TechTALK
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LIGHTWEIGHT CYLINDERS FOR CNG BUSES

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Business Manager
DYNETEK Industries Ltd.

Company Overview

Dynetek designs, produces and markets lightweight advanced fuel storage systems for:

- **Compressed natural gas for low emission CNG vehicles**
- **Compressed hydrogen for zero-emission fuel cell vehicles**
- **Ground storage and bulk transportation of compressed gases**

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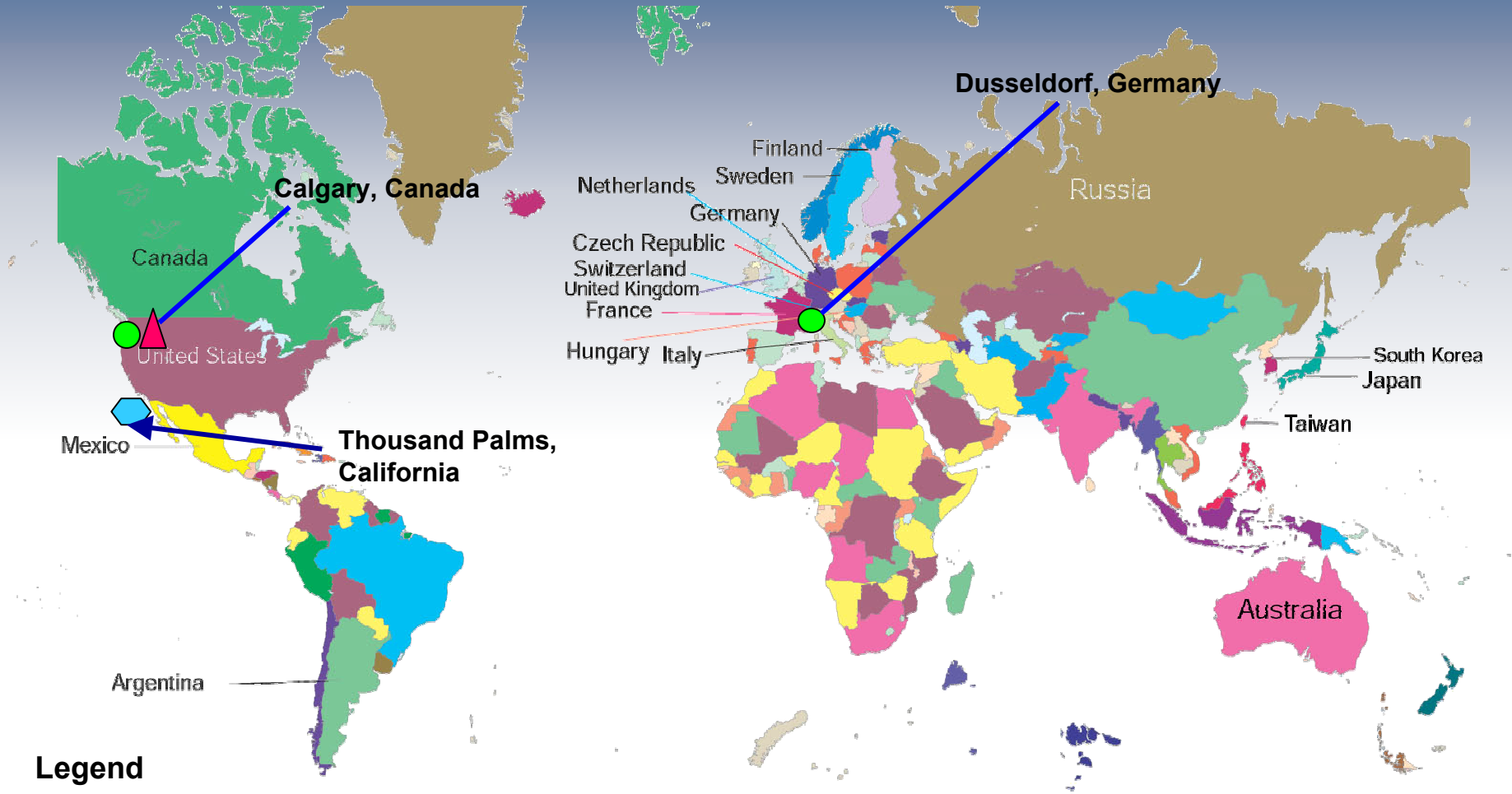
Dynetek Manufacturing



