



# ANUP ENGINEERING - PROXY PLAY TO GREEN HYDROGEN

The central tasks of Alfa Laval heat exchangers include cooling the hydrogen, oxygen and catholyte. In addition, they condense the moisture from both the hydrogen and the oxygen. So both substances can end up being used.

- GAIL** – plans to build India’s largest green hydrogen plant. The company has finalised 2-3 sites for plant, it will take 12-14 months to set up , and it will have a capacity of 10 MW. The company has started mixing hydrogen in natural gas in one of the cities on a pilot basis, the company is testing its percentage before it scales it up
- NTPC**: Company also plans to produce green hydrogen on a commercial scale. The company plans to do that from its upcoming 4,750 MW renewable energy park at the Rann of Kutch. The capacity of the plant will be 5 MW. NTPC also plans to set up its first green hydrogen fueling station in Leh, Ladakh.
- Indian Oil Corp**: Recently announced its plans to build a green hydrogen plant at its two refinery sites and had floated a global tender.

	Reliance	Adani
Planned Investment	\$10 Billion	\$20 Billion
Time Frame	3 Years	10 Years
Focus Areas	Solar, green hydrogen, batteries, fuel cells	Solar, wind, green hydrogen, energy infrastructure

Green hydrogen is an exciting and large opportunity knocking our way. There are multiple ways to play it.

- Producers of green hydrogen. RIL/Adani/IOC/NTPC/GAIL are early movers here.
- Manufacturers of Electrolysers. US based Ohmium International has just launched first Giga factory for electrolysers in Bengaluru. **Linde India** provides some services.
- Solar power generation. Adani Green an absolute leader here.
- Solar power plant manufacturing. Borosil Renewables.

**Hydrogen a US\$11trillion opportunity:** Assuming the 2050 target to go net zero by many large countries, it is estimated by BloombergNEF that hydrogen usage will attract US\$11trillion in investments. Direct investment will be in Electrolysers (US\$0.8trillion) and Storage (US\$1.2trillion) capacity, while indirect investment will be in renewable energy (US\$9trillion). Annual revenues are estimated to grow 17x in next 29years to US\$2.5trillion. It does depend on the momentum we see by government in driving the net zero objective but there is no denying that hydrogen is assured of it’s place in the sun. Back home Indian Prime Minister announced on 15<sup>th</sup> August National Hydrogen Mission. Finance Minister made a Rs800cr budgetary allocation for Hydrogen Mission. Reliance, Adani and some PSUs like GAIL, IOC and NTPC have already announced their plans for investment into green hydrogen. And earlier this week, Prime Minister **kick started** the National Hydrogen Mission with Indian Oil (IOC) calling for global tender to set up 2 plants of green hydrogen at it’s existing refining sites.

## ANUP - Order Book

### Order Book Review as on Date

Row Labels	Rs Cr	%
Heat Exchanger	220.5	74%
Vessels	48.4	16%
Tower & Reactor	27.8	9%
Centrifuge	1.8	1%
<b>Grand Total</b>	<b>298.5</b>	

Row Labels	Rs Cr	%
Refinery	224.9	75%
Paper	35.8	12%
Hydrogen	26.4	9%
Power	4.7	2%
Chemical	3.6	1%
Mining	1.6	1%
Fertilizer	1.5	0%
<b>Grand Total</b>	<b>298.5</b>	<b>100%</b>

## As on Jan-22

### Order Book Review

Equipment Type wise	Rs Cr	%
Heat Exchanger	205.4	72%
Vessels	49.5	17%
Tower/Reactor	26.1	9%
Centrifuge	2.5	1%
<b>Total</b>	<b>283.5</b>	<b>100%</b>

Industry Wise	Rs Cr	%
Refinery	209.1	74%
Paper & Pulp	35.8	13%
Hydrogen	26.5	9%
Chemical	6.5	2%
Mining	4.1	1%
Fertilizer	1.6	1%
<b>Total</b>	<b>283.5</b>	<b>100%</b>

- Strong Order book pipeline in Refining, Paper & Pulp and Hydrogen sector
- Further order of Rs 17.8 Cr received in January till date.

## ANUP - Clients

### Marquee Clients