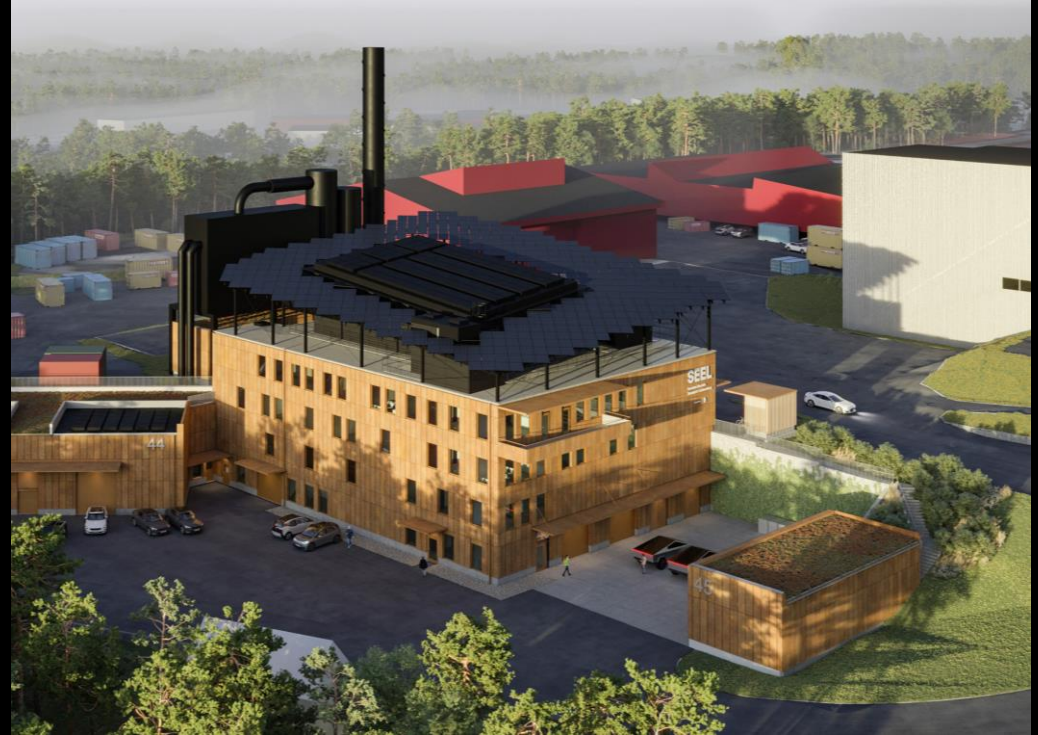


SEEL

SEEL Swedish Electric Transport Laboratory

Johanna Hallström, RISE AB



Test and research at three facilities

Gothenburg: Heavy and light vehicles

Batteries
Electric powertrain
Full scale vehicles

Nykvarn: Heavy vehicles

Batteries
Electric powertrain
Hybrid transmission

Borås: Safety tests

Batteries
Hydrogen
Abusive tests



SEEL

SEEL Swedish Electric Transport Laboratory, är en del av RISE –
Research Institutes of Sweden och Chalmers University of Technology.

CHALMERS

RISE

SEEL Test and Research Capability

Batteries

Cells
Modules
Pack

Power

Components
Charging

Machines

Motors
Inverters

Powertrain

Transmission
Vehicles
Land, sea and air

Safety

Climate
Vibrations
Fire



SEEL

SEEL Swedish Electric Transport Laboratory, är en del av RISE –
Research Institutes of Sweden och Chalmers University of Technology.

