

Apollo-Steriwave-Global-KleanGas

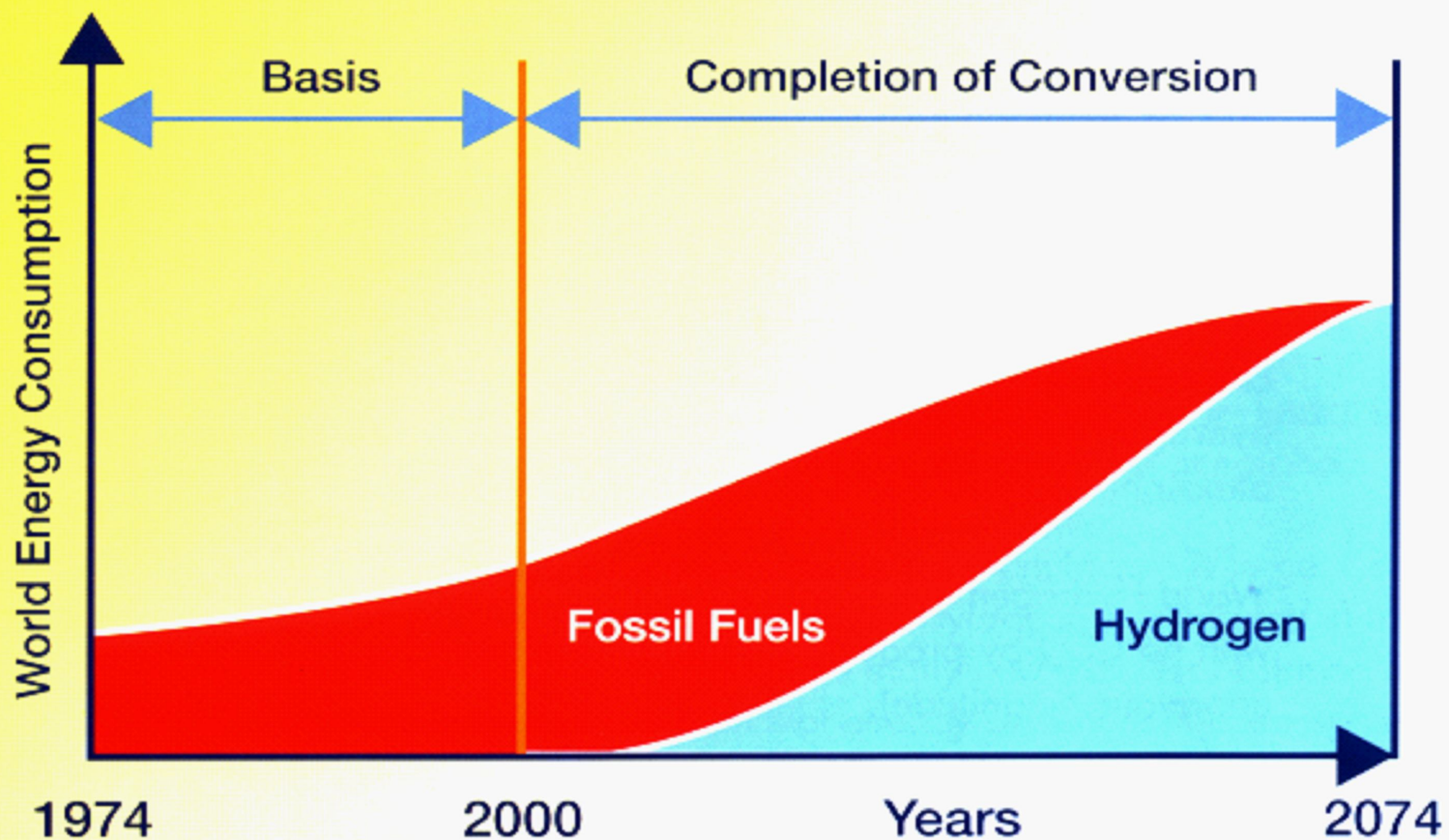
**Middle East
Projects**



- We are an industry leader in the research and development of Fuel Cell and Battery technology.
- More than 60 years of international experience on three continents.
- 4 Patents featuring 3D Battery technology with 138 claims, encompassing over 100 prior Patents issued.
- JPMorgan Chase has valued our technology alone at \$195 Million.

- Our Alkaline Fuel Cell (AFC) technology is superior to Polymer Electrolyte Membrane or Proton Exchange Membrane (PEM) .
- Our Fuel Cell technology will make the need for battery charging obsolete, as units will generate and store their own power.
- Our Fuel Cell technology is 80% efficient.
- Our Fuel Cell costs 40-50% less than competing technologies.

