NEX-G

CNG Composite Cylinder

A TIME Product

LIGHT WEIGHT CNG CYLINDERS

Solutions for Green Energy

A Technological Breakthrough

TYPE IV CNG CYLINDERS : Carbon Fibre Wrapped Metal Free Cylinders

CASCADES

ON-BOARD USAGE

About Us

Time Technoplast has been in the field of innovative polymer products for over 28 years with global presence in over 11 countries and have been developing innovative and performance oriented solutions in the field of Industrial Packaging, Automotive Components, Composites, Infrastructure and Material Handling.

LiteSafe®

Time Technoplast has been manufacturing LPG composite cylinders for over 13 years and today export to over 40 countries globally. LiteSafe Type IV LPG cylinders are recognized for their innovative features of being Light Weight, Explosion Proof, Rust Proof, Translucency, Attractiveness etc.

NEX-G

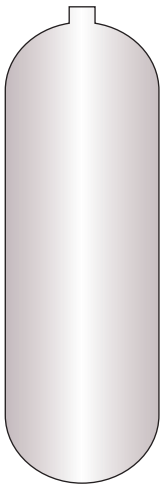
CNG Composite Cylinder

The development of CNG Type IV cylinder has been the next step in the development of composite products.
Metal free, polymer liner fully wrapped by carbon fibre for high pressure applications including CNG and Hydrogen.

Evolution of Gas Cylinders

Gen I

Full Steel Cylinders - Metal prone to rust and corrosion. Very heavy.

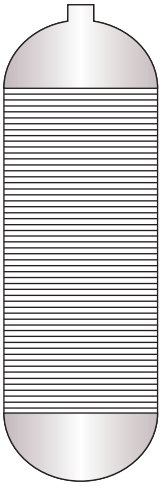


Type I

Metal Cylinders

Gen II

Lighter Steel Cylinders - Wrapped with carbon fibre partially on side body only. Top and bottom steel ends open/exposed. Prone to rust and still heavy.

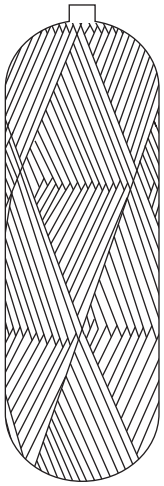


Type II

Metal Cylinders - Side wrapped with Carbon Fibre

Gen III

Aluminum Cylinders - Wrapped with carbon fibre all around but has a metal liner. Prone to galvanic corrosion. 30-35% heavier than Type IV cylinders.

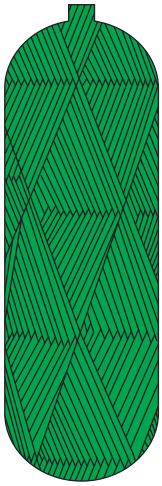


Type III

Aluminum Cylinders - Fully wrapped with Carbon Fibre

Gen IV

Non-metallic polymer liner - Wrapped with carbon fibre all around. No rust, No corrosion. Lightest cylinders in the evolution chain. Latest technology.