CHALMERS

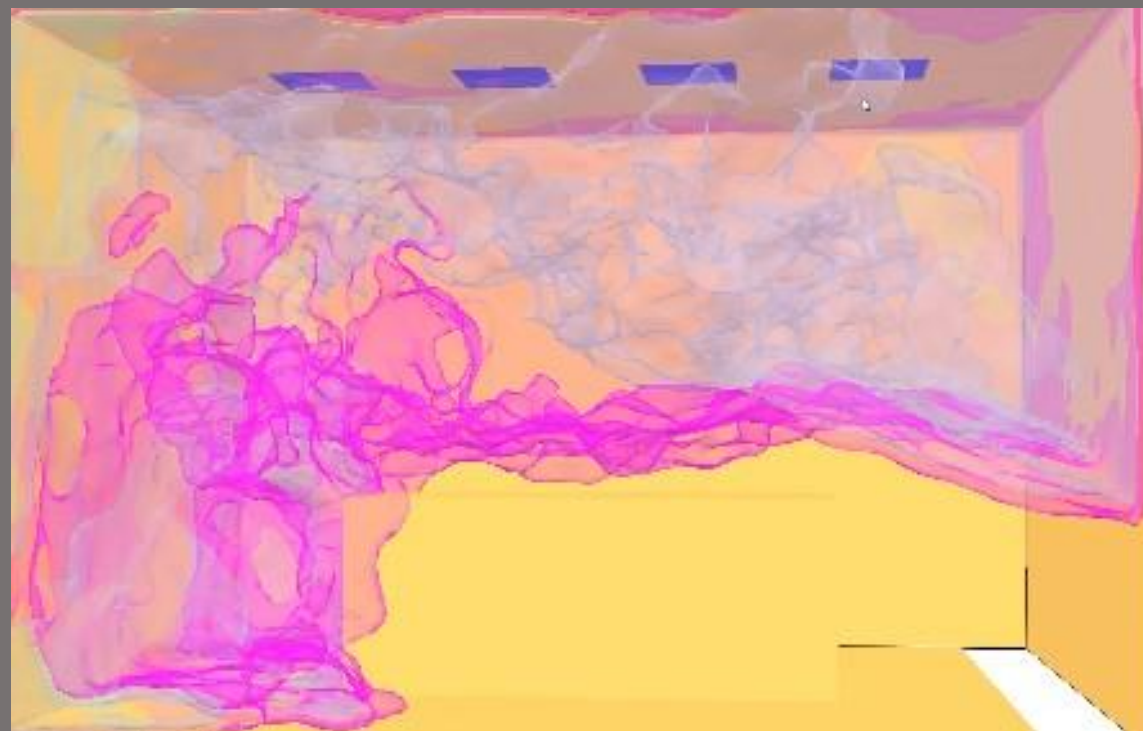
RISE



SEEL – SAFETY LABORATORY

ABUSE TESTING

For research or accredited verification test purposes



RI
SE



ETOX
Test 2 EL 2020-04-30

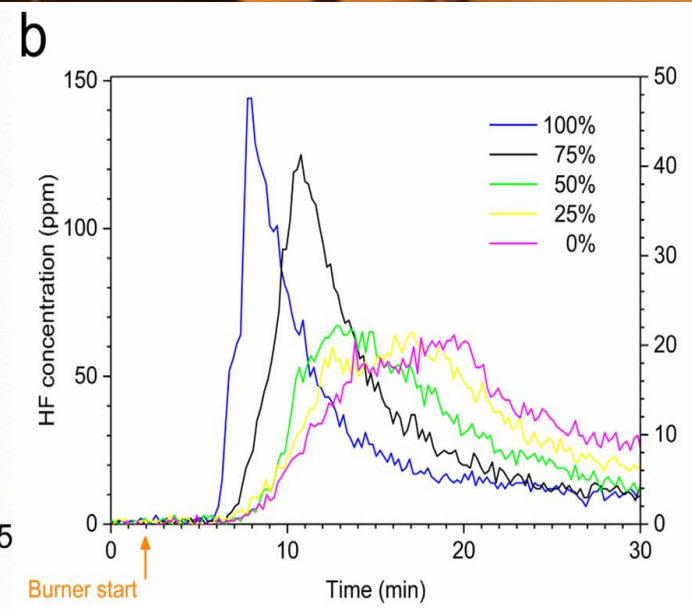
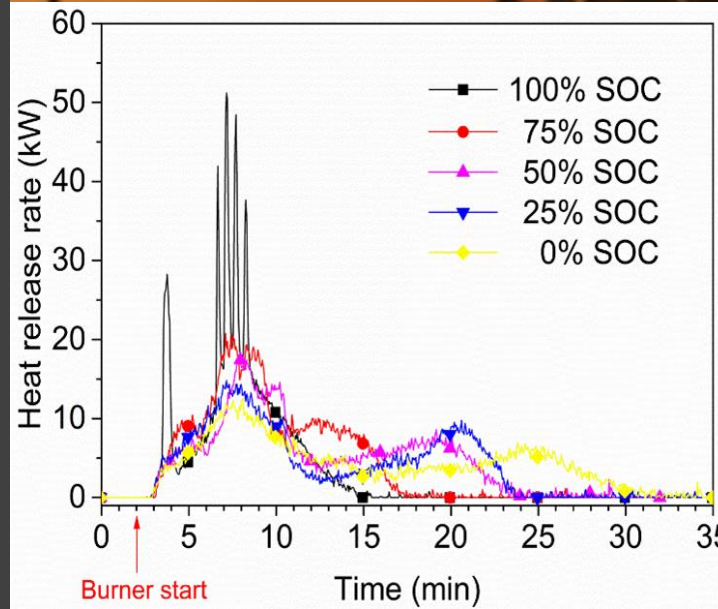