Building A Hydrogen Economy

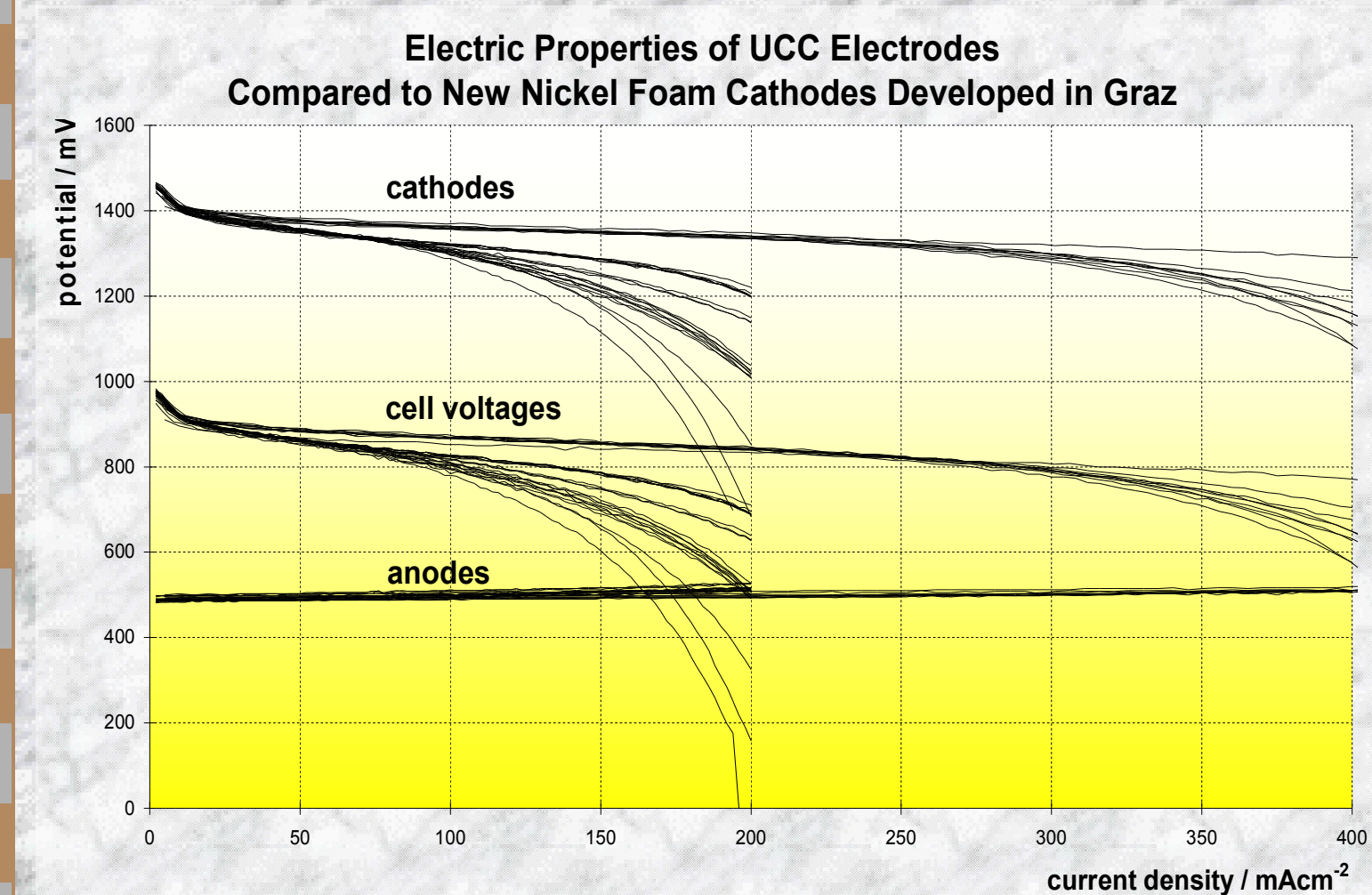


Fuel Cell Comparisons

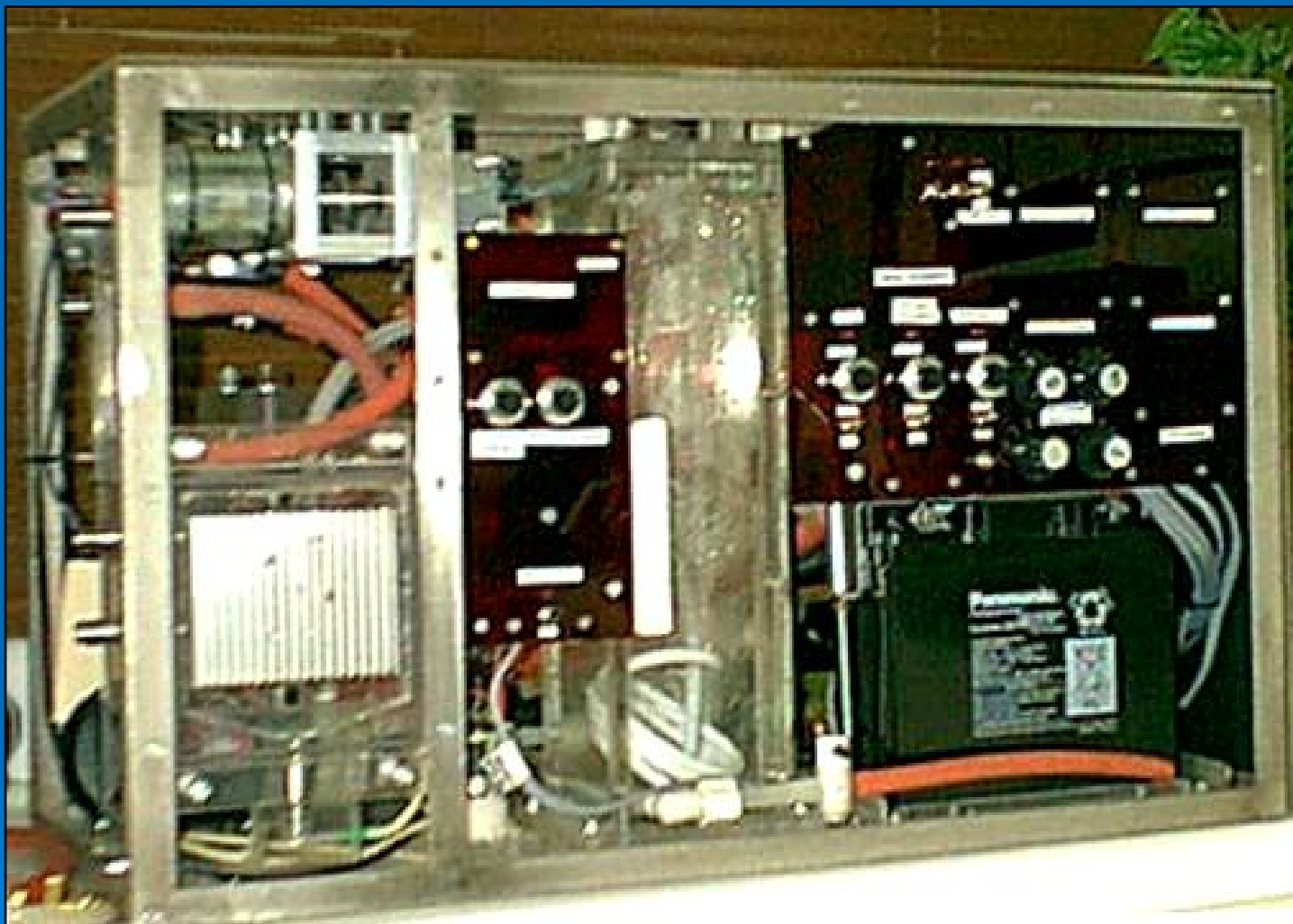
	PAFC	PEM	MCFC	SOFC	APOLLO AFC
Electrolyte	Liquid Phosphoric	Ion Exchange Membrane	Liquid Molten	Solid Oxide Ceramic	Potassium Hydroxide
Catalyst	Platinum	Platinum	Nickel	Perovskites	Silver Alloy
Cell Operating Temp. (degrees °C)	205 °C	Room Temp. to 80°C	650 °C	800-1,000 °C	Room Temp. to 80°C
Electrical System Efficiency (%LHV)	36-45 °C	32-40 °C	43-55 °C	43-55 °C	50-60 °C
Some Applications Cogeneration	X	X	X	X	X
Utility Power	X		X	X	X
Distributed Power	X	X	X	X	X
Utility Repowering	X		X	X	X
Passenger Vehicles		X			X
Heavy Duty Vehicles	X	X		X	X
Portable Power		X			X
Specialty Power		X			X

Note: The Apollo Energy Systems, Alkaline Fuel Cell has a circulating electrolyte, which can be shut down when not in use. This extends the life of the electrodes and allows for maintenance. It has a higher voltage than the other types of Fuel Cells.

Properties of new AFC-Electrodes



ALKALINE FUEL CELL



US PATENT NUMBER: 7,014,944 B2

AMMONIA CRACKER



U.S. PATENT 6,936,363 B2

FUEL CELL STACK



**NICKEL SCREEN SURROUNDED
BY PLASTIC FRAME FOR
LARGE ELECTRODE**



**SMALL
ELECTRODE**

- Our Lead Foam Cobalt battery technology has approximately the same energy density as Lithium-Ion batteries.
- They have a 50% longer life than Lithium-Ion batteries (over 1500 cycles, equivalent to five years of operation in an electric car).
- Can be fast charged without excessive heat buildup, thermo-runaway, fire and explosion.
- Lead Foam Cobalt batteries have similar weight density of Lithium-Ion batteries.

