brilliant LIGHT POWER

Business Presentation May 15, 2021

www.brilliantlightpower.com

Safe Harbor Statement

This presentation contains forward-looking statements, including statements regarding the company's plans and expectations regarding the development and commercialization of our technology. All forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those projected. The forward-looking statements speak only as of the date of this presentation. The company expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any such statements to reflect any change in the company's expectations or any change in events, conditions or circumstances on which any such statements are based.

About Brilliant Light Power

- We have developed a new zero-pollution, primary energy source applicable to essentially all power applications.
- The theoretically predicted energy breakthrough is based on reacting atomic hydrogen with a catalyst to cause the atom's electron to transition to a lower-energy orbital forming Hydrino®, a more stable chemical form of hydrogen that we have isolated and characterized by multiple spectroscopies.
- The proprietary SunCell® has been validated by experts at an excess power scale of 300 kW producing blackbody radiation and 100 kW cooled, continuously producing steam.
- We are running internal thermal field trials at a scale of 100-250 kW continuous power production and an extraordinary power density of up to 5MW/liter.

Reinventing thermal and electric power: *safe, accessible, affordable, clean*

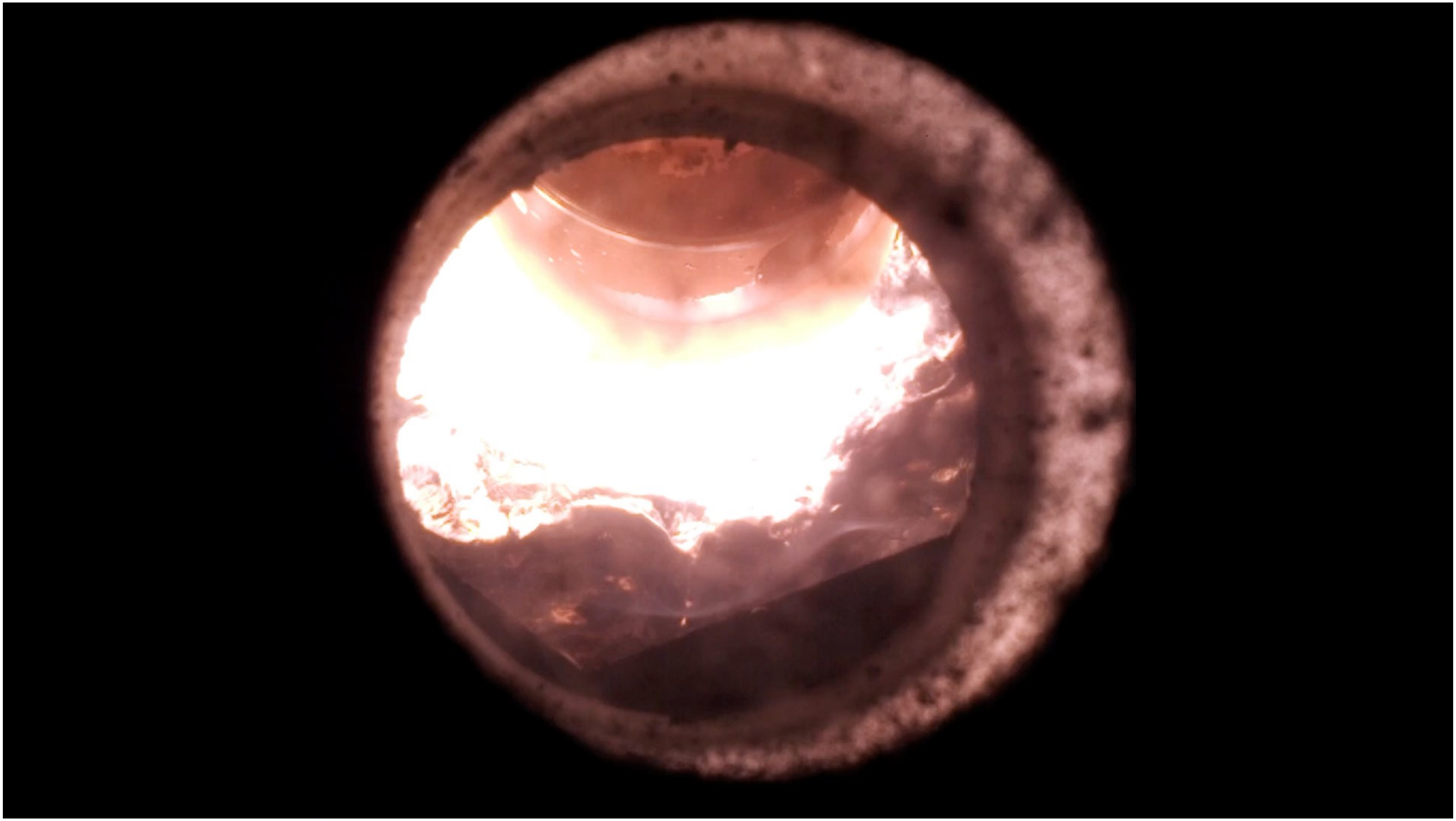
brilliant LIGHT POWER

About Brilliant Light Power cont’d

- The SunCell® comprises a hydrogen and catalyst injector and an electromagnetic pump that serves as an electrode that further injects molten gallium against a counter electrode to form a Hydrino®-reaction plasma with an energy release of 200 times that of burning the hydrogen obtained from water.
- We have Hydrino® “In a bottle” and spectroscopic methods achieved that identify Hydrino® in a dispositive manner by characteristic signatures that do not match any other known species.
- Extensive proprietary methods and systems with patents issued worldwide.