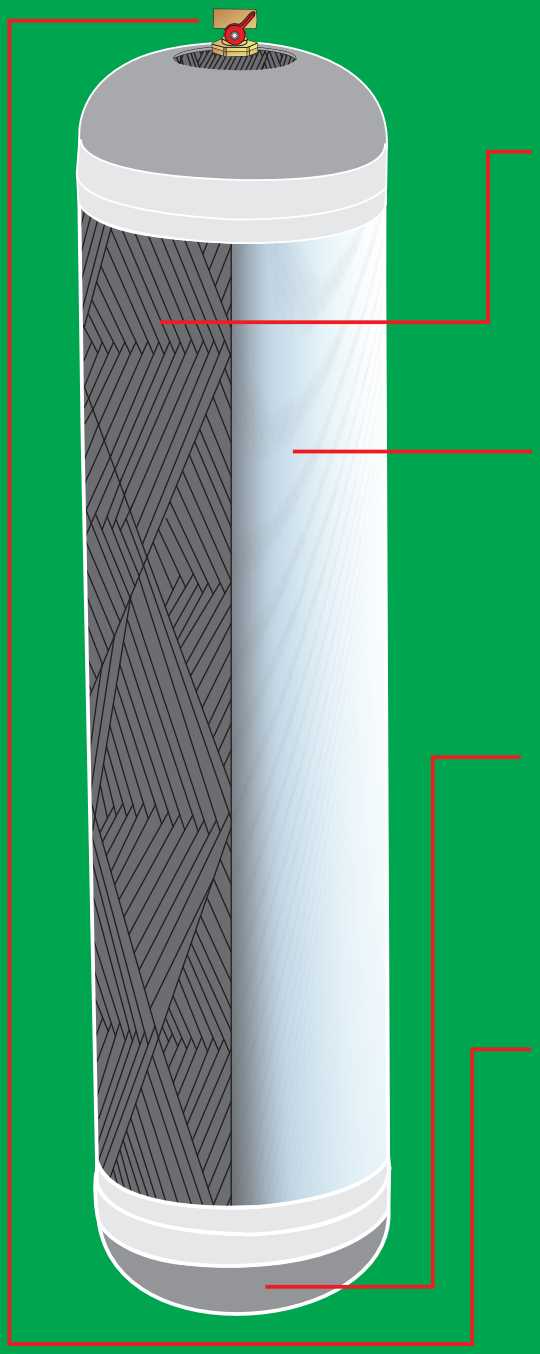
Type IV

Polymer - Non metallic liner wrapped with Carbon Fibre

SPECIFICATIONS

4th Generation Development Metal Free Liner Type IV Cylinders

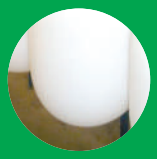
Using highly advanced carbon fibre reinforced technology, NEX-G CNG composite cylinders are designed for high pressure applications.



Carbon Fibre Reinforced Cylinder

Carbon fibre filaments are helically wound on the liner in combination with resin to impart high tensile strength. No fatigue effect in day to day operations.

Permeation Resistant Polymer Liner

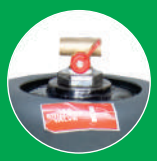


Non-metallic high density polyethylene (HDPE) liner with barrier surface treatment and additives to minimize permeation.

End Protection Caps

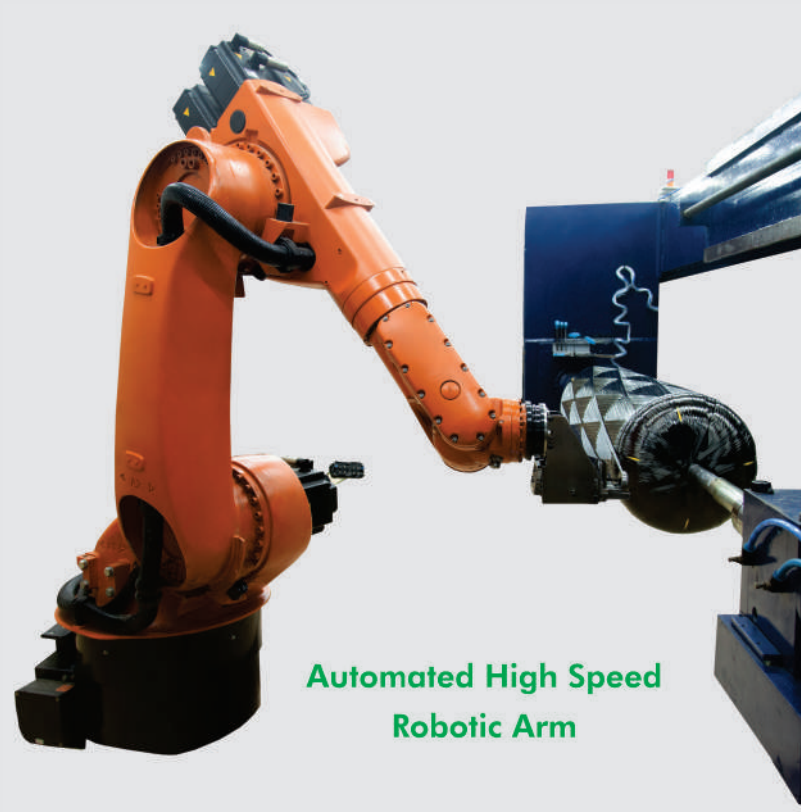
These end caps made of PU material provides cushion and absorbs shock impact during any handling abuse.