LARGE ABUSE LAB 130m²

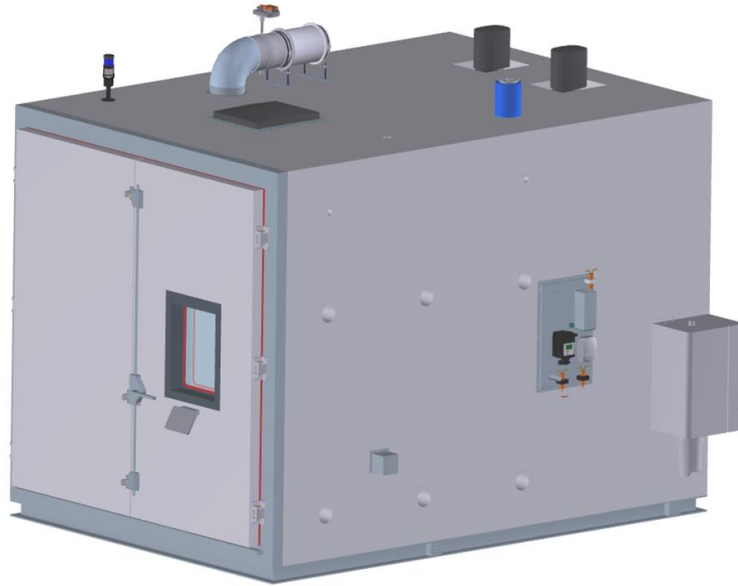
-for pack and full scale testing

SMALL ABUSE LABS 3x14m²

-for cell and module testing



CLIMATIC TESTING



Technical specifications

Model:	WT 20/65-150/5.0/LI-HL6
Size [HxWxD]:	2500x2500x3200 mm
Temperature range:	-65°C - +150°C
Rate of temperature change:	7,5°C/min
Humidity range:	10-95% Rh

Technical specifications

Model:	3 pcs ClimeEvent C/1300/70a/10 1 psc ClimeEvent C/1000/70a/10
Size [liters]:	1300 liters 1000 liters
Temperature range:	-70°C - +180°C
Rate of temperature change:	10°C/min
Humidity range:	10-98% Rh



ELEKTRODYNAMIC VIBRATION TEST SYSTEM LARGE

**RI.
SE**



Technical specifications

<i>Model:</i>	IMV K200
<i>Slip table Size (Max):</i>	Scalable up to 1600 x 2500 mm
<i>Pay load Weight (Max):</i>	3000 kg
<i>Frequency range:</i>	0-2000 Hz
<i>Maximum displacement:</i>	76.2 mm (p-p)
<i>Maximum acceleration:</i>	Sine: 1000 m/s ² Random: 700 m/s ² Shock: 2000 m/s ²
<i>Maximum velocity:</i>	2.0 m/s High velocity mode: 3.5 m/s
<i>Rated force:</i>	Sine: 200 kN Random: 200 kN Shock: 800kN
<i>Heated and cooled air around the test object</i>	No, Ambient

ELEKTRODYNAMIC VIBRATION TEST SYSTEM MEDIUM

**RI.
SE**



Technical specifications

<i>Model:</i>	IMV A74
<i>Slip table Size (Max):</i>	1200 x 1200 mm
<i>Pay load Weight (Max):</i>	1000 kg
<i>Frequency range:</i>	0-2600 Hz
<i>Maximum displacement:</i>	76.2 mm (p-p)
<i>Maximum acceleration:</i>	Sine: 1000 m/s ² Random: 630 m/s ² Shock: 2000 m/s ²
<i>Maximum velocity:</i>	2.5 m/s High velocity mode: 3.5 m/s
<i>Rated force:</i>	Sine: 74 kN Random: 74 kN Shock: 222 kN
<i>Heated and cooled air around the test object</i>	Climate chamber 2200 l Temperature range: -65 to +180°C Rate of temp change: 10 K/min Humidity range: 10 – 95 %RH