Legend

- **DyneCell cylinders system design & manufacturing**
- **DyneCell single port system design & manufacturing**
- **CNG System Manufacture/Installation/Service**

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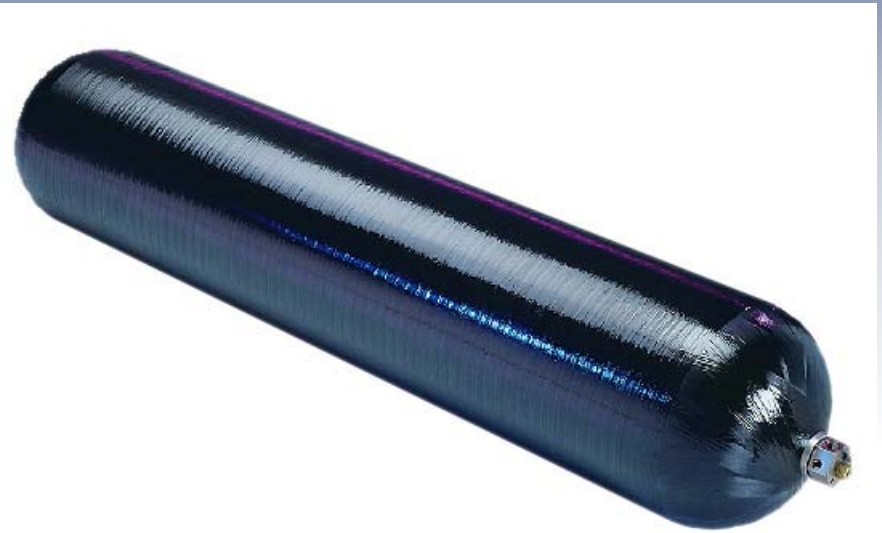
Cylinders



Invested over 124,000 engineering hours on the development, design and testing of DyneCell cylinders

DyneCell Cylinders

- **Lightest CNG cylinder on the market with a metallic liner**
- **Highest storage capacity of all lightweight designs**
- **Non-permeable, seamless aluminium liner**
- **Significantly safer by design**
- **Very flexible in size configurations**
- **True fast-fill capabilities**

Design Advantages

* Typical weight range

DYNETEK's role in Mumbai Project

Dynetek to demonstrate Lightweight CNG Cylinder Systems

Introduction to the India Market

Significant Benefits:

- **Improved Driving Range**
- **Better Fuel Economy leading to reduced emissions.**
- **Reduced Wear on Vehicle**
- **Safer design**

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System Weight & Fuel Comparison

Dynetek Lightweight System
- **enables low floor bus**
- **safer by design – out of crash zone**
- **2 x fuel storage capacity**
- **lighter system = improved fuel economy**

Typical Under-carriage CNG System in use in India
- **cylinders in crash zone**
- **heavier frame**
- **additional cost for suspension and transmission**

