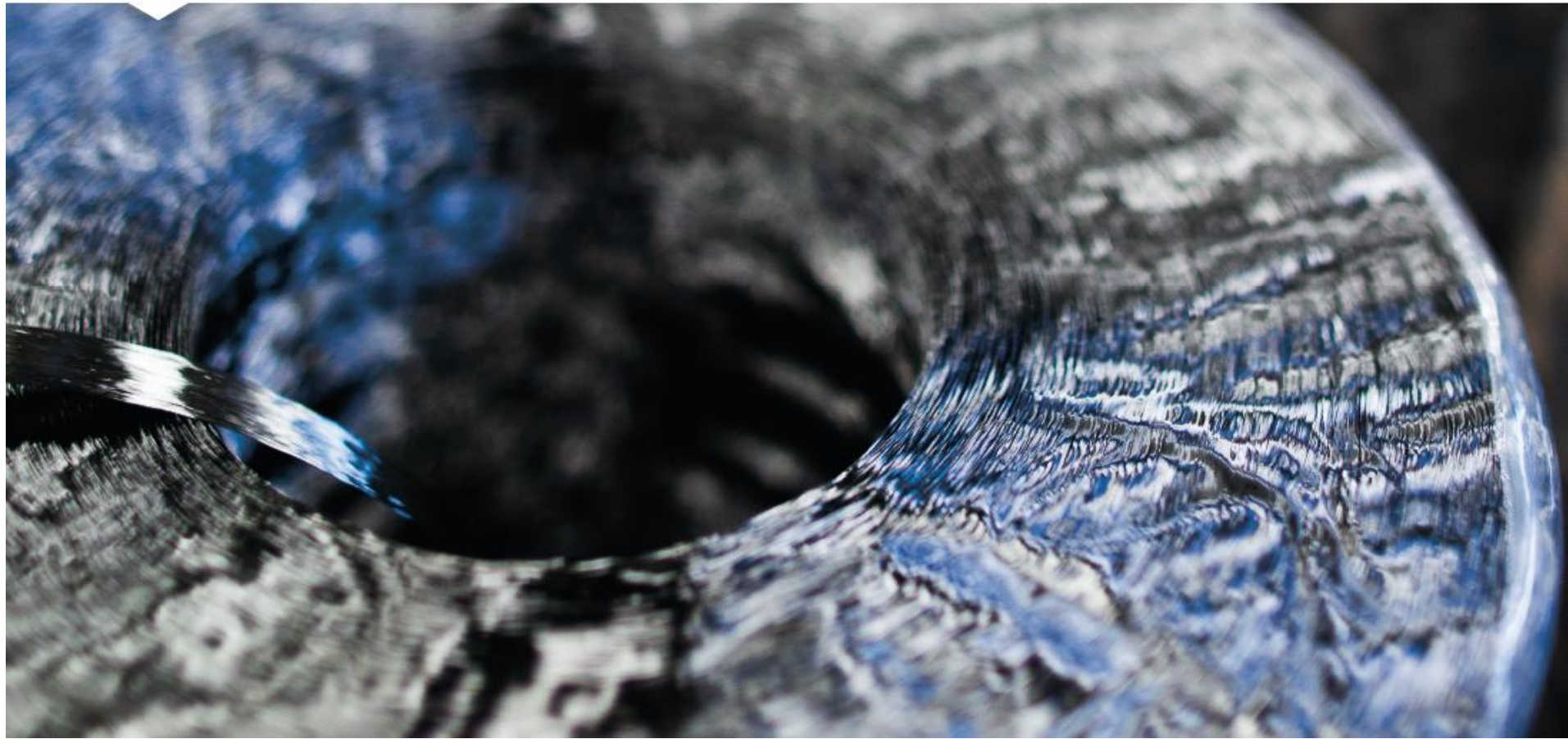


BULK HAULING EQUIPMENT FOR CHG

Don Baldwin
Director of Product Development - Hexagon Lincoln



HEXAGON
COMPOSITES



HEXAGON LINCOLN TITAN™ Module System

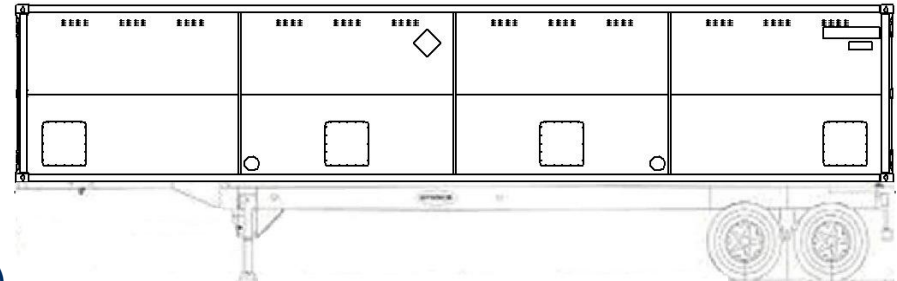


▶ Compressed Hydrogen Gas

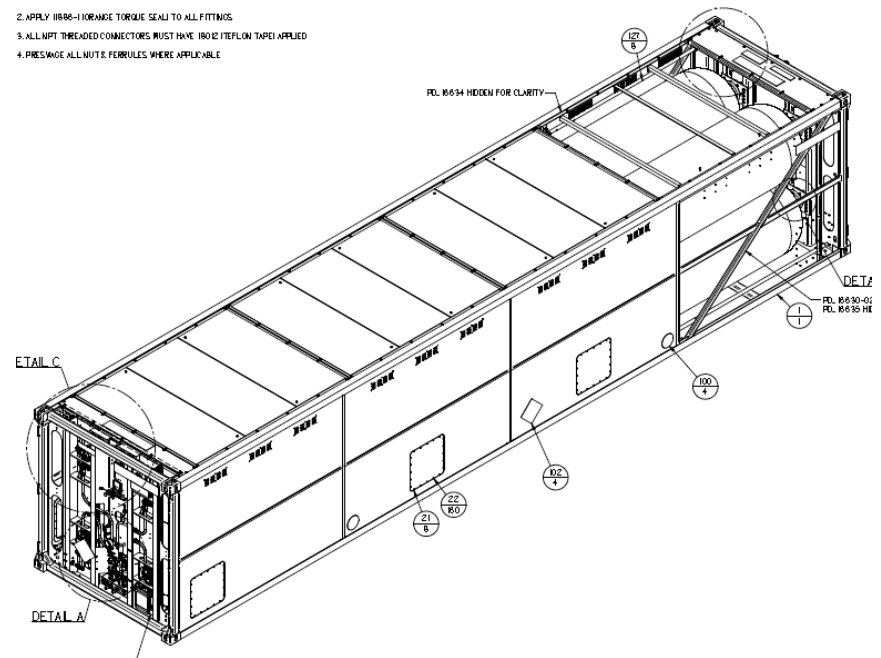
- Capacity
 - ▶ 250 bar – 616 kg
 - ▶ 350 bar – 809 kg
 - ▶ 540 bar – 1155 kg
- Gross Vehicle Weight (with prime mover)
 - ▶ 250 bar – 28 450 kg
 - ▶ 350 bar – 30 820 kg
 - ▶ 540 bar – 39 440 kg
- Purchase Cost
 - ▶ 250 bar – \$510,000
 - ▶ 350 bar – \$633,750
 - ▶ 540 bar – \$1,100,000

▶ Compressed Natural Gas

- Capacity (250 bar at 15 C) – 7412 kg
- GVW (With prime mover) – 35 250 kg
- Purchase Cost (+/- 5%) - \$510,000



2. APPLY HB86-1 TORQUE SEAL TO ALL FITTINGS
3. ALL NPT THREADED CONNECTORS MUST HAVE 180° TEFLON TAPE APPLIED
4. PRESWAGE ALL NUTS & FERRULES WHERE APPLICABLE