Reinventing thermal and electric power: *safe, accessible, affordable, clean*

New Fire



New Fire
Commercial Scale Power

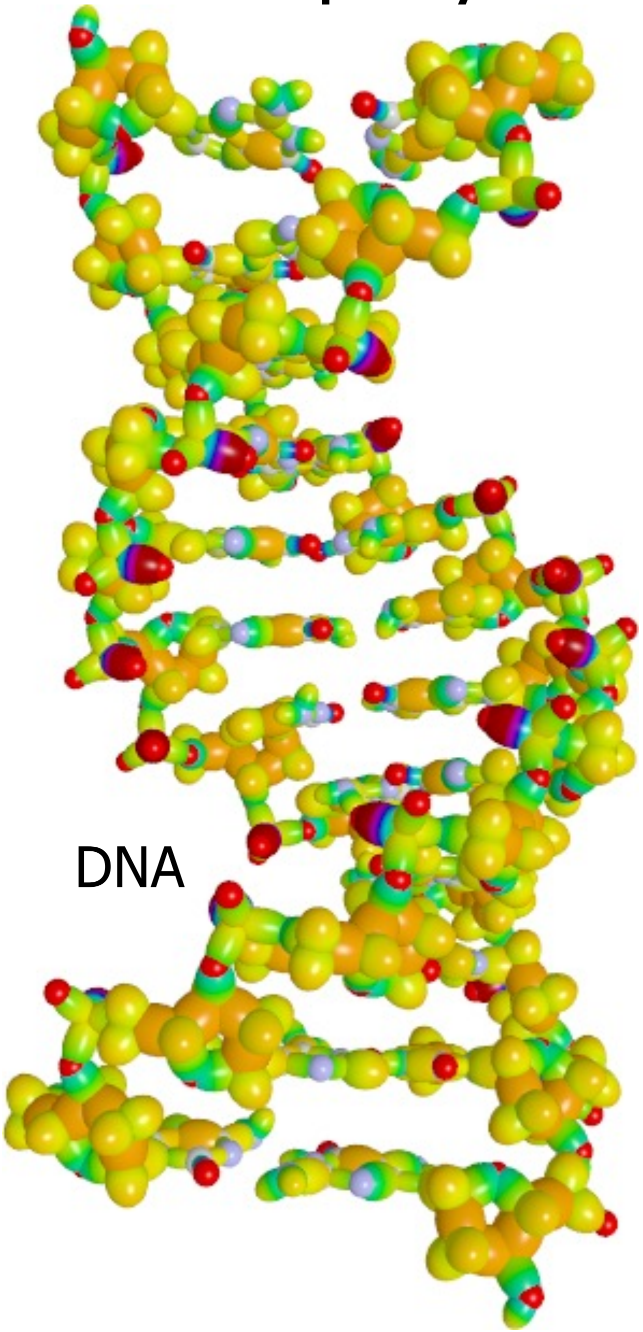
New Fire Commercial Scale Power cont'd

Hydrino® energy key points

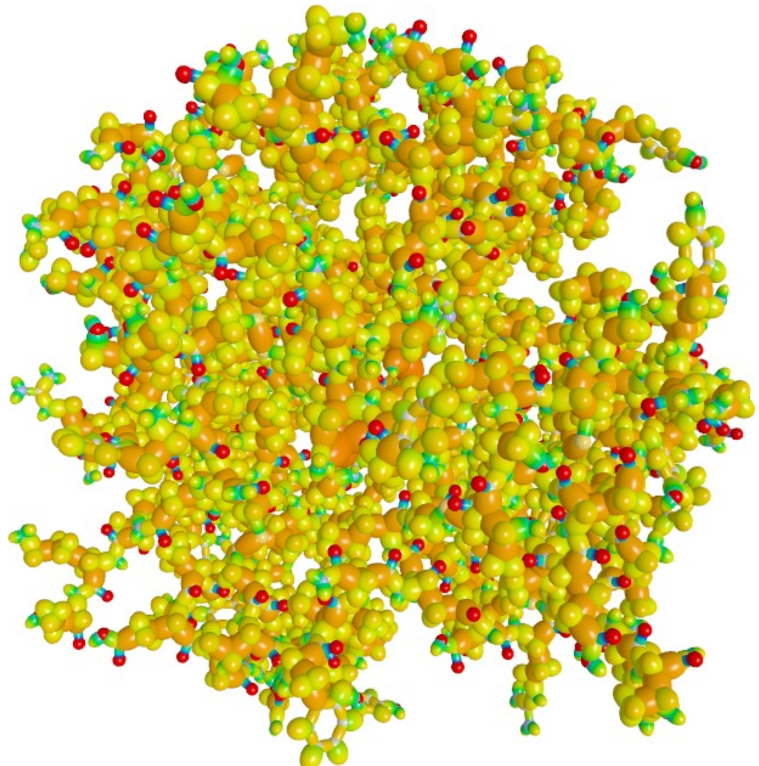
Investment of $100M+, years of research, success and invention…

- Hydrino® power has a higher power density than any other power source known to man. Recent NIST calibrated results show 20 MW peak optical power as unique signature of a high energy continuum emission spectrum and an energy gain of 200 to 500 times.
- The Hydrino® energy source has been identified by more than 20 different methods including EPR by Dr. Hagen of Delft University.
- The Hydrino® is ubiquitous in nature, and matches astrophysicists conclusions that so-named dark matter is a different chemical form of hydrogen.
- There are many validation reports published on the Brilliant Light Power website from leading experts, some from unfunded assessments.
- There are more than 100 peer reviewed publications to support the Hydrino® including external scientific authors.
- Every evolutionary step has produced a higher power density leading up to the commercial development of the SunCell®.

Theory Based on Classical Laws
Exemplary Exact Solutions: Millsian 2.0: Modeling Molecules

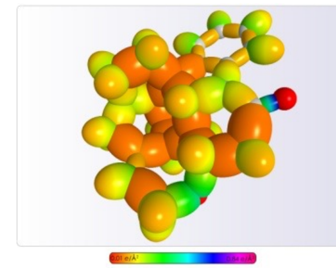


DNA

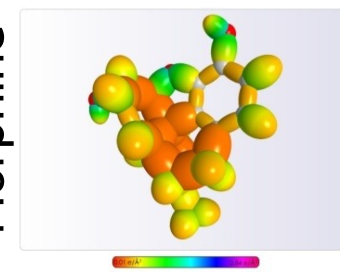


Insulin

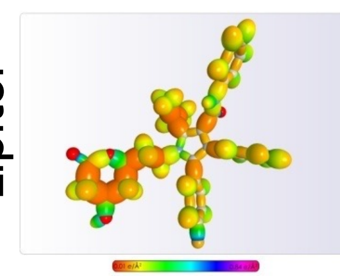
Strychnine



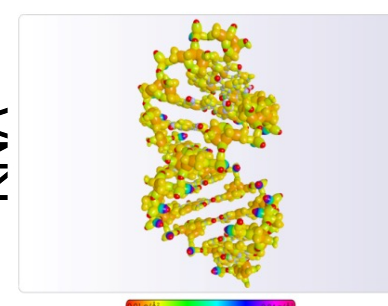
Morphine



Lipitor



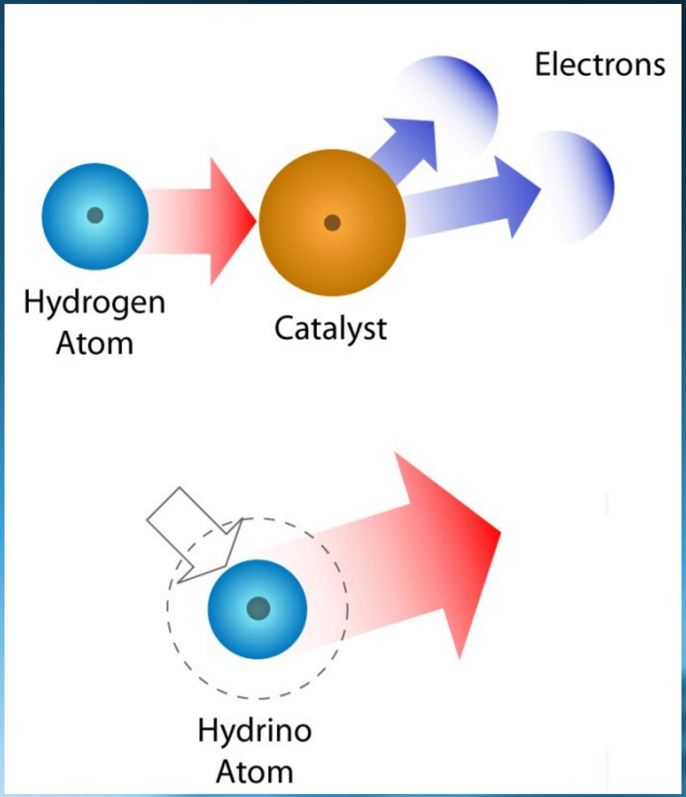
RNA



millsian.com

Catalytic Reaction of Atomic Hydrogen to Hydrino®

- Atomic hydrogen reacts with an energy acceptor called a catalyst wherein energy is transferred from atomic hydrogen to the catalyst which forms an ion due to accepting the energy
- Then, the negative electron drops to a lower shell closer to the positive proton to form a smaller hydrogen atom called a "hydrino" releasing energy that ultimately is in the form of heat
- The catalyst ion regains its lost electrons to reform the catalyst for another cycle with the release of the initial energy accepted from hydrogen. With the imposition of an arc current condition, the limiting space charge of the ionized electrons is eliminated and the rate becomes massively high.



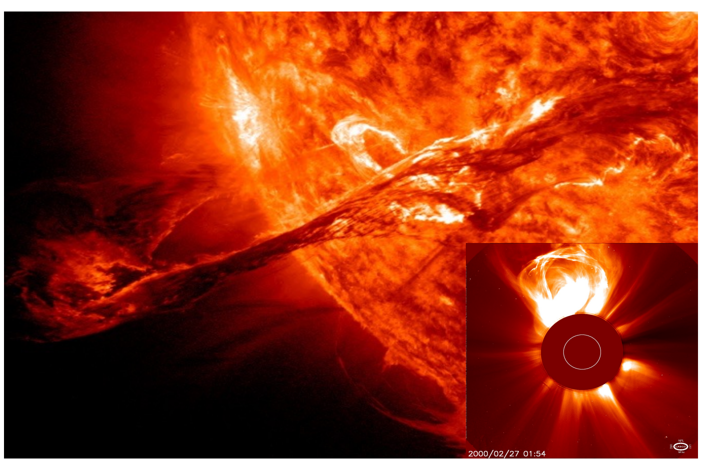
Hydrino transition EUV continuum results offer resolution to many otherwise inexplicable celestial observations with

(a) the energy and radiation from the hydrino transitions being the cause of sunspots and other solar activity, why the Sun emits X-rays, the missing energy balance, the source of extraordinary temperatures and power regarding the solar corona problem wherein the highly ionized ions are from EUV continuum radiation rather than thermal ionization,

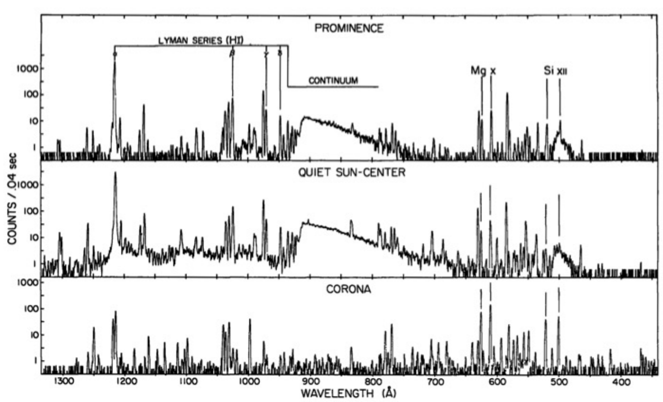
(b) the transition of H to H(1/4) being the source of the 10.1 nm cutoff EUV continuum radiation observed from interstellar medium,

(c) the hydrino continuum radiation being the source of the diffuse ubiquitous EUV and soft X-ray cosmic background, the radiation source behind the observation that diffuse Ha emission is ubiquitous throughout the Galaxy and widespread sources of flux shortward of 912 Å are required, and the source of ionization of the interstellar medium (ISM) wherein a large component of the baryonic matter of the universe is in the form of WHIM (warm-hot ionized media) in the absence of a conventional ionizing energy source,