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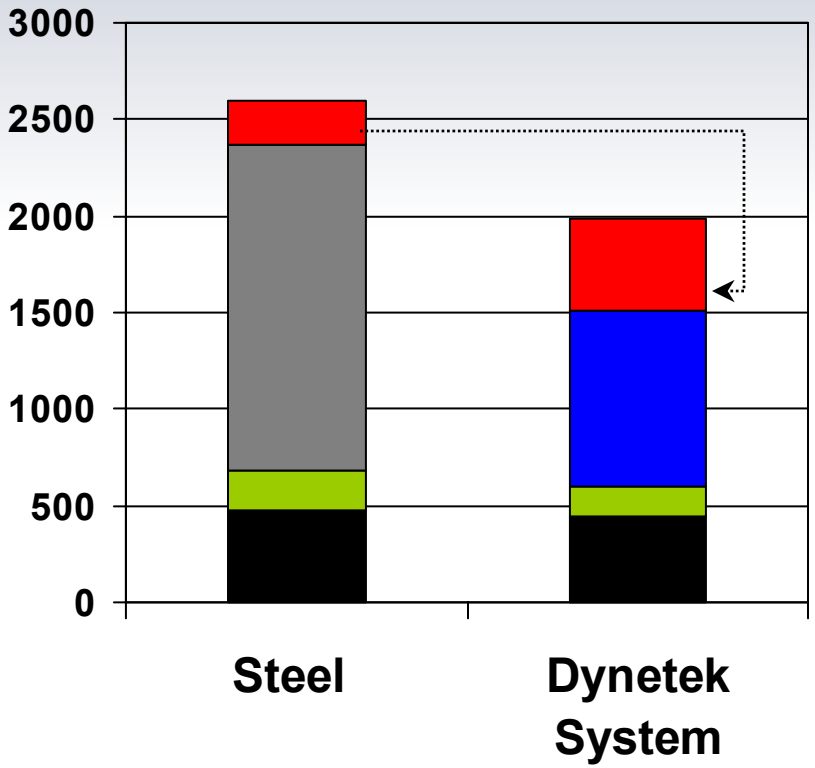
System Weight & Fuel Comparison

CNG: 200 bar / 15°C

ρ = 0,835 kg / Nm³



+ 115% more fuel

40% lighter system weight

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System Comparison

Roof Mount Fuel Storage System Benefits	DYNETEK SYSTEM		CURRENT STEEL CYLINDER SYSTEMS	
		Weight (lbs)		Weight (lbs)
Lightweight Sub frame	• Steel frame • Components & Tubing	**450**	• Steel frame	**480**
Sub frame cover	• Composite Cover	**148**	• Fiber Glass (reinforced) • Assumed Comparable	**205**
Cylinders ***(Service pressure 3000 psi/ 200 bar)***	• W320 4 x 320 L cyl. • 16"x 113" • 4 cylinders @ 223 lbs/ cylinder • 12080 SCF – 324 sm3	**892**	• 12 x 50 L cyl. • Approx. 6312 SCF	**1608**
Mounting	• 4 sets @ 4 lbs per set	**16**	• Belly mount brackets • 4 sets @ 20 lbs/ set	**80**
TOTAL ESTIMATED WEIGHT (lbs/Bus)		1,506 lbs **685 KG**		2,373lbs **1079 KG**
OVERALL % ESTIMATED WEIGHT SAVINGS	***DYNETEK SYSTEM*** ***394 KG LIGHTER*** ***Extra Fuel + 100 %***	**40 %** **226 lbs / 102 kg CNG**		**484 lbs / 220 kg CNG**

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Dynetek's Experience

Heavy Duty Trucks

Customer: Carmenita

Automotive

Nissan FCV

Transit Buses

Customer: Heuliez Bus

Vocational Trucks: Sweepers

Customer: Elgin Sweepers

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Dynetek's Experience: CNG Vehicles On The Road