Safety Valve and Boss



The cylinders comes with a pre-installed safety valve and pressure relief device (PRD & TPRD). Boss is made of a special grade stainless steel and ensures no leakage under high pressure filling at 250 bar.

Sophisticated Manufacturing Facility Set-up



Highly automated and robotic process adopted for fast standard and high quality products. Full fledged state-of-the-art testing facilities set up for stringent testing of cylinders online and offline to ensure safety, reliability & its performance.

High Quality Stringent Tests and Certifications

Drop

Sturdy cylinders withstand 1.8 mtr drop on multiple sides.

Leak

Zero leakage performance tested for every cylinder. Air tested at 250 bar submerged in water.

Flaw

2.5mm depth Vertical & Horizontal flaw / cut created on the carbon fiber winding surface on two cylinders. (followed by burst) 5000 Cycle test to ascertain if any leakage.

Cyclic

Cyclic test simulates cylinder /cascade filling upto 260 bar and emptied to atmospheric pressure and cycle repeated again and again. Simulation test exceeds service life of 20 years and more.

Extreme Temperature Cycling

20 bar to 260 bar cycle test repeated over and over again at extreme temperature of -40°C and +65°C.

High Velocity Impact

Cylinder construction ensures it passes the bullet test. Cylinder does not shatter when a piercing projectile (bullet) goes through the 250 bar pressurized cylinder.

ISO

PESO, India

BUREAU VERITAS

AATMA-NIRBHAR BHARAT

MAKE IN INDIA

FEATURES

High Performance Features That Make Cascades & Cylinders Unique

Light & Efficient:

Nex-G cylinders are almost 70% lighter than its steel counterparts and increases gas carrying capacity. Can transport 2 times more gas in one trip reducing CNG transportation cost by almost 50%, bringing in huge savings.

Non Corrosive & Permeation Resistant:

All cylinders have polymer liner with special additives made with gas tight PE material which are resistant to fatigue and rust. There is no chance of rusting and corrosion leaving out any chance of contamination & line leakage. Special non-metallic liner does not allow permeation.

Low Maintenance Cost:

Designed to be maintenance free and retesting requires only inspection. (No hydrostatic testing required for On-Board usage cylinders)

High Service Life:

Over 20 years service life. PESO Approved.

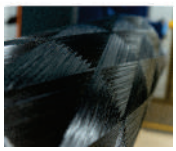
20 YEARS
Service Life

Highly Safe & Durable:

Using highly advanced carbon fibre reinforced technology, Nex-G cylinders are very strong and suited for storage of gas at high pressures. When it comes to CNG cylinders, safety is of paramount importance.

Economical:

Higher quantum of gas moved, lower operational cost, huge savings & faster payback. Huge savings during operational period.