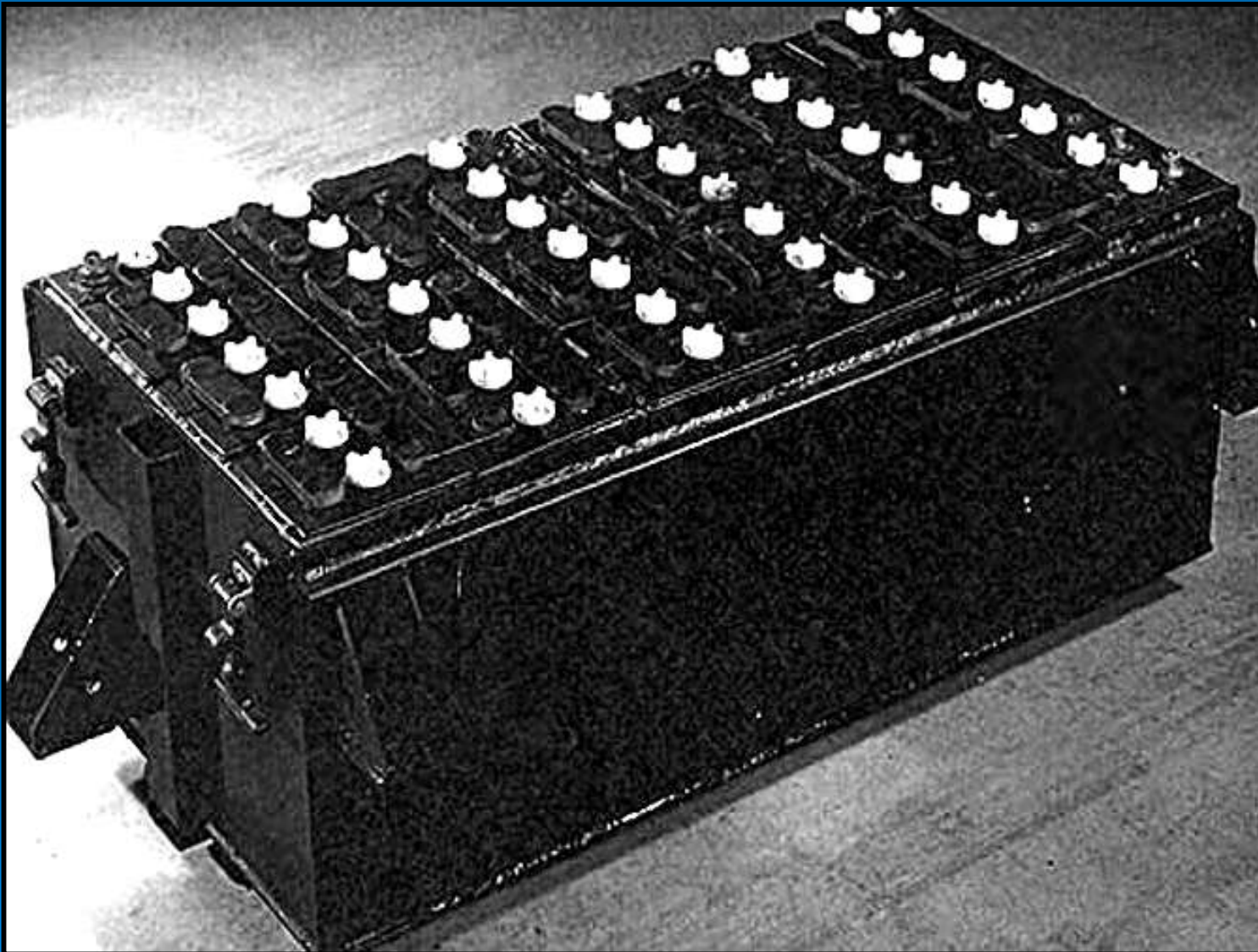
- Our Lead Foam Cobalt batteries cost 75% less than Lithium-Ion batteries.
- Can be easily recycled, unlike Lithium-Ion.
- Can be customized and configured to many sizes or shapes, amperage hours, volts or watts to meet the specific requirements of the application.