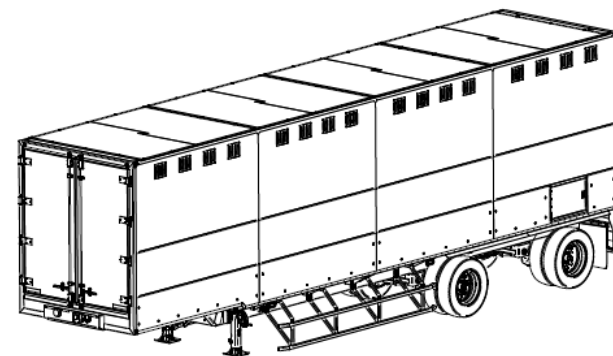




HEXAGON
COMPOSITES

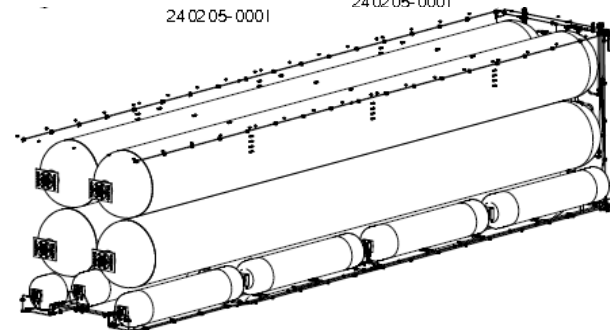
HEXAGON LINCOLN TITAN™ V Magnum Trailer System

- ▶ Compressed Hydrogen Gas
 - Capacity
 - ▶ 250 bar – 800 kg
 - ▶ 350 bar – 1050 kg
 - ▶ 540 bar – 1500 kg
 - Gross Vehicle Weight (with prime mover)
 - ▶ 250 bar – 31 000 kg
 - ▶ 350 bar – 34 200 kg
 - ▶ 540 bar – 45 700 kg
 - Purchase Cost (+/- 5%)
 - ▶ 250 bar – \$595,000
 - ▶ 350 bar – \$745,000
 - ▶ 540 bar – \$1,295,000
- ▶ Compressed Natural Gas
 - Capacity (250 bar at 15 C) – 9649 kg
 - GVW (With prime mover) – 39 830 kg
 - Purchase Cost (+/- 5%) - \$595,000



