



# Meeting with CreditSights

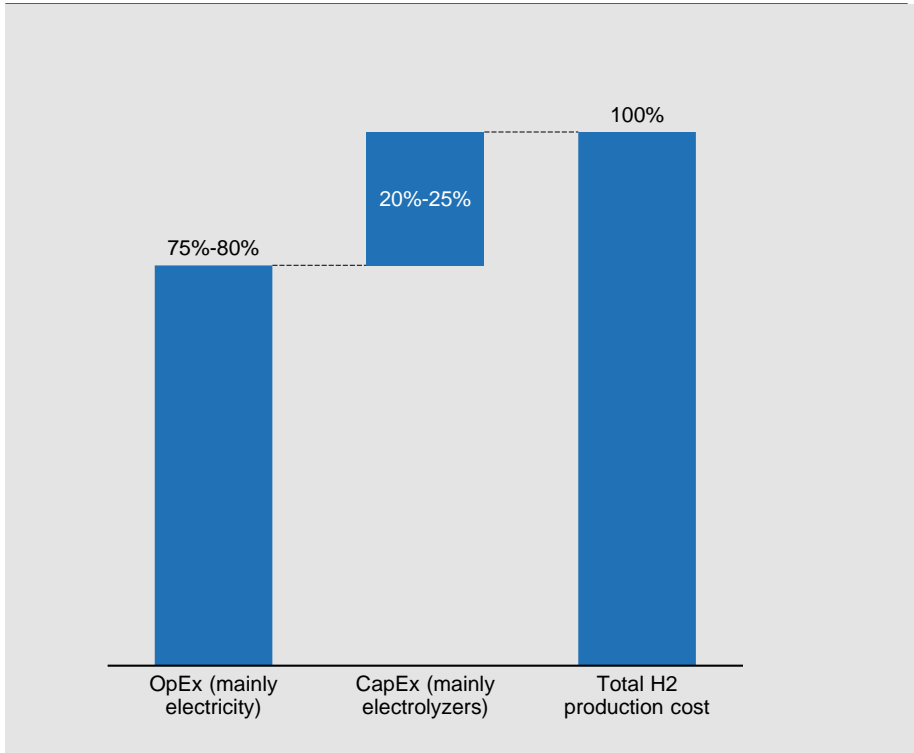
12 October 2020



VATTENFALL

# Cost structure of hydrogen from electrolysis

Large scale industrial applications



## Example case:

- Almost full load, ~8000h/yr
  - ~40 EUR/MWh electricity+O&M
  - 50 kWh/kg hydrogen
  - Investment 1000 EUR/kW
- Production cost:
- ~2.6 EUR/kg H<sub>2</sub>
  - Equals 67 EUR/MWh (HHV) or 80 EUR/MWh (LHV)

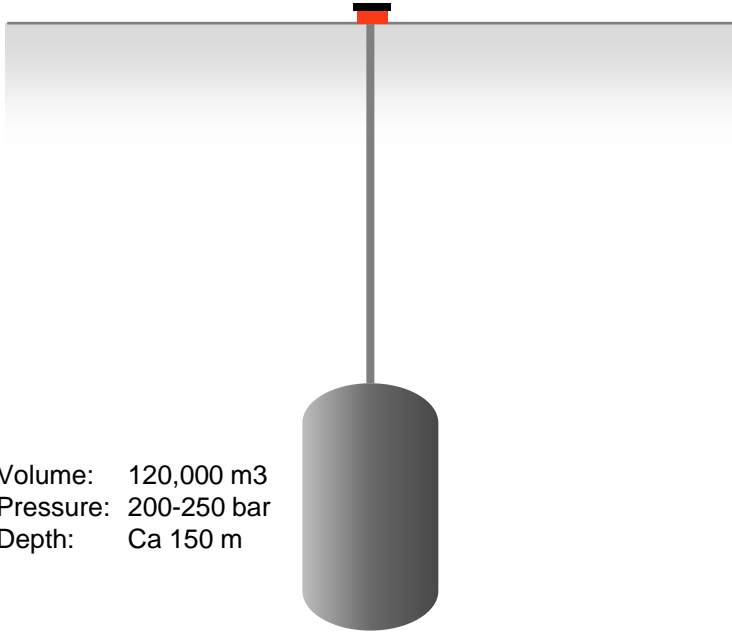
More electrolyser capacity = lower OpEx by increased ability to avoid expensive hours

...BUT ALSO...

More electrolyser capacity = higher capital cost for electrolyzers + storage

# One H<sub>2</sub> storage equals a million Teslas

- and can supply a full scale iron/steel mill with H<sub>2</sub> for five days



Volume: 120,000 m<sup>3</sup>  
Pressure: 200-250 bar  
Depth: Ca 150 m

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Tesla  
x 1,000,000

# Markets for green products mean business... before reaching cost parity

## Impact of decarbonization on product cost

US\$ / % price increase

|          | Intermediate product |   | End product  |
|----------|----------------------|---|--|
| Cement   | +100%<br>(+30%)      | = | +3%<br>Ex: +\$15,000 for a \$500,000 house from fossil-free cement |
| Steel    | +20%                 | = | +1%<br>Ex: +\$180 for a car made of fossil-free steel              |
| Plastics | +50%                 | = | <3%<br>Ex: +\$0.01 for a bottle of soda from fossil-free plastic   |