BATTERY CYCLING

in combination with other test areas
(Abuse, Climate, Vibration)



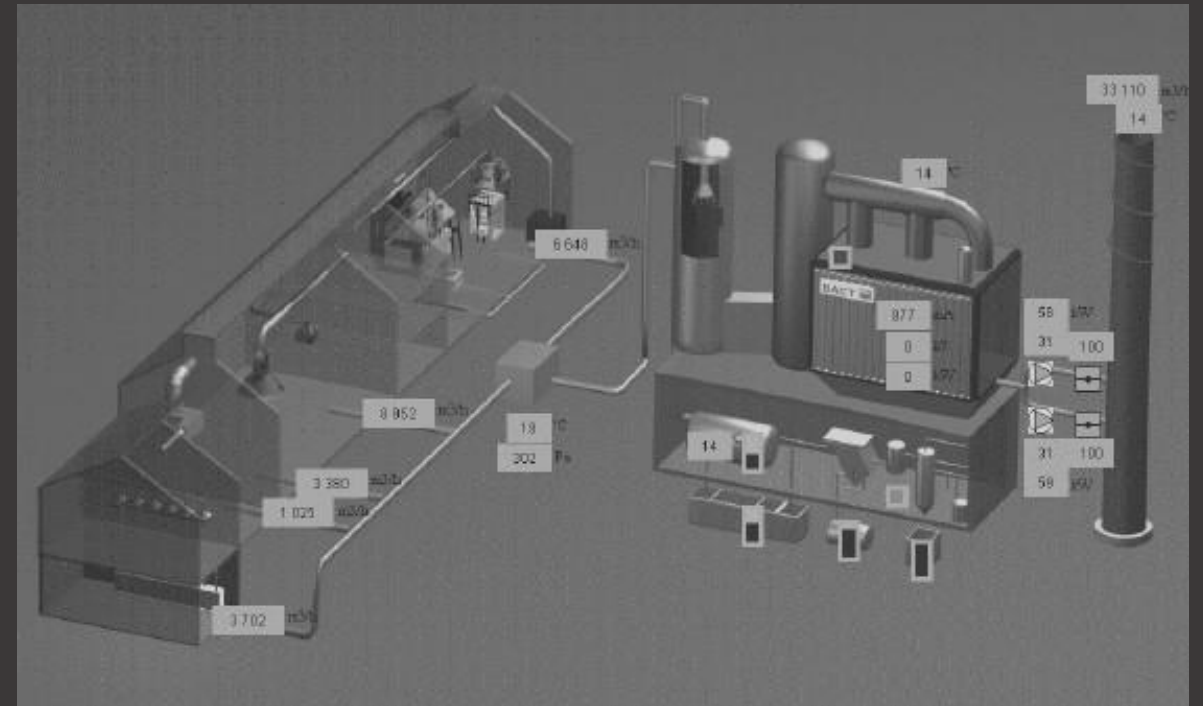
<i>Technical specifications</i>							
	Pack		Module		Cell		
<i>Number of channels:</i>	1	3	12	2	80	24	8
<i>Voltage/channel:</i>	1200 V	800V	100V	150V	6V	6V	5V
<i>Current/channel:</i>	1200 A	300A	600A	100A	50A	50A	100A
<i>Power/channel:</i>	250kW	80kW	60kW	15kW	250W	250W	500W

SMOKE CLEANING – for sustainable research and testing

- Total gas flow: 170 000 m³/h,
- Gas temp: less then 300 °C peak 500 °C
- Emissions: less then 20 mg/m³



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LAB TOUR, BORÅS TEST FACILITIES

Lab visit 1 – Vibration lab with electrodynamic shakers

Lab visit 2 - Applied Mechanics lab

Lab visit 3 – EMC lab

During the lab tour we will also pass the construction site for SEEL Safety Lab.

Three groups, led by Peter Eriksson, Albin Bäckstrand and Johanna Hallström.

No photographing allowed.