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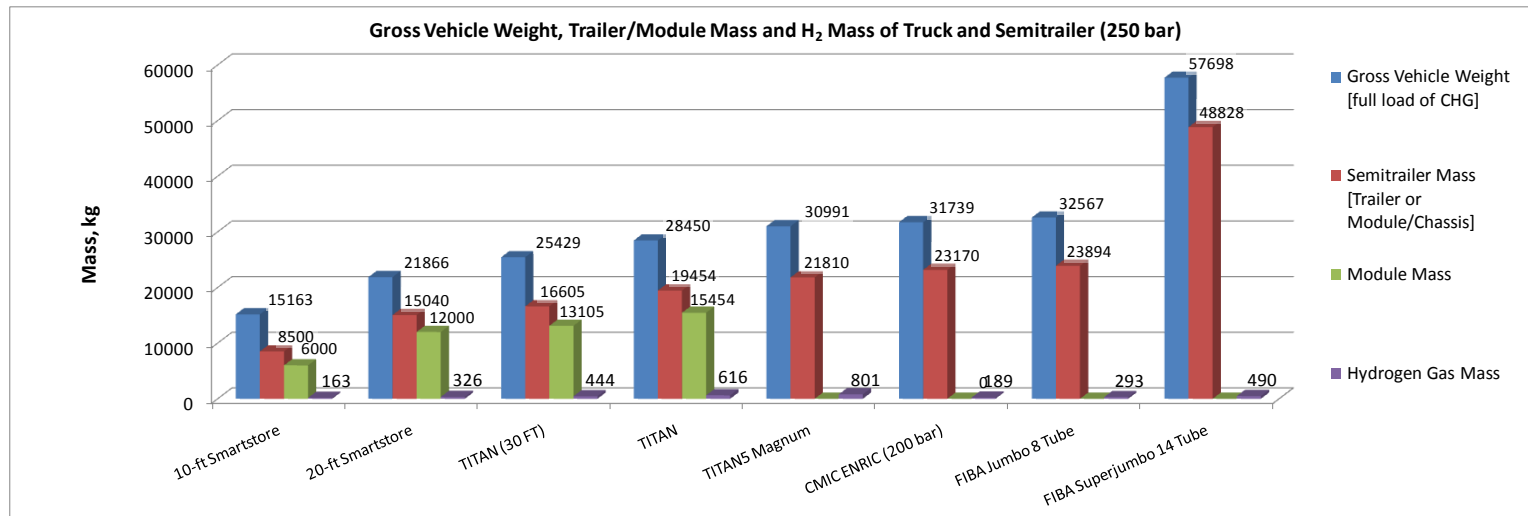
