

NEW HRS AND HYDROGEN PRODUCTION IN FINLAND

Facts and figures

ESTABLISHED IN 1882

The oldest gas company and producer in Finland

Facts and figures

MANUFACTURES BOTH MEDICAL AND TECHNICAL GASES.
SELLS AND SUPPLIES OWN PRODUCTS AND ACCESSORIES.

Facts and figures

MARKET AREA FINLAND + Russia, Baltic and Europe

ANNUAL TURNOVER

45 MILLION EUR (2014)

Facts and figures

180 EMPLOYEES

Facts and figures

300 000

GAS CYLINDERS

Facts and figures

200 STORAGE TANKS FOR LIQUIFIED GASES

Facts and figures

23 TRANSPORT UNITS
FOR LIQUIFIED GASES

Facts and figures

25 EXTERNAL CARRIER COMPANIES

Facts and figures

30 000

CUSTOMERS

INVESTMENTS

40 MILLION EUR IN 2013-2014

Values

Diligent work

Continuous ability to innovate

Appreciation for the work and people

Responsibility

Continuous learning

Customer satisfaction



WOIKOSKI HYDROGEN

H₂ Properties

- › Lightest chemical element, 15 times lighter than air
- › 100% hydrogen doesn't ignite or burn
- › Burning gas only if mixed with air 5-75%
- › Non toxic, no environmental problems

H₂ production methods

- › Steam reforming from natural or biogas
- › Water electrolysis from de-mineralized water
- › By-product Hydrogen from chemical process

Woikoski
hydrogen

Woikoski promotes

hydrogen society

- › Hydrogen production since 1913 (102 years)
- › Experience of hydrogen refuelling Stations and fuel cell vehicles in arctic climate
- › By-product production
- › Europes largest electrolysis plant for hydrogen production in Kokkola, started 11/2014



Facts

- › 2014 was the Woikoski hydrogen fuelling concept introduced
- › 2015 starts mass production of fuel cell cars
- › 102 years has Woikoski produced hydrogen
- › 0% CO₂ during drive
- › 2 000 000 kg hydrogen per year available for vehicle applications:
 - 9 500 passenger cars
(20 000km/year, 1 kg H₂/100km)
 - 800 buses (30 000 km/year, 8 kg H₂/100 km)

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Hydrogen refuelling station (HRS)

Main components

- › Hydrogen storage
- › Compressing unit
- › High pressure buffer storage
- › Dispenser unit
 - Standardization of outlets
 - 350/700 bar
- › Remote control
- › Mass flow measurement & payment system (rfid, credit card)

Corridors

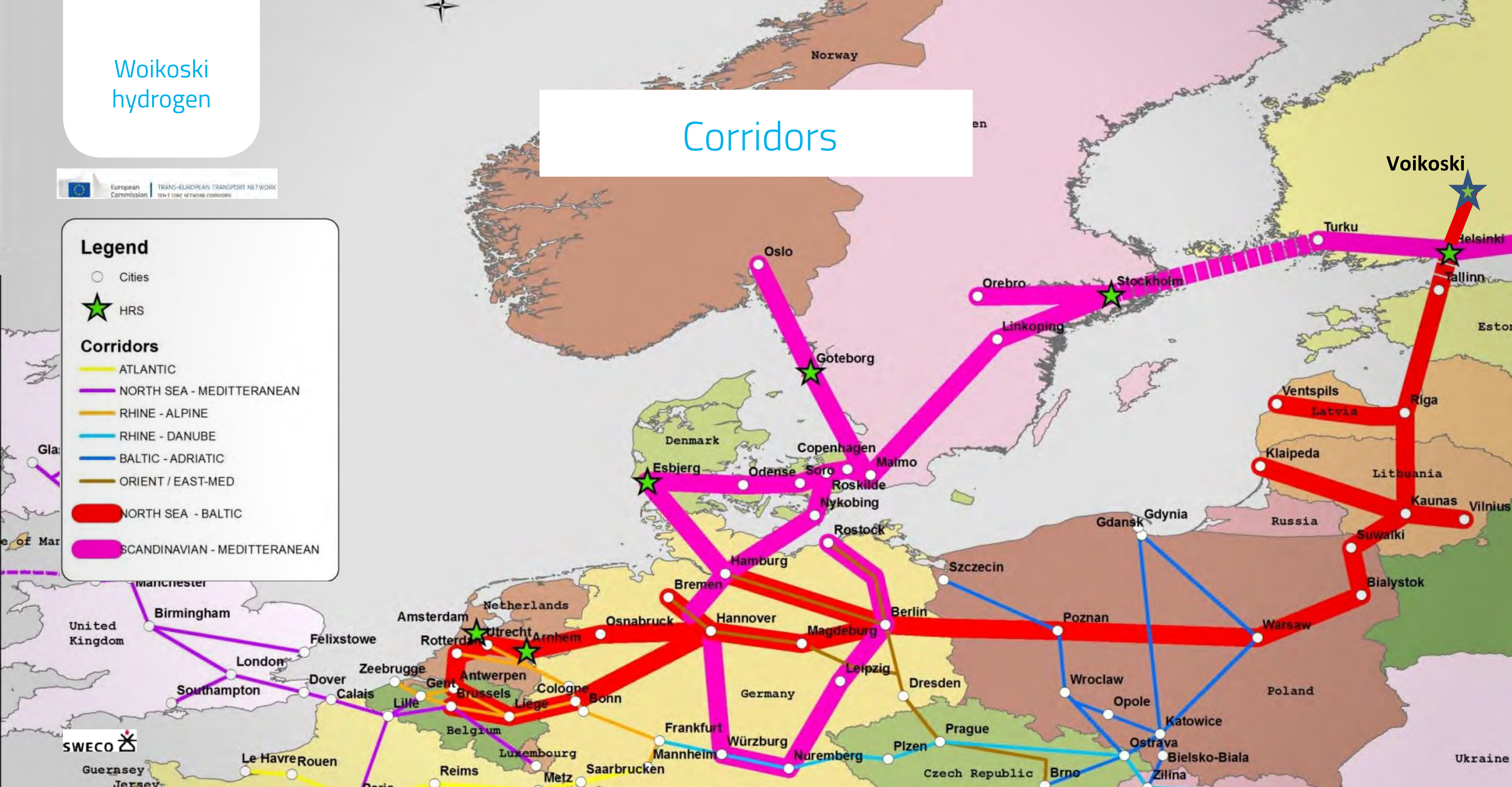


Legend

- Cities
- HRS

Corridors

- ATLANTIC
- NORTH SEA - MEDITERRANEAN
- RHINE - ALPINE
- RHINE - DANUBE
- BALTIC - ADRIATIC
- ORIENT / EAST-MED
- NORTH SEA - BALTIC
- SCANDINAVIAN - MEDITERRANEAN





Woikoski hydrogen cars

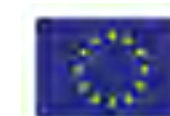
- › Packard in the 1930's
 - Piston engine
 - 50l H₂ cylinder on back seat
 - Driving range 3 km
- › Hyundai ix35 2014
 - Fuel Cell
 - H₂ filling about 5-6 kg
 - Driving range 500-600 km
 - The first fuel cell car in Finland
 - Experience of refueling and driving in arctic climate

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H:FUEL

HYDROGENERATION

HIT-2-CORRIDORS



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www.woikoski.fi