Hydrino® power source in the Sun's corona



Hydrino® >912 Å continuum in the Sun's corona



SunCell® EUV continuum emission

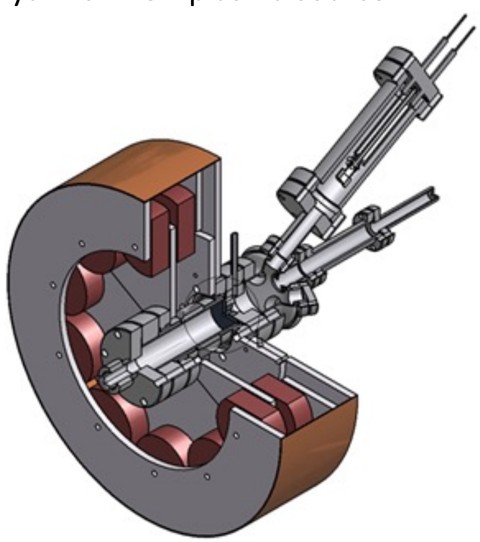
Hydrino transition EUV continuum results offer resolution to many otherwise inexplicable celestial observations with

(d) the transitions of H to H(1/2), H(1/3), and H(1/4) being the source of the continua bands in the EUV spectra of white dwarfs,

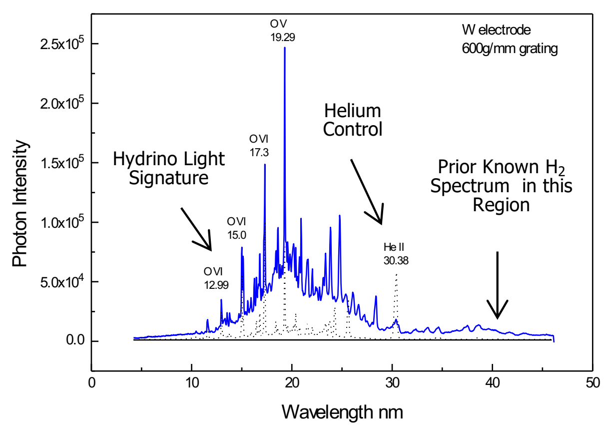
(e) the hydrino transition H to H(1/17) catalyzed by H(1/4) being the source of the 3.48 keV emission assigned to dark matter, (f) the energy release from H to H(1/4) being the source of the temperature of galactic halo gas is in the range of 86 eV to 215 eV,

(f) molecular hydrino rotational transitions with spin-orbital and fluxon linkage spitting such as those observed Raman spectroscopy and electron beam emission spectroscopy match the Diffuse Interstellar Medium (DIBs) lines and further match lines observed by electron paramagnetic resonance (EPR) spectroscopy at a 10^{-6} lower energy scale.

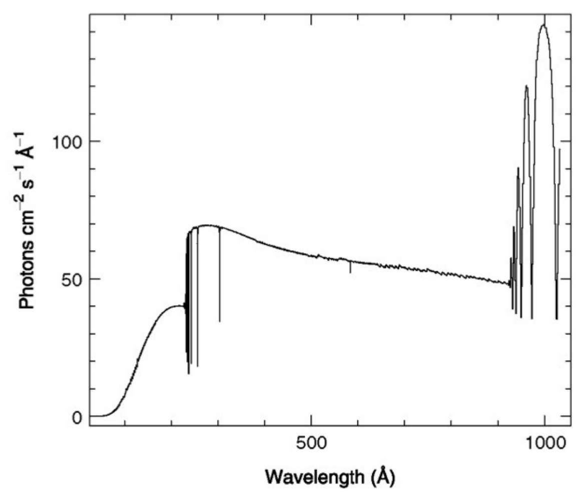
Hydrino® EUV plasma source



Hydrino® EUV continuum emission



EUV spectra of white dwarfs

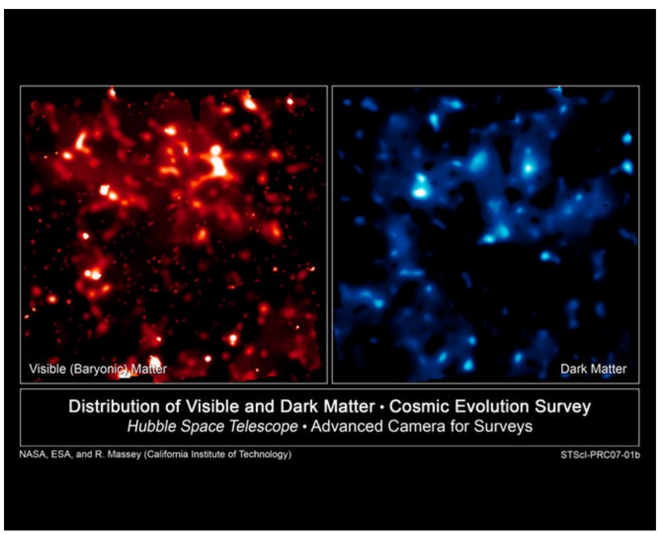


Hydrino transition EUV continuum results offer resolution to many otherwise inexplicable celestial observations with

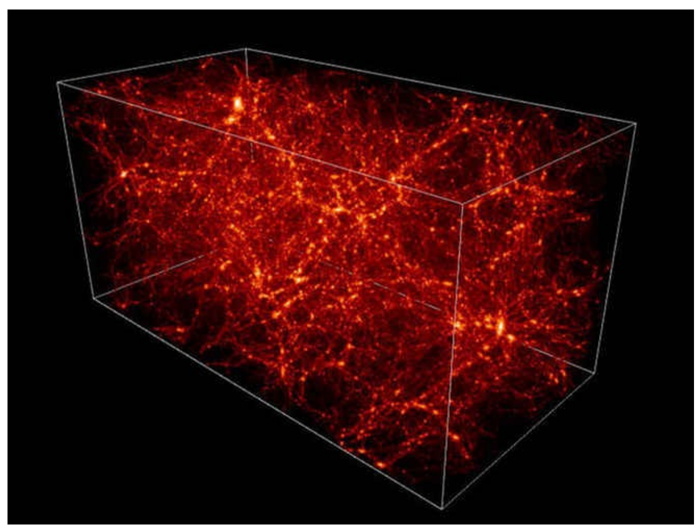
g) the identity of dark matter being hydrinos.

R. Mills, J. Lotoski, Y. Lu, “Mechanism of soft X-ray continuum radiation from low-energy pinch discharges of hydrogen and ultra-low field ignition of solid fuels”, Plasma Science and Technology, Vol. 19, (2017), pp. 1-28.
R. L. Mills, Y. Lu, “Hydrino continuum transitions with cutoffs at 22.8 nm and 10.1 nm,” Int. J. Hydrogen Energy, 35 (2010), pp. 8446-8456, doi: 10.1016/j.ijhydene.2010.05.098.
R. L. Mills, Y. Lu, K. Akhtar, “Spectroscopic observation of helium-ion- and hydrogen-catalyzed hydrino transitions,” Cent. Eur. J. Phys., 8 (2010), pp. 318-339, doi: 10.2478/s11534-009-0106-9.
R. L. Mills, Y. Lu, “Time-resolved hydrino continuum transitions with cutoffs at 22.8 nm and 10.1 nm,” Eur. Phys. J. D, Vol. 64, (2011), pp. 65, DOI: 10.1140/epjd/e2011-20246-5.
R. L. Mills, R. Booker, Y. Lu, “Soft X-ray Continuum Radiation from Low-Energy Pinch Discharges of Hydrogen,” J. Plasma Physics, Vol. 79, (2013), pp 489-507; doi: 10.1017/S0022377812001109.
A. Bykanov, “Validation of the observation of soft X-ray continuum radiation from low energy pinch discharges in the presence of molecular hydrogen,” http://www.blacklightpower.com/wp-content/uploads/pdf/GEN3_Harvard.pdf.