Vehicle Model: BredaMenarinibus M240CNG

CNG Storage: 4 cylinders - driving direction

BredaMenarinibus

Dynetek

Dynetek's Experience: CNG Vehicles On The Road

Vehicle Model: vanHool A330 CNG

Vehicle Size-Length: 12 m

CNG Storage: 4 cylinders - longitudinal – integrated in the bus structure

VANHOOL

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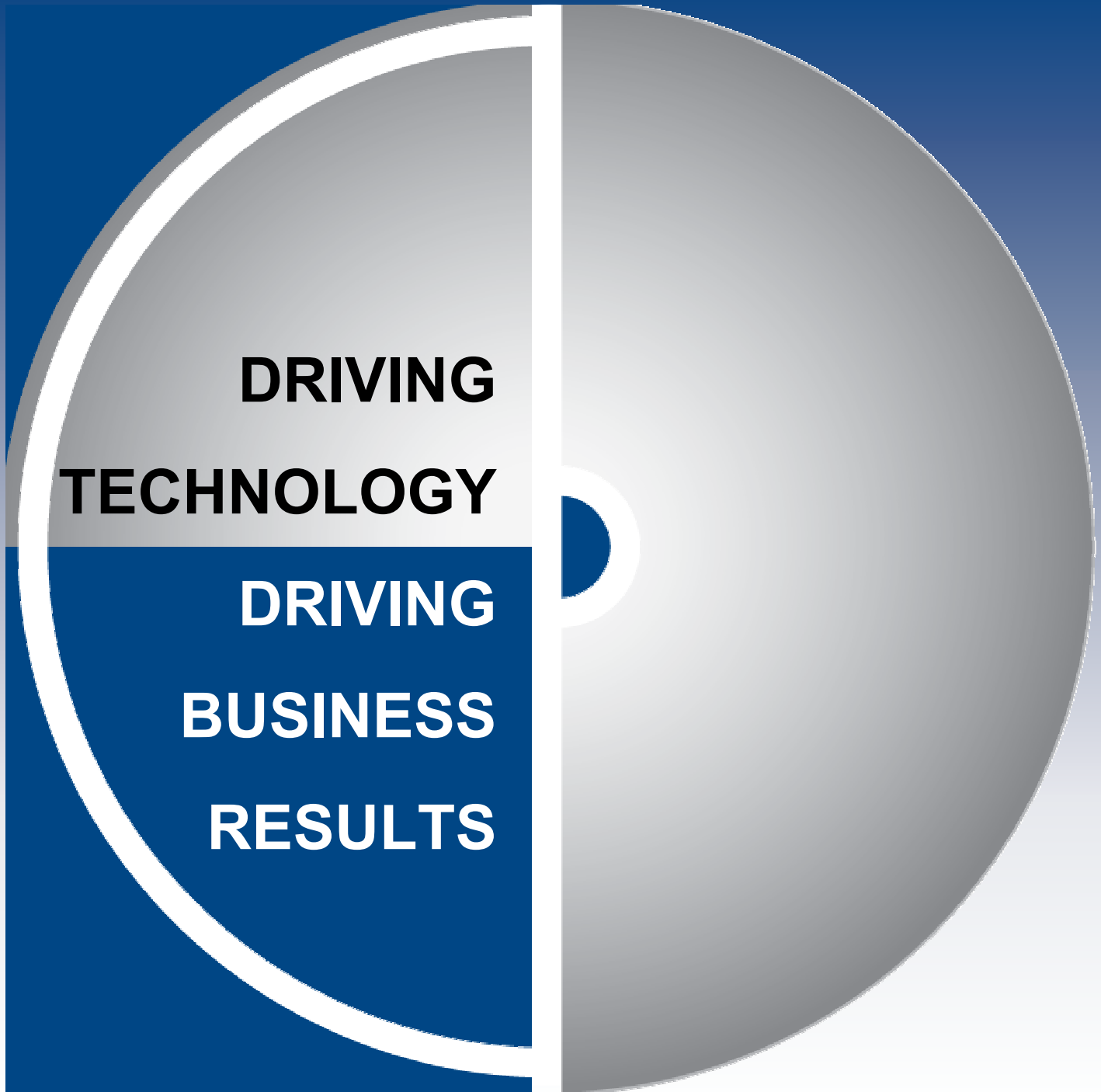
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