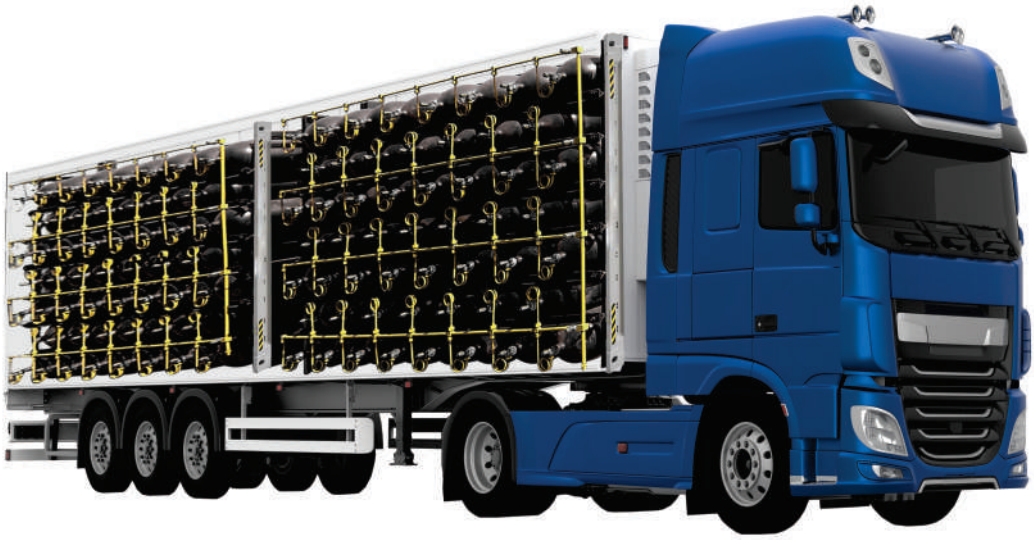
A World Of Difference

Cascades	Type-I	V/S	Type-IV
Material of Construction	Made of Steel		Non-metallic inliner, fully wrapped with carbon fibre.
Cylinder Weight (9,000 Litre Capacity Cascade)	13,200 Kgs		2,538 kgs
CNG Carrying Capacity (Per Cascade as per Payload & RTO Norms)	4,500 Litres		9,360 Litres*
Residue Impact	Sulphur/H_2S residue, Corrodes Metal Cylinder. Maintenance Required.		Polymer inliner inert to all residues. Maintenance Free.
Standard	IS:7285		ISO:11119-3

* Depending on the requirement, different optimum size cascades are available in different Water Liter Capacities. Reduce operating costs and maximize movement of maximum CNG.

On-Board	Type-I	V/S	Type-IV
Material of Construction	Made of Steel, Exposed to atmosphere and prone to corrosion.		Non-metallic cylinder fully wrapped with carbon fibre.
Standard Sizes	30 Litres - 35 kgs (Tare) 60 Litres - 65 kgs (Tare)		60 Litres - 16 kgs (Tare)
Cylinder Weight	Heavy weight cylinder. Huge additional load on vehicle chassis.		Light weight cylinder, More driving comfort, Higher service life to vehicles.
Residue Impact	Can result into engine seizure or clogging of fuel lines. Prone to rust.		Inliner inerts to CNG residues S/H_2S. No Rust, No Corrosion.
Vehicle Mileage	Lower mileage due to higher weight.		Higher mileage due to lower weight.
Cylinder Mounting	Heavy Weight - Limits the number of cylinders.		Light Weight - One or more cylinders can be mounted increasing driving range.
Suspension Load	Higher wear and tear of suspension and brake parts.		Lighter cylinder, lighter load on suspension and brake parts.
Explosion Proof	Metal cylinders prone to explosion in the event of fire.		Yes

Type IV CNG Cascades with More Fuel Carrying Capacity



70%
Lighter
than TYPE 1 Cylinders

2.20
Times More Gas
per trip

Reduce
per Kg CNG transportation cost by almost 50%

No
Dry Outs

- Conventional Type I CNG Cascade accommodates 4,500 water litre capacity on a standard truck.
- With the same truck and payload capacity, Type IV CNG Cascade can accommodate 9,360 water litre capacity and hence more CNG can be transported.
- Depending on Cascade size required, optimum size can be designed & within truck payload capacity available.
- Guaranteed max size on any truck vis-a-vis other options & always more than double compared to Type I Cascade.
- Offers highest degree of structural stability and safe as the height to base ratio exceeds 2.5.
- Easy access to filling and decanting ports either at back or on sides.
- Strong and Sturdy Cascade frame designed. Crash resistant and easy access to cylinder valves.
- Cascade design facilitates airy and roomy structure.
- The entire 9,360 water litre capacity can be filled in `one go' without compromising any filling capacity nor any additional time loss.
- Cascade design with single bank / multiple bank provision possible.
- Key prominent and visible branding space options.
- Reputed brand tubings and fittings used.

Mobile Refuelling Unit (MRU)

- MRU is used as a novel idea to bring the CNG to your doorstep.
- MRU Cascade unit with in-built compressor facilitates CNG dispensation to on-road vehicles anytime anywhere.
- Double capacity Type IV Cascade normally does not need refill during the day.
- Large gas carrying capacity lowers operating cost, to ferry gas between mother station and dispensing location.