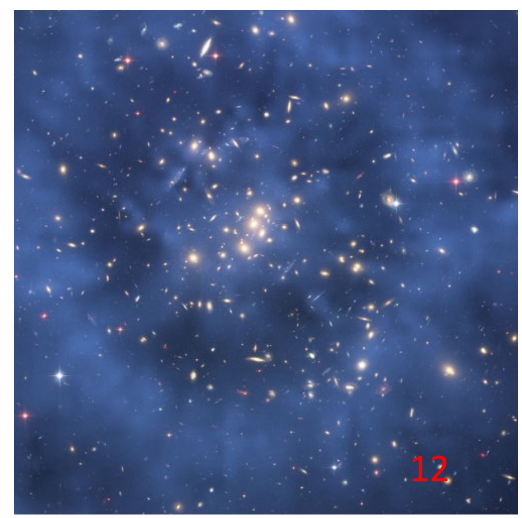
Distribution of visible (L) and dark (R) matter



Distribution of dark matter in the universe



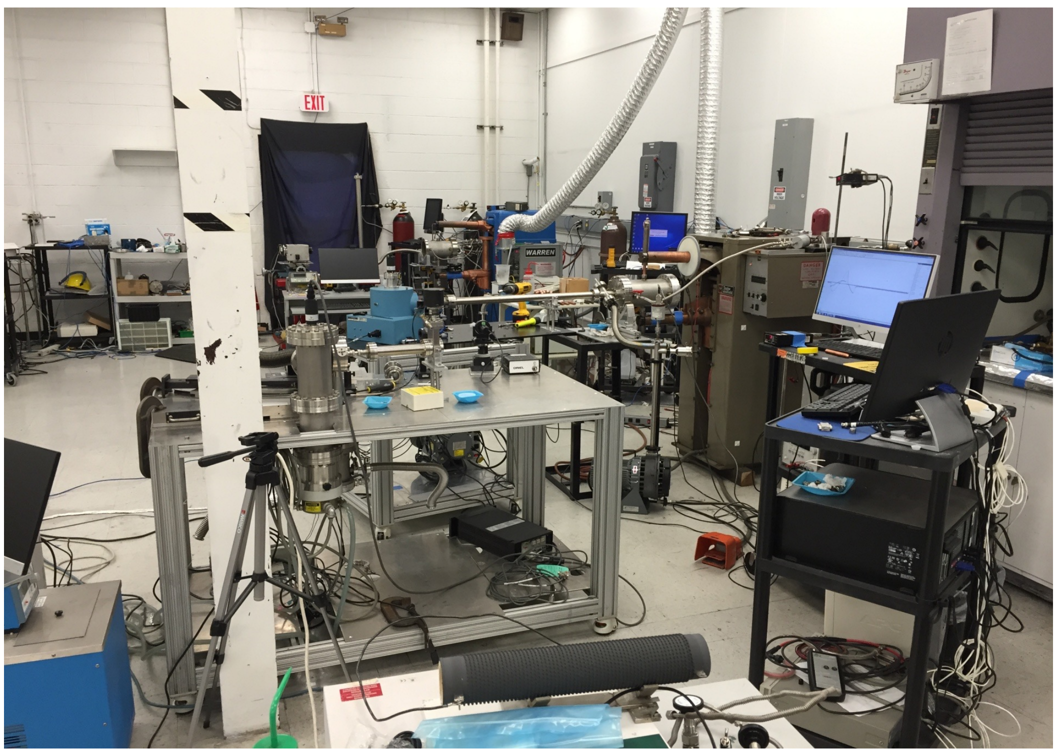
Dark matter ring in galaxy cluster

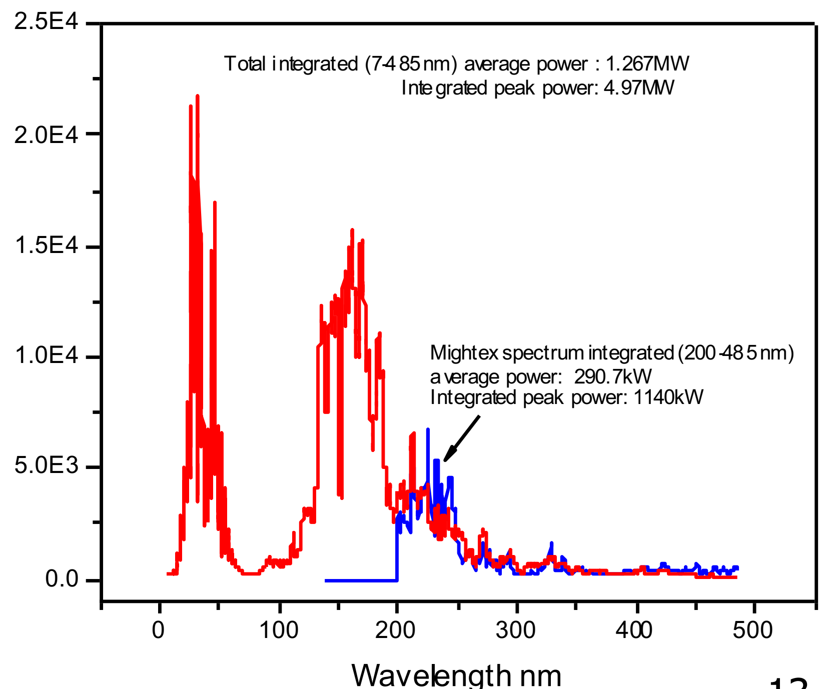


Optical Power Measurement Using NIST Standards Over 10-800 nm Region: Spectral Emission in the High Energy Region Only

Validated Hydrino Reaction's Extraordinary High-Energy Continuum Light and Optical Power at over 1,000,000W Levels

The continuum radiation with the predicted 10.1 nm cutoff confirms the production of H(1/4).



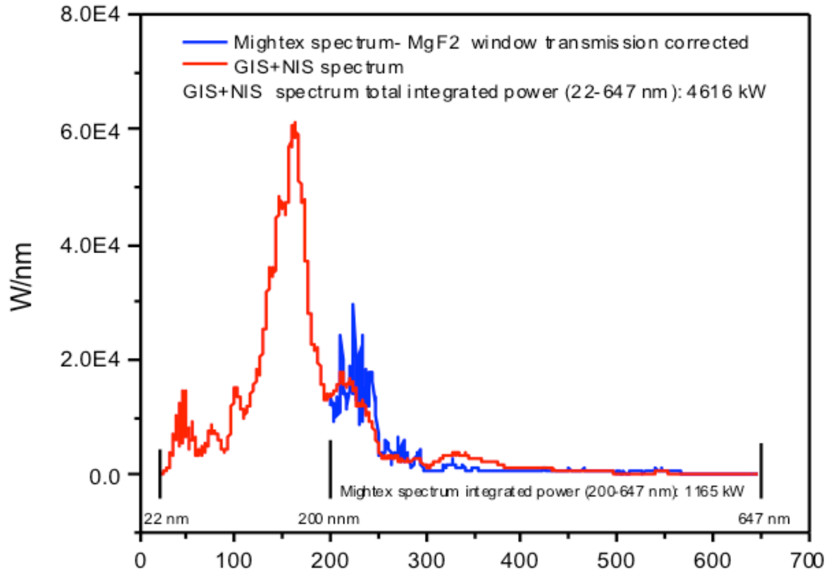


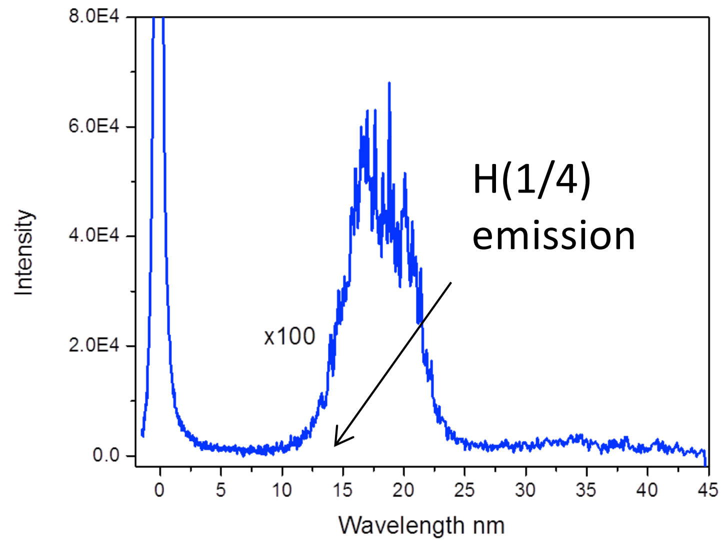
4.6 MW Characteristic H to H(1/4) Transition EUV Continuum Radiation with a Predicted 10.1 nm Cutoff

- Hydrated silver shots comprising a source of H and HOH catalyst were ignited by passing a low voltage, high current through the shot to produce explosive plasma that emitted brilliant light predominantly in the short-wavelength 10 to 300 nm region.

- The peak power of 20 MW and time-average power of 4.6 MW was measured using absolute spectroscopy over the 22.8-647 nm region wherein the optical emission energy was 250 times the applied energy.

- The wavelength calibrated and absolute intensity calibrated spectrum (10-45 nm) of the emission of hydrated silver shots recorded on the GIS with a Zr filter showed the EUV continuum cutoff at *10.1 nm that matches dark matter emission*.





R. Mills, Y. Lu, R. Frazer, “Power Determination and Hydrino Product Characterization of Ultra-low Field Ignition of Hydrated Silver Shots”, Chinese Journal of Physics, Vol. 56, (2018), pp. 1667-1717.

Existence of Hydrino Confirmed by Over 22 Methods

There are multiple techniques wherein some alone can prove the existence of hydrino or the hydrino reaction.

