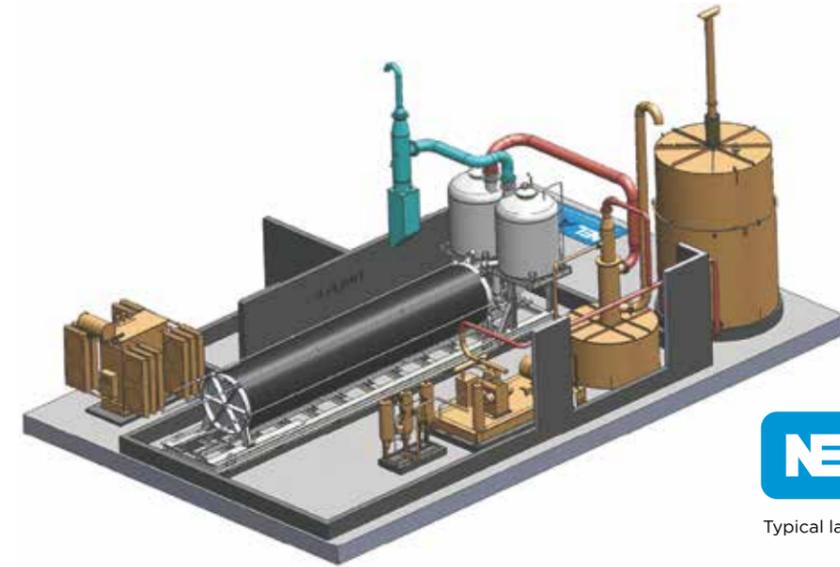
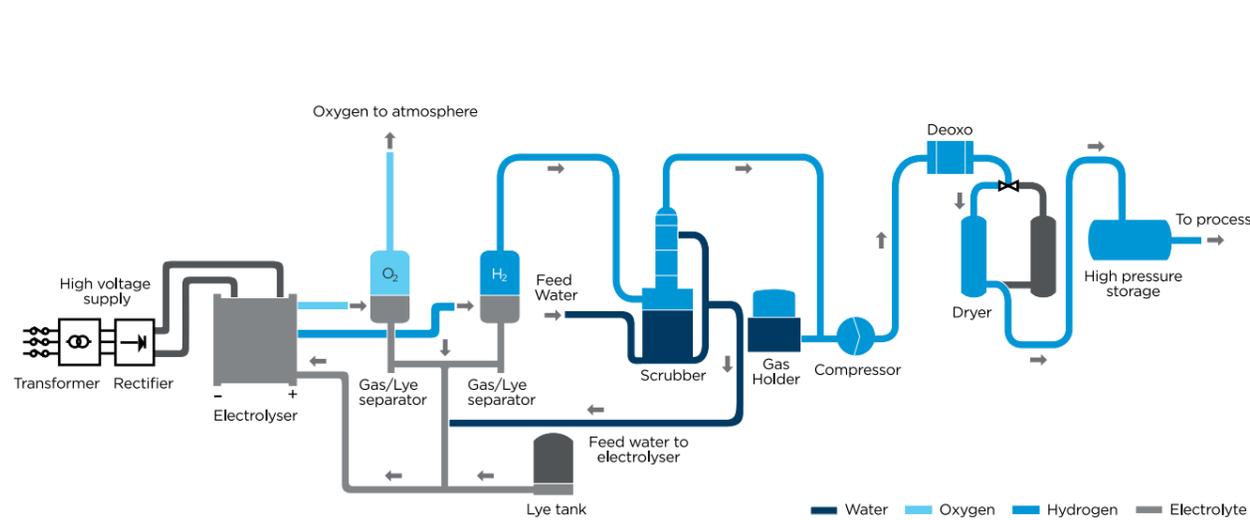


THE PROCESS AND THE HYDROGEN PLANT



NEL A-485

Typical layout of one NEL A-485 plant

Electrolysis is the process of splitting water into hydrogen and oxygen using an electrical current. The inputs to this process are simply feed water and electrical power.

The NEL A-hydrogen plants are delivered as pre-assembled modules which are easily inter-connected on-site:

Transformer / Rectifier

The transformer and rectifier convert the AC high voltage supply into DC current input.

Electrolyser

The electrolyser is of the filter press construction with bipolar electrodes separated by non-asbestos diaphragms. Hydrogen is generated at the cathode and oxygen at the anode.

Electrolyte System

This module consists of two gas separators and the electrolyte recirculation system. The electrolyte is recovered in the separators, then cooled and recycled into the cell block.

Scrubber

The scrubber has 3 main functions:

- Remove residual traces of electrolyte
- Cool down the hydrogen
- Feed water reservoir

Gas Holder

The gas holder is a buffer tank installed between the electrolyser and the compressor or the process at site.

Compressor

If required, a compressor is installed to compress the gas from atmospheric pressure in the gas holder to the pressure required for the process or the storage vessel.

Deoxidiser

Hydrogen generated in the electrolyser is a very pure gas. It is saturated with water, and has an oxygen content of less than 0.2%. If higher purity is required, residual oxygen can be removed by catalytic reaction in a deoxidizer.

Dryer

The dryer will dry the gas to reach the suitable dew point. It consists of twin towers filled with a desiccant to absorb the water.

Gas Storage

The gas storage provides a back-up solution or ensures the hydrogen make-up for batch applications with uneven gas consumption.

NEL A - Technical Specifications

	NEL A-150	NEL A-300	NEL A-485
Capacity / Nominal Flow Rate			
Capacity range (Nm ³ H ₂ /hr) per unit	50 - 150	151 - 300	301 - 485
Production capacity dynamic range	20 - 100% of nominal flow rate		
Energy (electrolyser cell stack)			
Typical power consumption (kWh/Nm ³ H ₂)	3.8 - 4.4		
Purity (measured on dry basis)			
H ₂ purity (%)	99.9 ± 0.1		
O ₂ purity (%)	99.5 ± 0.2		
After purification⁽¹⁾			
O ₂ -content	< 2 ppm v		
H ₂ O-content	< 2 ppm v		
Pressure			
H ₂ outlet pressure after electrolyser	200 - 400 mm WG		
H ₂ outlet pressure after compressor ⁽²⁾	Max 250 bar g		
Operation			
Operating temperature	80°C		
Electrolyte	25% KOH aqueous solution		
Feed water consumption	0.9 litre / Nm ³ H ₂		

(1) Higher purities available on demand

(2) Higher pressure available on demand