibrillator**, switch it on and follow the instructions (*it will tell you what to do*).



4 Keep Going!



Continue to perform CPR until:

- Paramedics arrive and take over;
- The person starts to breath; or
- A defibrillator tells you to stop (*to analyse or shock*).

Stroke: Act F.A.S.T.

Do **Not** give **Aspirin** to someone who may be having a stroke

A stroke can happen at any time. If you see these signs, think FAST & save a life. Call 999.

F

Face

Can they smile? Does one side droop?

A

Arm

Can they lift both arms? Is one weak?

S

Speech

Is their speech slurred or muddled?

T

Time

To call 999.

Chest, Heart & Stroke Scotland

Chest, Heart & Stroke Scotland and CHSS are operating names of The Chest, Heart & Stroke Association Scotland, a registered Charity No. SC018761

NHS
Lothian

HVDC Challenges to Deliver 'Beyond 2030':

Challenge to Deliver at Scale & Pace

Supply Chain Constraints

Limited international supply of: converter stations, cables and vessels.

HVDC Skills Shortage

Skilled and experienced Engineers are increasingly in short supply.

Standardisation

Lack of standardisation of converters, controls and cables.

Challenge to Deliver DC-Grids

Multi-Vendor Interoperability

Only single-vendor grids are currently possible, limiting the benefit of DC-Grids.

DC Circuit Breakers

Large DC Networks are difficult without DC Circuit Breakers (to isolate sections in fault).

Challenge to Deliver Resilient Networks

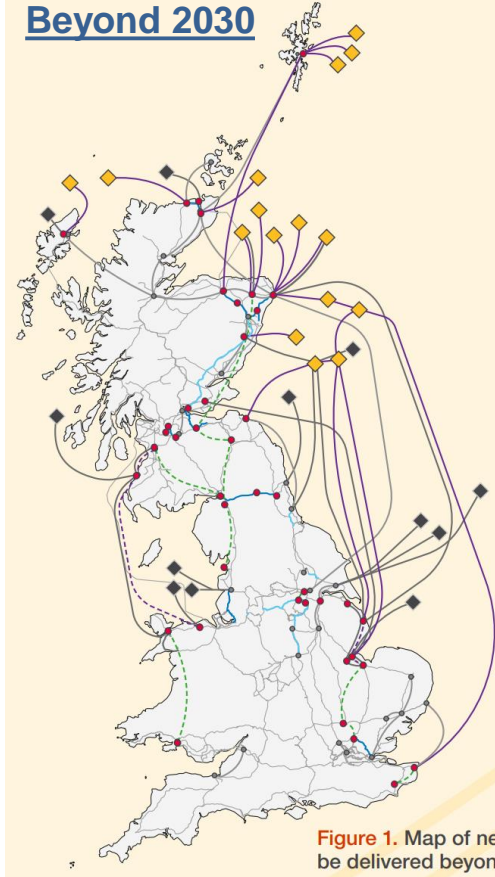
DC-Network Reliability

GB's dependency on HVDC requires confidence in high reliability.

AC-Network Stability

Providing stability and de-risking integrations to ensure the stability of the AC Network.

Beyond 2030



What are we doing?

SSEN is development strategic partnerships, with converter and cable manufacturers.

HVDC Centre is working with DESNZ, to highlight challenge.

Doctoral Sponsorship programmes: ETP, IDCORE & ODORed.

Graduate Scheme, Summer Placements, University Outreach and Training.

SSEN has developed Standard Converter and Cable specifications.

HVDC Centre is developing standardised controls (**Aquila**) & Replica Specifications.

Project **Aquila** is working with Vendors to develop interoperability standards.

Supporting Horizon Europe Projects: **InterOPERA**, **Ready4DC** & **Inter-oPEn**.

Network-DC (SIF) project is working with vendors to develop DCCBs Specification.

Previous work on **PROMOTiON** (Horizon Europe)

HVDC-Wise (Horizon Europe) is focused on the reliability and resilience of networks (both AC & DC).

Insight (SIF): Monitoring and mitigating network oscillation.
BLADE (SIF): OWF Black start.

RTD2 (SIF): New project, providing a GB-Wide tool for AC Network Interactions.

Today at the Operators' Forum



Morning Session

- 08:30 Teas, Coffees and Cakes
- 09:00 **Welcome to Day 2**
Simon Marshall, The National HVDC Centre
- Session 3 Standardisation and Strategic Contracts**
- 09:15 **Session Introduction and Context**
Ben Marshall, The National HVDC Centre
- 09:30 **Technical Standardisation of HVDC Schemes**
Perry Hofbauer, SSEN Transmission
- 10:00 **The TenneT 2GW program**
Sertkan Kabul, TenneT TSO B.V.
- 10:15 **Strategic Supply Chain Engagement**
Panel Session
- 10:45 **Future Development of the HVDC National Centre**
Simon Marshall, The National HVDC Centre
- 11:05 **Coffee Break**

Session 4

- 11:25 **Session Introduction and Context**
Dong Chen, The National HVDC Centre
- 11:40 **SOFIA and Dogger Bank C OWF interaction study: overview and current status**
Viktor Rudan, RTE international

12:00 LUNCH & NETWORKING



Afternoon Session

- Session 5 HVDC and Interoperability**
- 13:00 **Interoperability Aquila Demonstration**
HVDC Centre Engineers
- 14:00 **GTSOC Demo/Presentation**
Sumek Elimban, RTDS Technologies Inc.
- 14:20 **HVDC Interoperability, Past, Present and Future**
Carl Barker, GE Vernova
- 14:40 **HVDC Interoperability updates (Aquila, InterOPERA, NEDO)**
Mitsubishi Electricity Company, Hitachi Energy, Siemens Energy
- 15:00 **Wrap up**
Ben Marshall, The National HVDC Centre
- 15:20 **Close**

Thanks for listening.

Any questions, please?

□ For further information, please visit www.hvdccentre.com ; OR email: [info@hvdccentre.com/](mailto:info@hvdccentre.com)



**The National
HVDC Centre**

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