- Electron paramagnetic resonance (EPR) spectroscopy: electron spin flip with spin-orbital coupling and fluxon coupling energies. [Princeton University, Delft University of Technology, Bruker Scientific LLC, Billerica, MA]
- Raman spectroscopy: molecular hydrino rotational transitions with spin-orbital coupling and fluxon coupling energies, and rotational-vibrational transitions. Deuterium shifted rotational transitions with spin-orbital coupling and fluxon coupling energies. Raman peaks matching those of the Diffuse Interstellar Bands (DIBs). [Duke University, Princeton University, ThermoFisher Scientific, University of Texas El Paso]
- High resolution visible spectroscopy of $H^-(1/2)$ binding and fluxon coupling energies. [Brilliant Light Power, Inc.]
- Infrared spectroscopy: application of a magnetic field permits molecular rotational infrared excitation by coupling to the aligned magnetic dipole of $H_2(1/4)$. [Princeton University]
- Electron beam emission spectroscopy: rotational-vibrational energies of molecular hydrino with spin-orbital coupling and fluxon coupling energies. [Rutgers University, Brilliant Light Power, Inc., University of Illinois]
- Gas chromatography: faster migration than any known gas, higher thermal conductivity than that of any known gas. [Brilliant Light Power, Inc. on three instruments]

Existence of Hydrino Confirmed by Over 22 Methods cont'd

- X-ray photoelectron spectroscopy: total bonding energy of hydrino of 496 eV with only a single peak corresponding to a single molecular orbital. [Lehigh University, Brilliant Light Power, Inc., Duke University, North Carolina State University]
- Extreme ultraviolet (EUV) spectroscopy: extreme ultraviolet continuum radiation with a 10.1 nm cutoff corresponding to the hydrino reaction transition H to H(1/4) and optical power of 20 MW. [Brilliant Light Power, Inc.]
- ToF SIMs shows K(K2CO3:H2)x+ polymers and intense H- due to the stability of hydrino hydride ion. [Charles Evans & Associates, MRL Lab, Brilliant Light Power, Inc., Case Western University]
- ToF SIMs shows K(K2CO3:H2)x+ polymers and intense H- due to the stability of hydrino hydride ion. [Charles Evans & Associates, MRL Lab, Brilliant Light Power, Inc., Case Western University]
- Electrospray ionization time of flight (ESI-ToF) novel inorganic hydrides in aqueous media [Rowan University, Brilliant Light Power, Inc., Ricerca]
- Nuclear magnetic resonance (NMR) spectroscopy and vibrating sample magnetometry: upfield shifted NMR peak and superparamagnetism due to the unpaired electron of molecular hydrino. [Spectra Data Services, Shell, University of Delaware]
- High performance liquid chromatography (HPLC): inorganic hydrino compounds behaving like organic molecules. [Ricerca, Inc., Rowan University]
- Vibrating sample magnetometry: super-paramagnetism of hydrino molecules in a diamagnetic matrix [University of Oregon].

Existence of Hydrino Confirmed by Over 22 Methods cont'd

Energetics of hydrino reaction:

- High resolution visible spectroscopy of extraordinary H Doppler and Stark line broadening [Brilliant Light Power, Inc., Technical University of Eindhoven, many other universities worldwide]
- H excited state line inversion [Brilliant Light Power, Inc.,]
- Shock wave development much greater than that of TNT [Brilliant Light Power, Inc.]
- SunCell® fully ionized energetic plasma and electromagnetic pulse [Brilliant Light Power, Inc.]
- Solid fuels calorimetry [Brilliant Light Power, Inc., University of Illinois, Auburn University, University of Norte Dane, Setaram, Perkin Elmer]
- Electrochemical power [Brilliant Light Power, Inc., Enser]

Existence of Hydrino Confirmed by Over 22 Methods cont'd

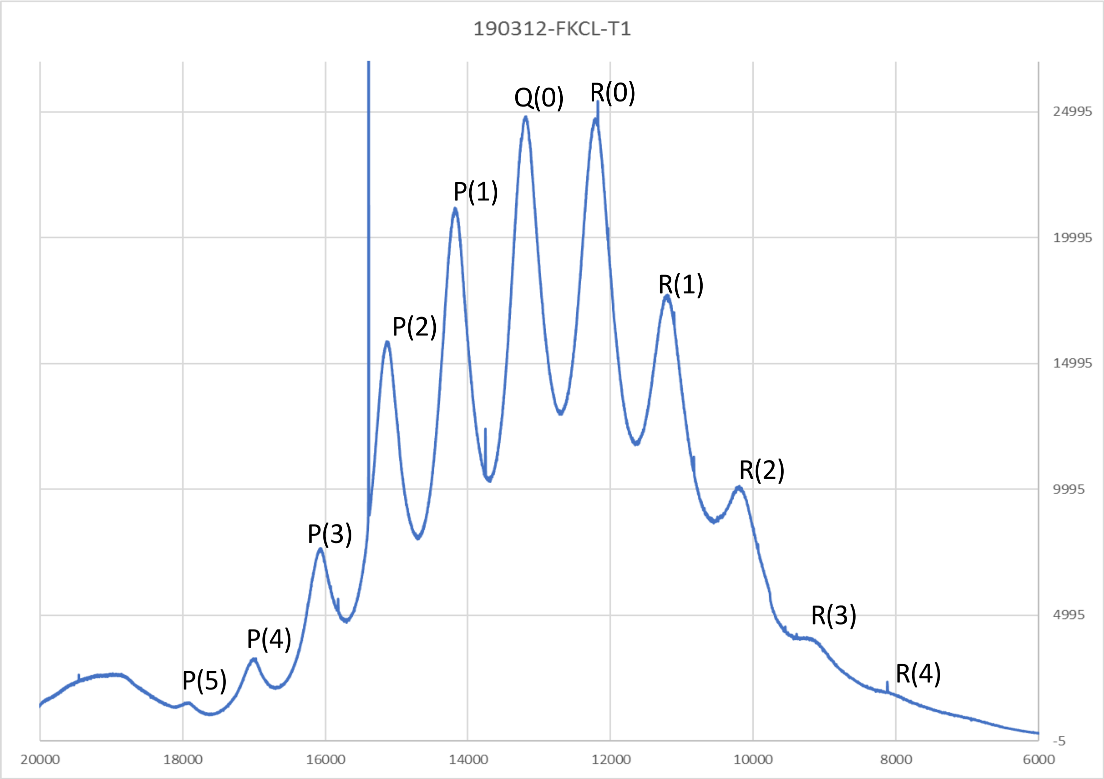
Energetics of hydrino reaction:

- Electrochemical power [Brilliant Light Power, Inc., Enser]
- Chemically produced hydrogen plasma [Brilliant Light Power, Inc., Ruhr-University Bochum]
- Plasma afterglow [Brilliant Light Power, Inc., Ruhr-University Bochum]
- 340 kW level SunCell® power development [Brilliant Light Power, Inc.]
- 210 kW SunCell® continuous steam production [Brilliant Light Power, Inc.]

The validators for these results are or were professors at or received their PhD from prestigious universities such as the California Institute of Technology, Massachusetts Institute of Technology, University of North Carolina, Rutgers University, INP Greifswald, University of California Berkley, University of Wisconsin-Madison, University of Pennsylvania, and others. Companies such as Samina SCI, ARA, Enser, and others were validators. Dates of results, journal references, and validation reports:
https://brilliantlightpower.com/pdf/Analytical_Presentation.pdf
https://brilliantlightpower.com/pdf/Hydrino_States_of_Hydrogen.pdf

Raman Confirmation of Molecular Hydrino of $H_2(1/4)$ in KCl Matrix Ro-Vibrational Band

Raman-mode second-order photoluminescence spectrum of the KCl getter exposed to thermal decomposition gas from Ga_2O_3:$H_2(1/4)$ from the SunCell® using a Horiba Jobin Yvon LabRam ARAMIS with a 325nm laser. The series of peaks matches the theoretical peaks to within an error of less than 1%.



R. Mills, X Yu, Y. Lu, G Chu, J. He, J. Lotoski, "Catalyst induced hydrino transition (CIHT) electrochemical cell," (2012), Int. J. Energy Res., (2013), DOI: 10.1002/er.3142.

R. Mills, J. Lotoski, J. Kong, G. Chu, J. He, J. Trevey, "High-Power-Density Catalyst Induced Hydrino Transition (CIHT) Electrochemical Cell." Int. J. Hydrogen Energy, 39 (2014), pp. 14512–14530 DOI: 10.1016/j.ijhydene.2014.06.153.

R. Mills, Y. Lu, R. Frazer, "Power Determination and Hydrino Product Characterization of Ultra-low Field Ignition of Hydrated Silver Shots", Chinese Journal of Physics, Vol. 56, (2018), pp. 1667-1717.