Battery Performance Comparisons

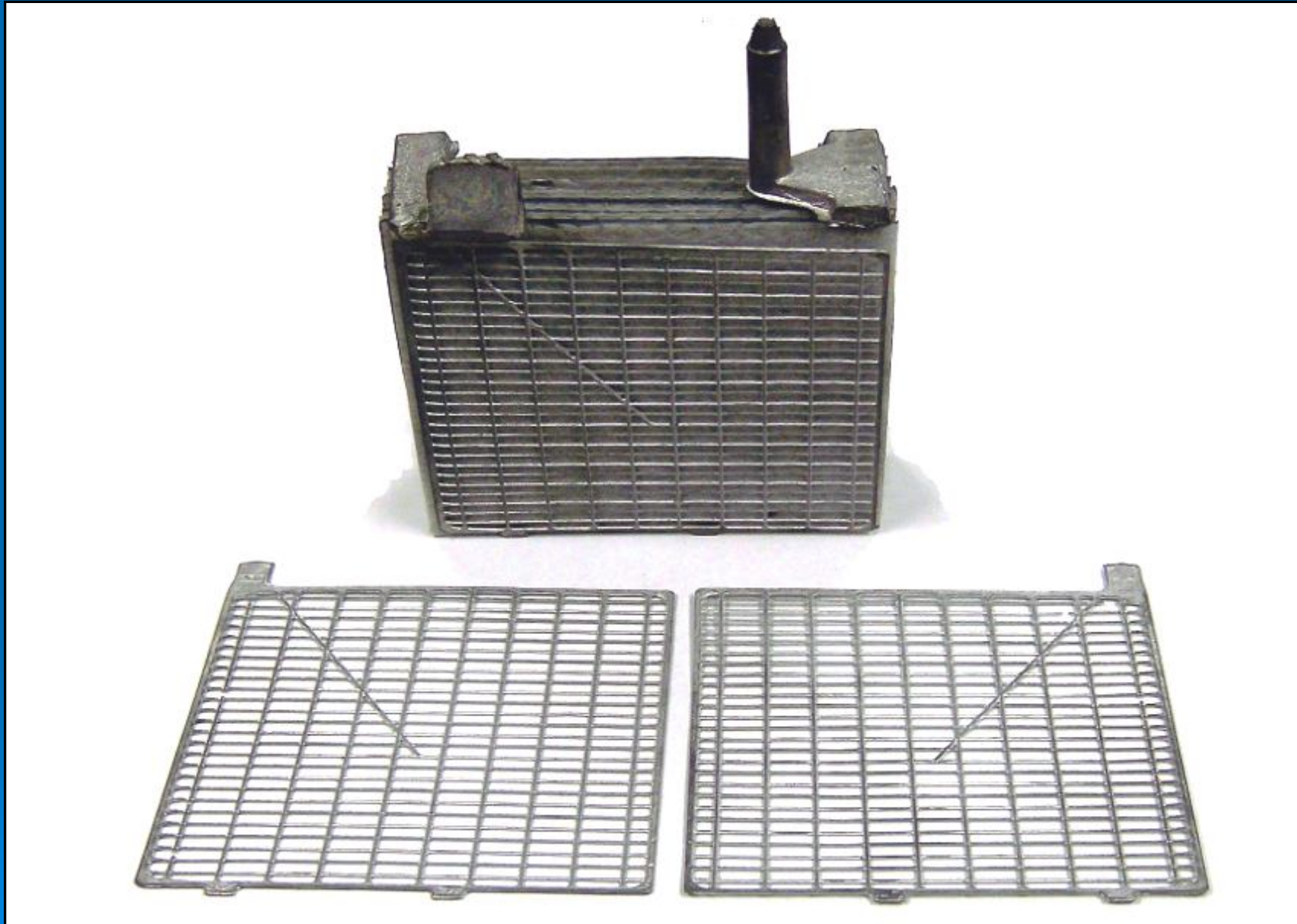
PARAMETERS	LEAD ACID	NICKEL-CAD	NICKEL-MH	LITHIUM-ION	APOLLO TPX-1	APOLLO TPX-2
Voltage	2	1.2	1.2	3.6	2.2	2.2
Weight Energy Density Wh/Kg	25	50	80	90-125	37	128
Volume Energy Density Wh/L	80	150	200	320	80	264
Cycle Life (times)	300	500	500	800	1,500	1500
Self Discharge (% per month)	1	25-30	30-35	6-10	1	1
Electrolyte State	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
Aging (life in years)	3	10	5	2-3	5	5
Cell Balancing Needed	No	No	No	Yes	No	No
Price per kWh	\$75	\$500	\$400	\$600	\$43	\$140
Range in Miles (battery only)	50	70	120	245	146	370
Test Vehicle	GM EV-1	Electric Corvair	GM EV-2	Tesla	Mars II	Mars II

Note: All comparison data taken from published reports.