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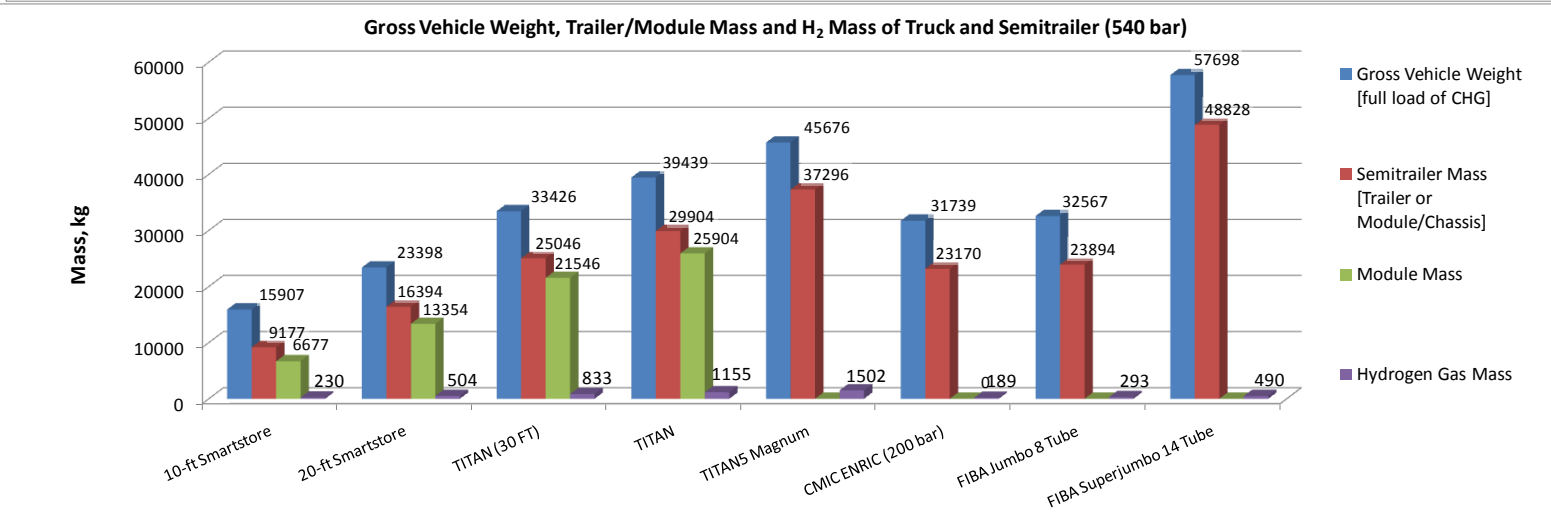
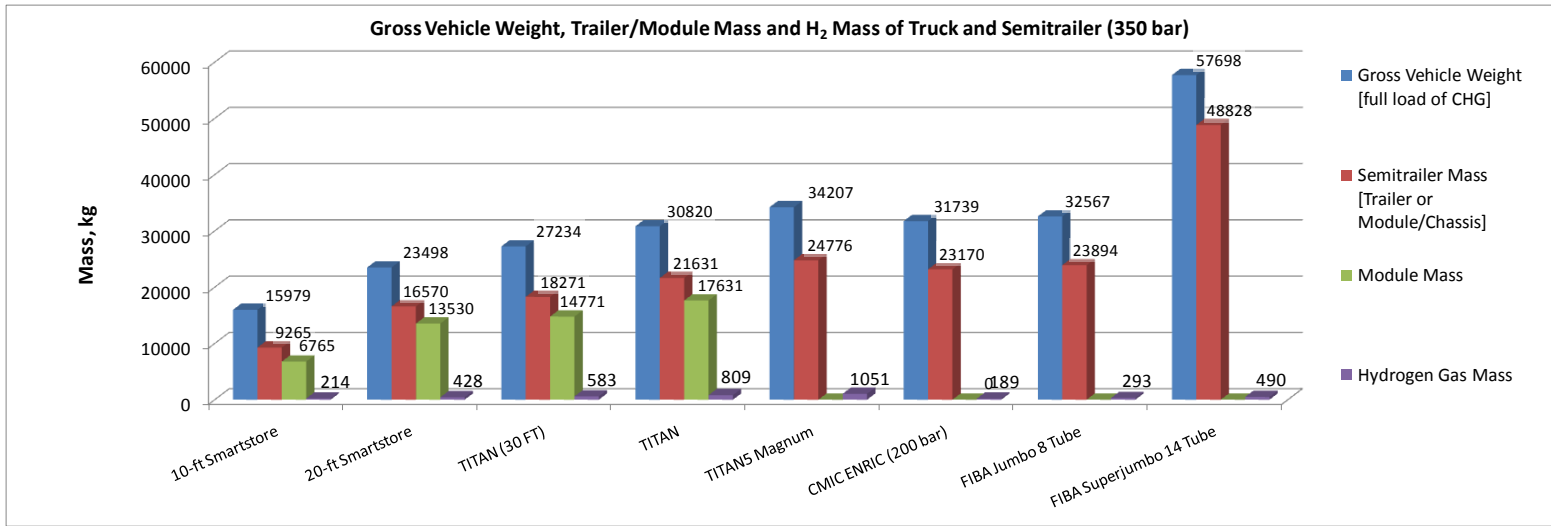