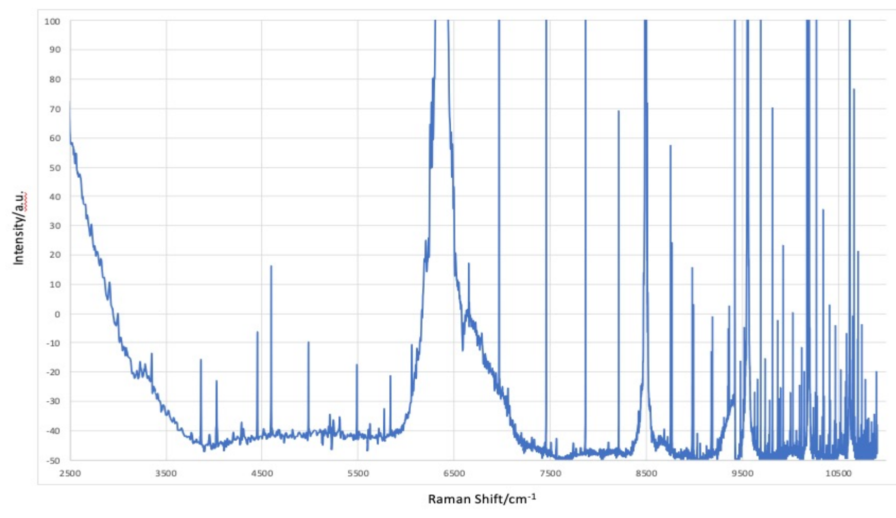
R. Mills J. Lotoski, "H_2O-based solid fuel power source based on the catalysis of H by HOH catalyst", Int'l J. Hydrogen Energy, Vol. 40, (2015), 25-37.

Comparison of the Transition Energies and Transition Assignments with the Observed Raman Peaks

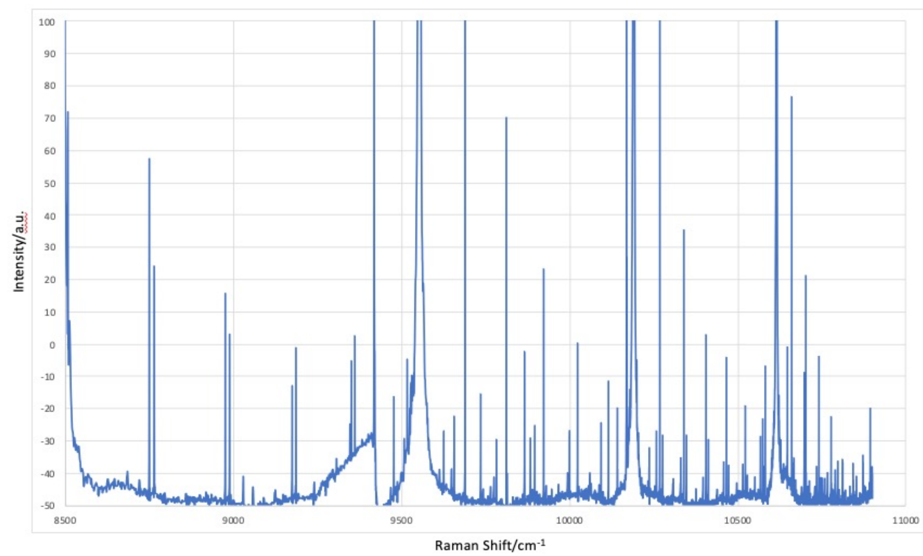
Assignment	Calculated (cm^{-1})	Experimental (cm^{-1})	Difference (%)
P(5)	18,055	17,892	0.91
P(4)	17,081	16,993	0.52
P(3)	16,107	16,064	0.27
P(2)	15,134	15,121	0.08
P(1)	14,160	14,168	-0.06
Q(0)	13,186	13,183	0.02
R(0)	12,212	12,199	0.11
R(1)	11,239	11,207	0.28
R(2)	10,265	10,191	0.73
R(3)	9,291	9,141	1.65
R(4)	8,318	8,100	2.69

Confirmation of Molecular Hydrino $H_2(1/4)$ by Raman Spectroscopy

Raman spectra obtained using a Horiba Jobin Yvon LabRam ARAMIS spectrometer with a 785 nm laser on a Ni foil prepared by immersion in the molten gallium of a SunCell that maintained a hydrino plasma reaction for 10 minutes. A. 2500 cm^{-1} to 11,000 cm^{-1} region. B. 8500 cm^{-1} to 11,000 cm^{-1} region. C. 6000 cm^{-1} to 11,000 cm^{-1} region. All of the novel lines matched those of either (i) the pure $H_2(1/4)$ J = 0 to J' = 3 rotational transition, (ii) the concerted transitions comprising the J = 0 to J' = 2,3 rotational transitions with the J = 0 to J = 1 spin rotational transition, or (iii) the double transition for final rotational quantum numbers $J'_p = 2$ and $J'_c = 1$. Corresponding spin-orbital coupling and fluxon coupling were also observed with the pure, concerted, and double transitions.



(A)

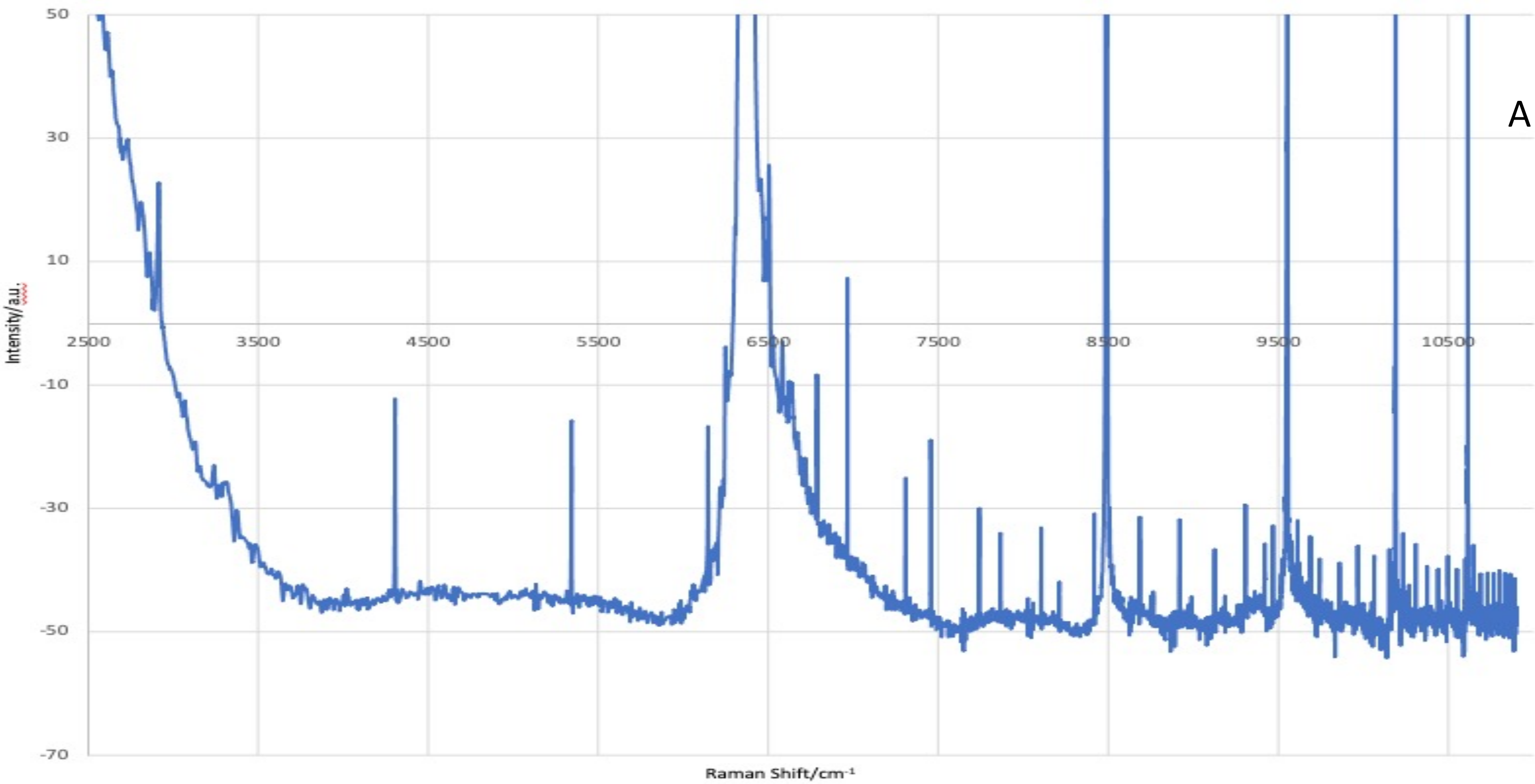


(B)