LEAD COBALT BATTERY



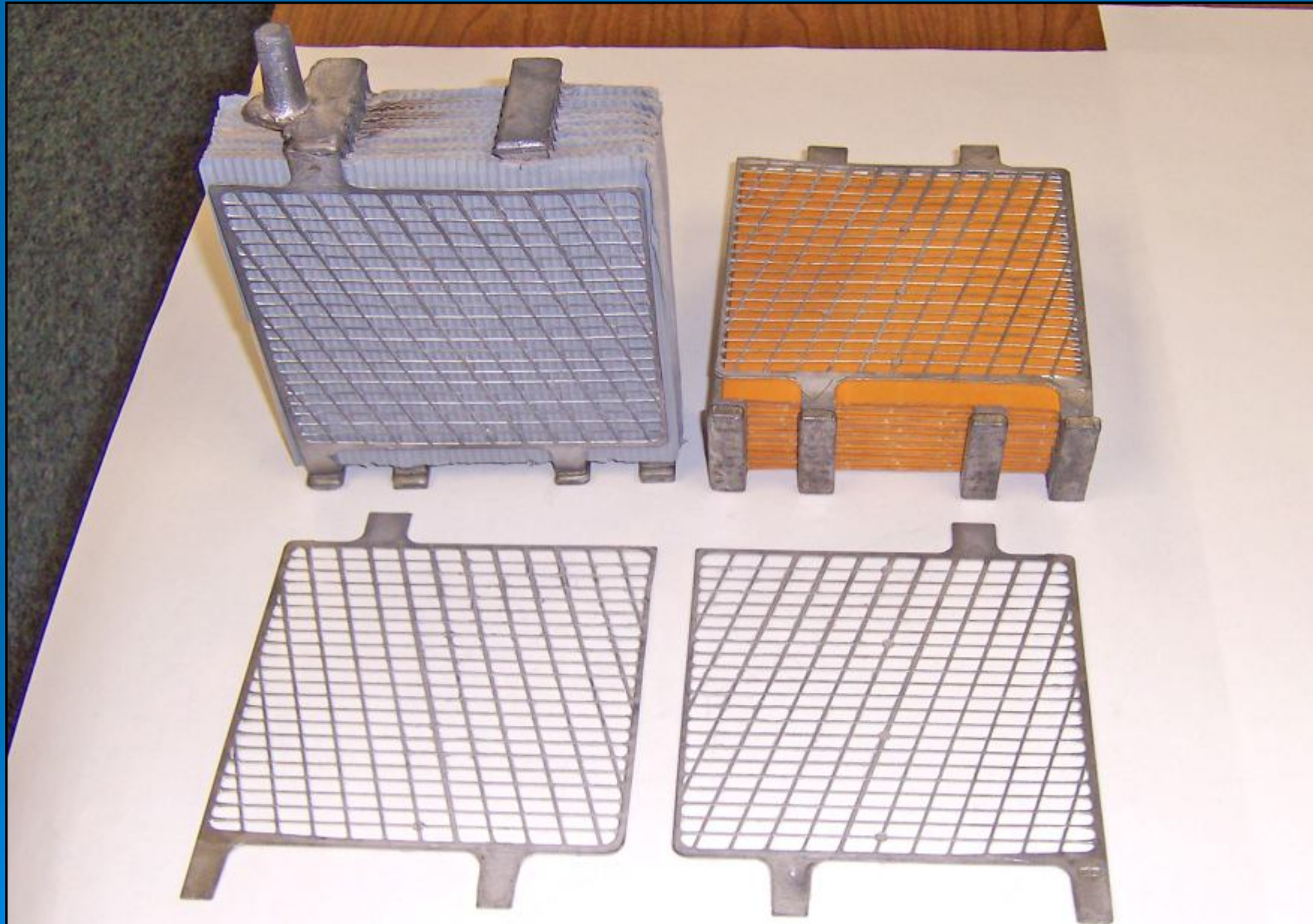
ORDINARY BATTERY CELL CONSTRUCTION 2 BUS BARS AT TOP ONLY



ORDINARY LEAD GRIDS

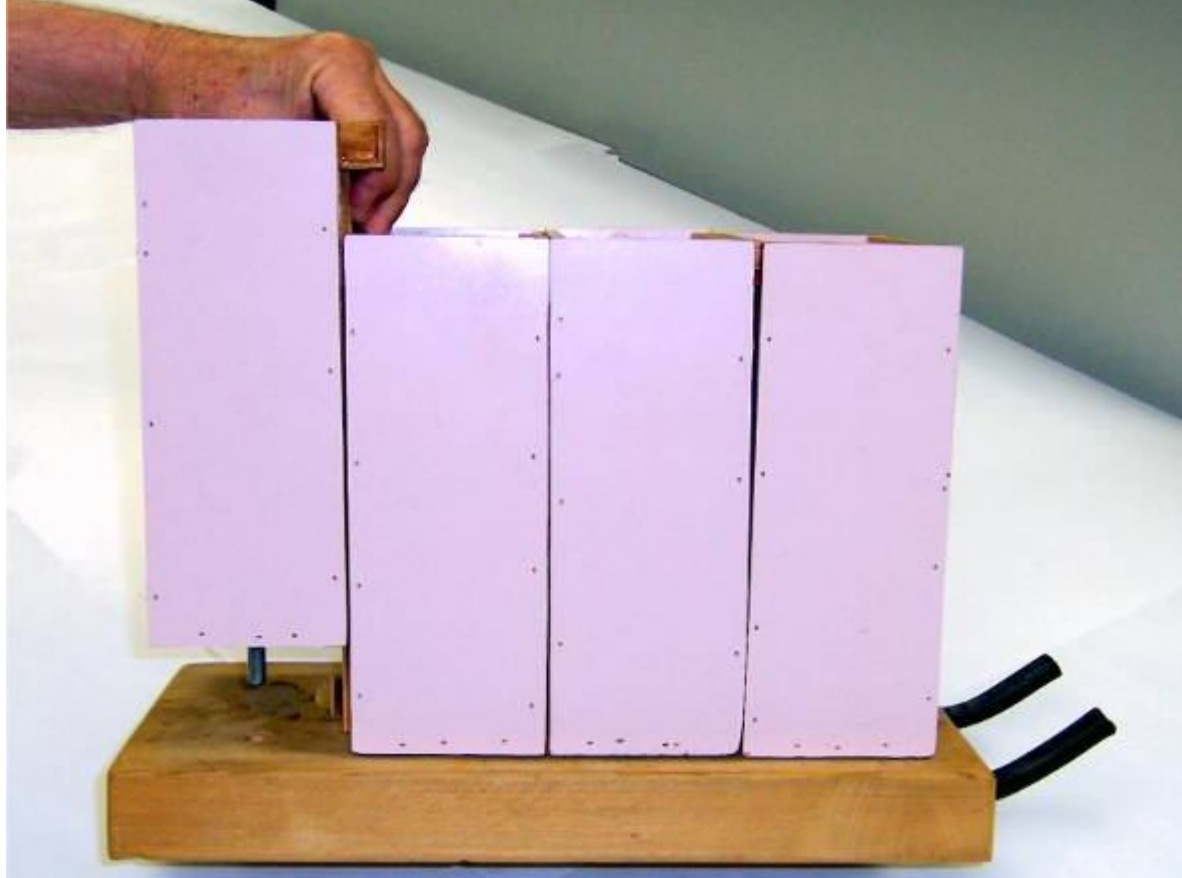
TRI-POLAR BATTERY CELL CONSTRUCTION

6 BUS BARS (2 TOP, 4 BOTTOM)

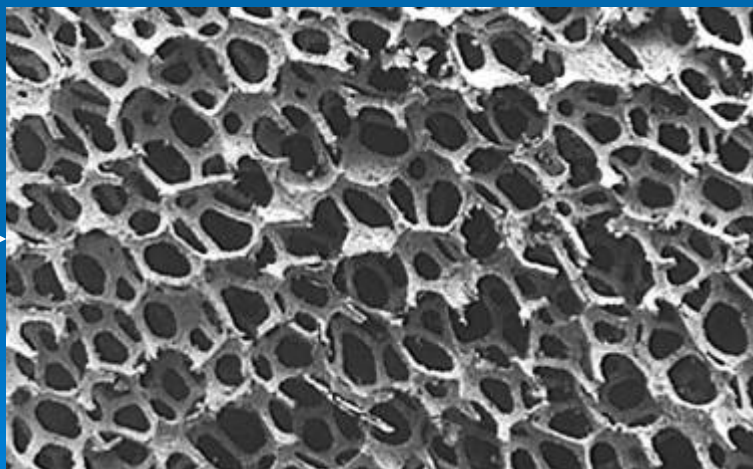


TRI-POLAR STANDARD LEAD GRIDS

**MULTI-CELLUAR
TRI-POLAR BATTERY
U.S. PATENT 7,037,620 B2**



**LEAD FOAM
MAGNIFIED**



LEAD FOAM GRID

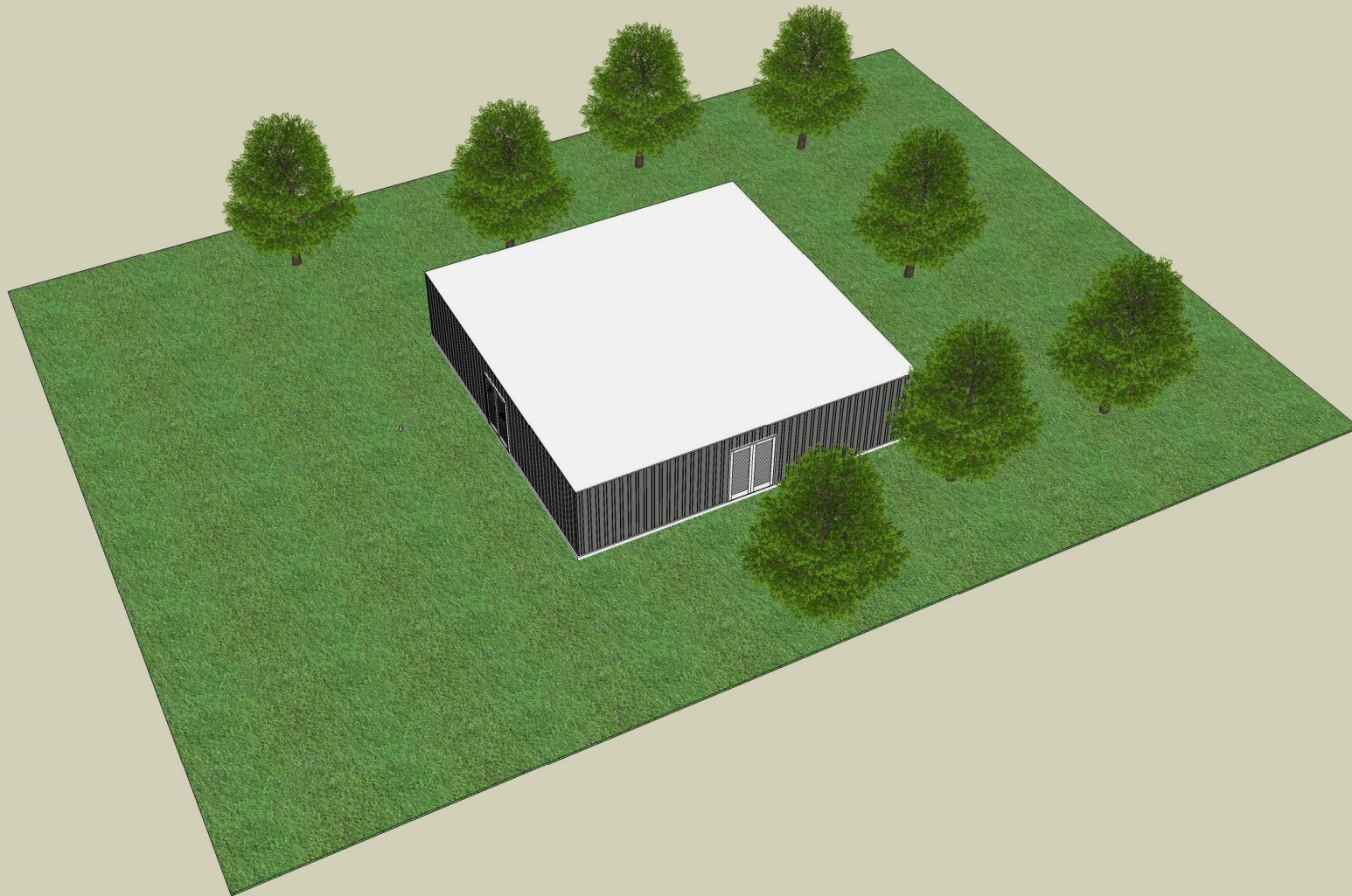
**WEIGHS 16% OF TRI-POLAR LEAD GRID
300% MORE POWER**

Applications

Efficient local power generation and storage at a fraction of the current cost for usage in:

- Remote Operations
- Control Centers
- Communications
- Fuel Pumping Stations
- Emergency Facilities
- Housing
- Industrial Complexes