OPERATIONAL PARAMETERS FOR BULK HAULING EQUIPMENT

- ▶ More Hydrogen Capacity and Lower GVW Reduces Operating Expenses
- ▶ Bulk Hauling Equipment Options
 - Steel Tube Trailers/Skids – Lower Acquisition Cost, Low Capacity, High GVW
 - ▶ Good value for stationary storage at 200 bar
 - Large footprint – takes 4 to 6 tube trailers to offload 1 TITAN™ V Magnum
 - ▶ High operating costs for rolling stock
 - T4 Tube Trailers/Modules – Higher Acquisition Cost, High Capacity, Low GVW
 - ▶ Smaller cluster packs for small projects/consumers
 - ▶ Large tank trailers/modules for hauling large quantities over long distances



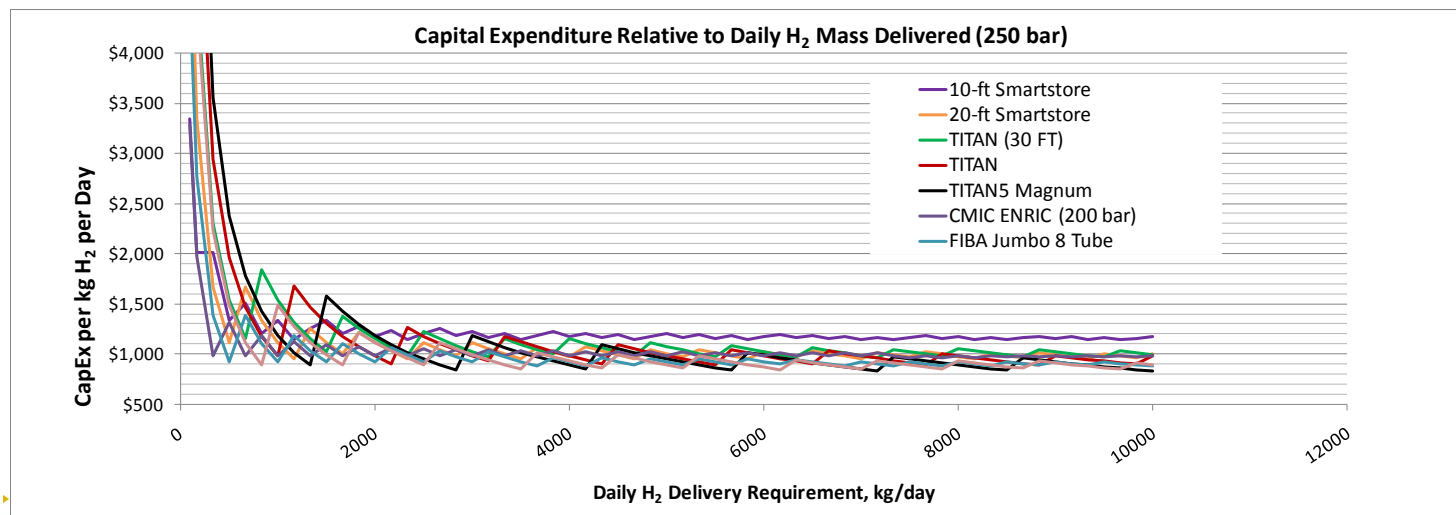
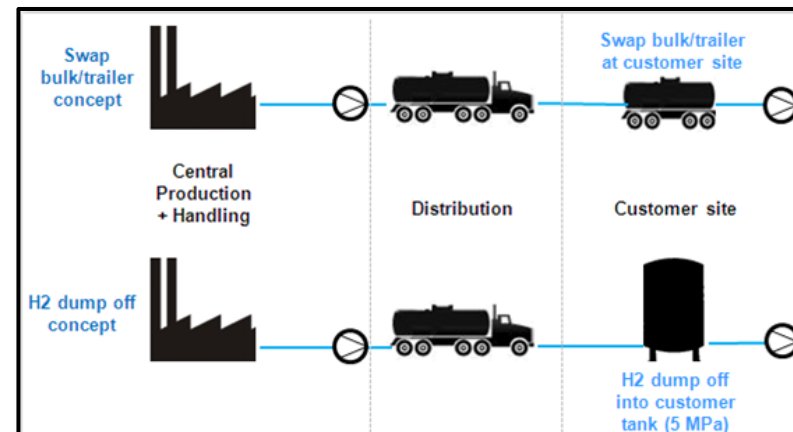
OPERATIONAL PARAMETERS FOR BULK HAULING EQUIPMENT





CAPITAL EXPENDITURE FOR BULK HAULING EQUIPMENT

- ▶ For large consumption, total CapEx for Large T4 systems about the same as steel tube trailers
- ▶ Charts assume dump-off mode of operation
- ▶ Dump/unload trailer at point of use
 - Reduce CapEx for expensive rolling stock
 - Keep rolling stock moving to minimize OpEx
 - Drive-unload-drive-fill each cycle
 - Requires stationary storage (eg; 200 bar steel tube skids)
- ▶ Assumptions for charts
 - 2 deliveries per trailer per day (12 hr cycle)
 - 90% efficiency on trailer capacity
 - Includes cost for stationary storage (\$600/kg)



CAPITAL EXPENDITURE FOR BULK HAULING EQUIPMENT