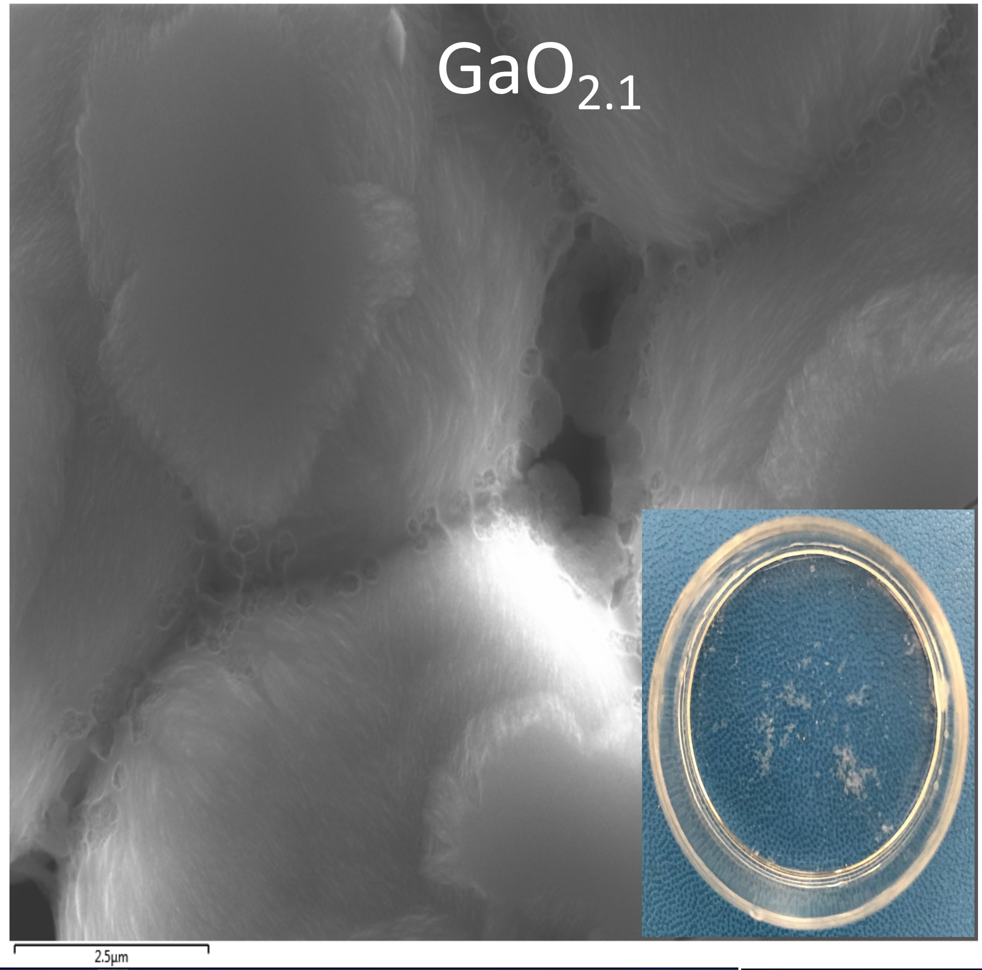
R. Mills, Z. Dong, J. Jenkins, R. Gandhi, N. S. Mehta, S. Mhatre, P. Sharma, "Hydrino States of Hydrogen", Supplementary information to Nature paper in progress, https://brilliantlightpower.com/pdf/Hydrino_States_of_Hydrogen_Paper.pdf.

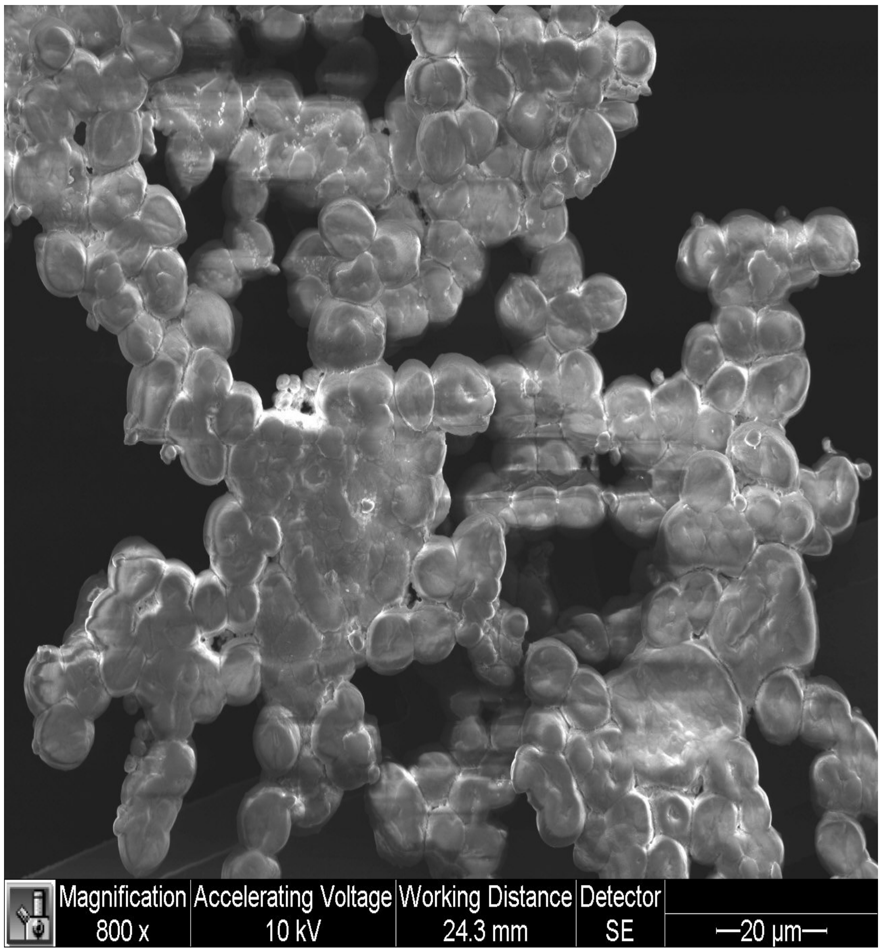
Confirmation of Molecular Hydrino HD(1/4) by Raman Spectroscopy

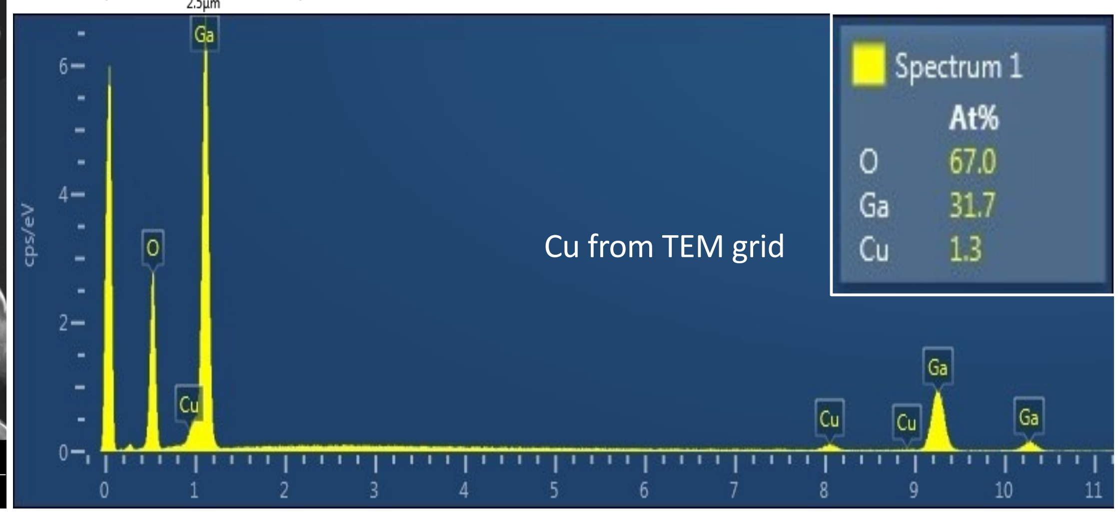
Raman spectra obtained using a Horiba Jobin Yvon LabRam ARAMIS spectrometer with a 785 nm laser on GaOOH:HD(1/4). A. 2500 cm^{-1} to 11,000 cm^{-1} region. B. 8000 cm-1 to 11,000 cm-1 region. All of the novel lines matched those of either (i) the pure HD(1/4) J = 0 to J' = =3,4 rotational transition, (ii) the concerted transitions comprising the J = 0 to J' = 3 rotational transitions with the J = 0 to J = 1 spin rotational transition, or (iii) the double transition for final rotational quantum numbers $J'_p = 3$ and $J'_c = 1$. Corresponding spin-orbital coupling and fluxon coupling were also observed with both the pure and concerted transition. The rotational peaks shifted as predicted for the change in reduced mass of HD(1/4) compared to that of $H_2(1/4)$.



SEM and Energy Dispersive X-ray Spectroscopy (EDS) of $GaOOH{:}H_2(1/4)$ formed by dissolving Ga_2O_3 collected from a hydrino reaction run in the SunCell® in 4M aqueous KOH, allowing fibers to grow, and float to the surface where they were collected by filtration. Particle size: KOH 100 nm; NaOH 40 nm. The hydrino compound is not soluble in concentrated acid (pH ~0) or concentrated base (pH ~14).