1 Mega Watt Facility (40ft. Wide X 40ft. Deep X 10ft. Tall)



1 Mega Watt Facility (40ft. Wide X 40ft. Deep X 10ft. Tall)



Power Plant

POWER PLANT	GALLONS NH3 PER 24 HOUR	SQUARE FEET INSTALLATION	CUBIC FEET FUEL TANK	FUEL CELL REPLACEMENT	BATTERY REPLACEMENT	SELLING PRICE
100 kW	16.4	16	7	\$25,000	\$10,000	\$125,000
1 MW	164	1,600	70	\$250,000	\$100,000	\$1,250,000
10 MW	1,640	16,000	700	\$2,500,000	\$1,000,000	\$12,500,000
20 MW	3,280	32,000	1,400	\$5,000,000	\$2,000,000	\$25,000,000
25 MW	4,100	40,000	1,750	\$6,250,000	\$2,500,000	\$31,250,000
40 MW	6,560	64,000	2,800	\$10,000,000	\$4,000,000	\$50,000,000
50 MW	8,200	80,000	3,500	\$12,500,000	\$5,000,000	\$62,500,000
100 MW	16,400	160,000	7,000	\$25,000,000	\$10,000,000	\$125,000,000

Maintenance Note: Power Plants are inspected by engineers on a weekly basis. Spare parts are \$100 per week per Mega Watt. Fuel Cells are replaced every 7-1/2 years. Batteries are replaced every 5 years.

Summary

Once commercialised the highly efficient Fuel Cell with TPX II Lead Cobalt Batteries will quickly dominate the industry, and render the current wasteful and inefficient grid systems obsolete. Small units even offer portability for power anywhere, anytime. This represents a paradigm shift in the evolution of local power generation. The potential applications consists of powering remote operations, industrial complexes, control centers, communication, fuel pumping stations, housing and emergency facilities safely and at a fraction of the current costs.

Global Apollo KleanGas Ltd
18-23 Airport House. Purley Way,
Croydon. Surrey CR0 0XZ United
Kingdom