On-Board Applications

Bus

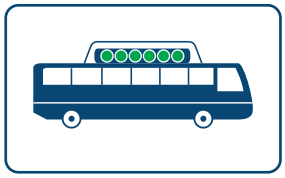
Advantages with Type-IV CNG cylinders

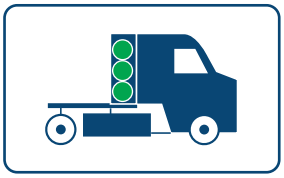
- Higher driving range of 500 to 1000 kms in one fill – No refill anxiety issues.
- No compromise on underfloor luggage storage area as Type-IV cylinders can be mounted on rooftop.
- Type-IV cylinders are lighter therefore no issues related to Cg shift even when mounted on roof.
- Higher mileage, Reduced fuel cost per km, savings up to 40 to 50% v/s Diesel powered bus.
- For long-haul buses : Type-IV CNG conversion cost can be recovered within 2 years.
- No buckling of side frame with Type IV cylinders when mounted on roof - Light weight.
- Higher Mileage due to lighter weight cylinders.
- More savings due to lower wear and tear of suspension, brakes & tires.

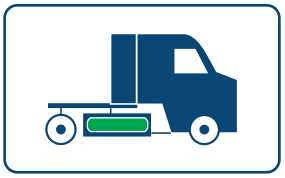
Truck

Advantages with Type-IV CNG cylinders

- Higher driving range of 500 to 1000 kms in one fill – No refill anxiety issues.
- No compromise on payload capacity of vehicle.
- Reduced fuel cost up to 40 to 50% v/s Diesel powered truck.
- Type-IV CNG conversion cost can be recovered with-in 2 years.
- Higher mileage due to lighter weight cylinders.
- More savings due to lower wear and tear of suspension, brakes & tires.







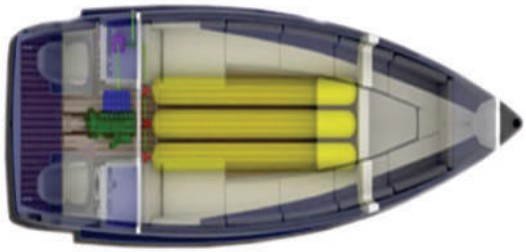
On-Board Applications

Passenger Vehicles

Advantages with Type-IV CNG cylinders

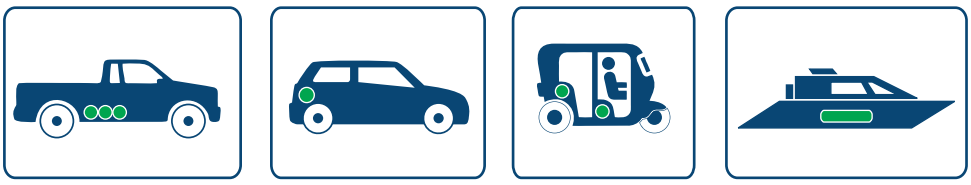
- Light weight cylinder, provides great driving comfort, vehicle does not drag as weight reduces considerably.
- Higher driving range – No range anxiety issues.
- For long-haul : Multiple Type-IV CNG cylinders, 2 or more numbers can be mounted without adding higher weight.
- Higher mileage v/s Type-I CNG cylinders.
- Rust-proof Inner liner increases life of vehicle.
- More savings due to lower wear of suspension, brakes & tires.
- No rust / corrosion, No fuel contamination.

Boat



Advantages with Type-IV CNG cylinders

- Reduce unpleasant smoke, harmful emissions & noise pollution. Do away with polluting diesel. Cleaner and safer for marine life.
- Longer driving time – No range anxiety issues.
- Type-IV cylinders have rust-proof liner, therefore no issues due to water splashes or salty environment.
- Type-IV cylinders are 70 % Lighter than Type-I / Steel cylinders & therefore no issues on adding more cylinders / capacity.
- Reduced fuel cost up to 40 to 50% w.r.t. Diesel / kerosene powered engines.
- Safe for using in fishing trawlers or passenger boats.



NEX-G

CNG Composite Cylinder

TIME

TIME TECHNOPLAST LTD.

Bringing Polymers To Life

Corporate Office: 2nd Floor, 55, Corporate Avenue, Saki Vihar Road, Andheri (E), Mumbai - 400 072, Maharashtra, India.

Tel.: +91-22-7111 9500 / 9999 / 9700 | Fax: +91-22-2857 5672 | E-mail: ttl@timetechnoplast.com | Website: www.timetechnoplast.com