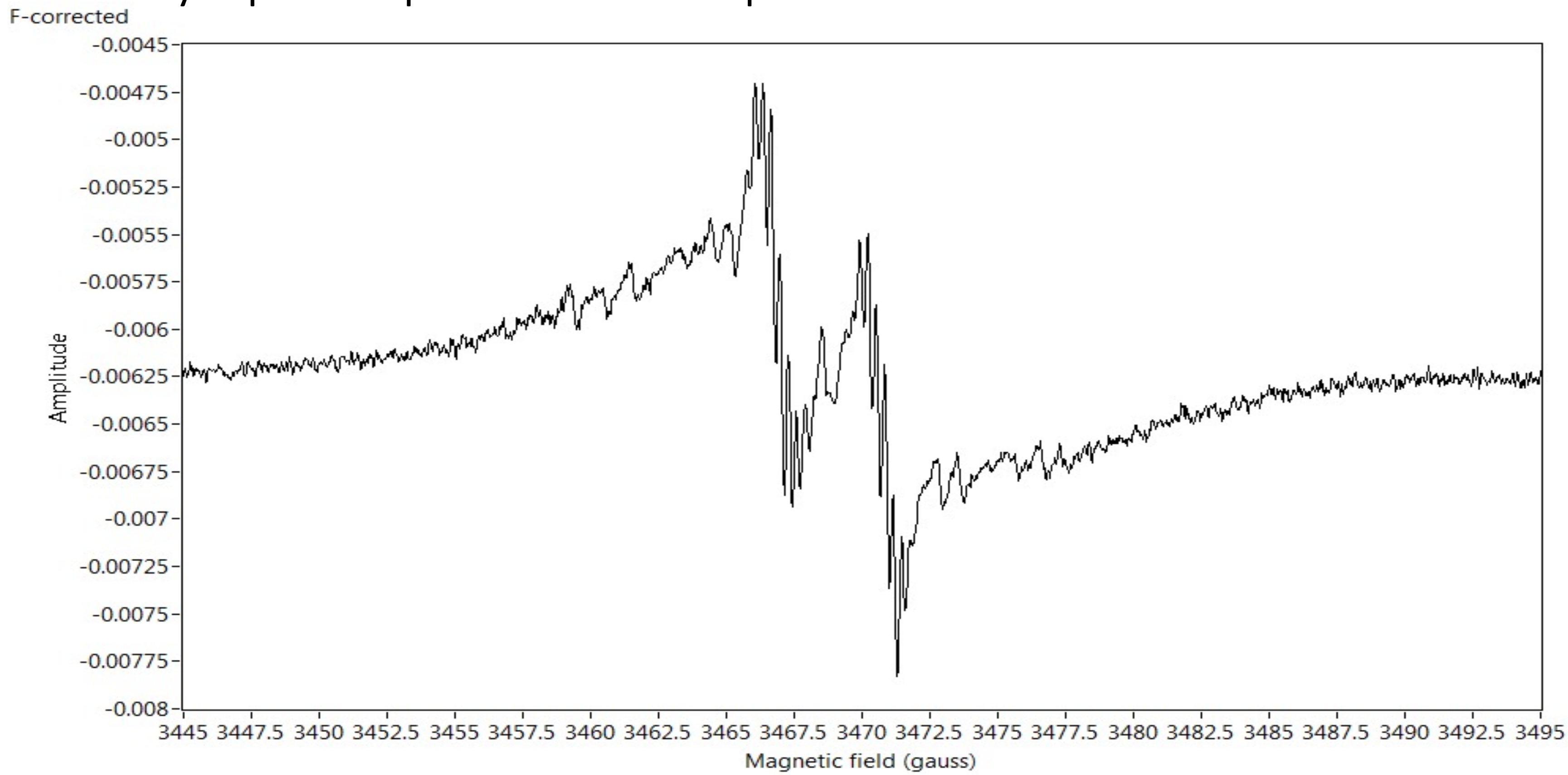




High Resolution Electron Paramagnetic Resonance (EPR) Spectrum of a Molecular Hydrino (Data courtesy of prof dr Wilfred R Hagen TU Delft)

The 9.73855 GHz EPR spectrum (3445 G to 3495 G region) of a hydrino reaction product GaOOH:H_2(1/4) .

The spectrum demonstrates splitting into two main peaks at 3467.9 G and 3470.9 G corresponding to a 4.1 G separation, wherein the two main peaks comprised sub-splitting into a series of evenly separated peaks of 0.31 G separation.



Theory Chapter 16: https://brilliantlightpower.com/GUT/GUT-CP-2020-Ed-Volume2-Web.pdf

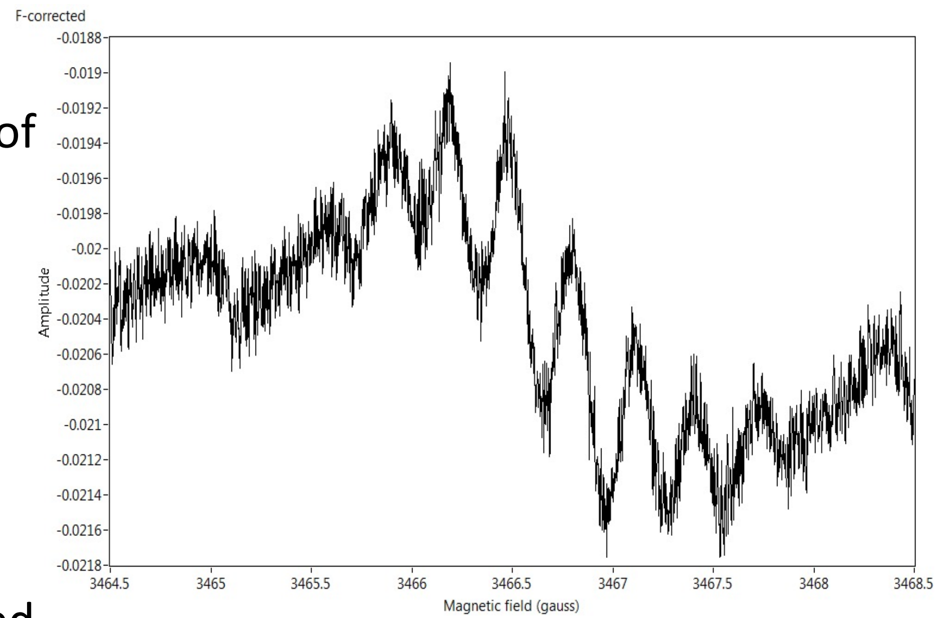
W. R.. Hagen, R. L. Mills, " Distinguishing Electron Paramagnetic Resonance signature of molecular hydrino ", Nature, (2020), in progress.

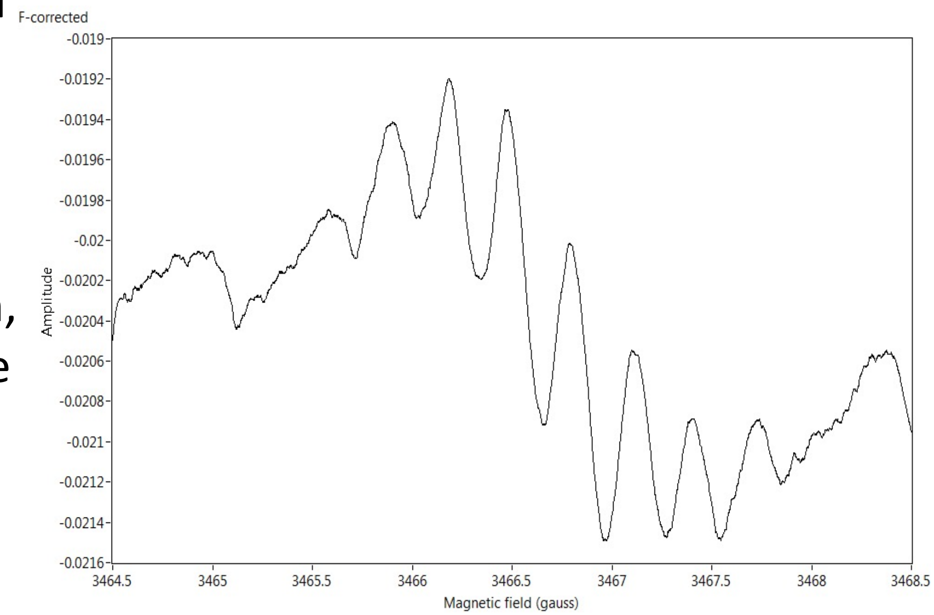
High Resolution Electron Paramagnetic Resonance (EPR) Spectrum of a Molecular Hydrino (Data courtesy of prof dr Wilfred R Hagen TU Delft)

The sub-splitting into the series of evenly spaced peaks of 0.31 G separation is apparent in the high-resolution 9.7385 GHz EPR spectrum in the region of 3464.5 G to 3468.5 G acquired at modulation amplitude of 0.025 G with averaging of 1000, 20 s scans (top) and in the corresponding filtered spectrum (bottom).

The spectra match theory identically wherein the two main peaks arise from spin-orbital coupling between the spin magnetic moment of the unpaired electron and an orbital diamagnetic moment induced in the paired electron by the flip of the spin magnetic moment.

By a common mechanism as the hydrino hydride ion, the evenly spaced series of sub-splitting peaks is due to flux linkage during the coupling between the paired and unpaired magnetic moments in units of the magnetic flux quantum h/2e while a spin flip transition occurs. The splitting energies are too low to match any prior known assignment.



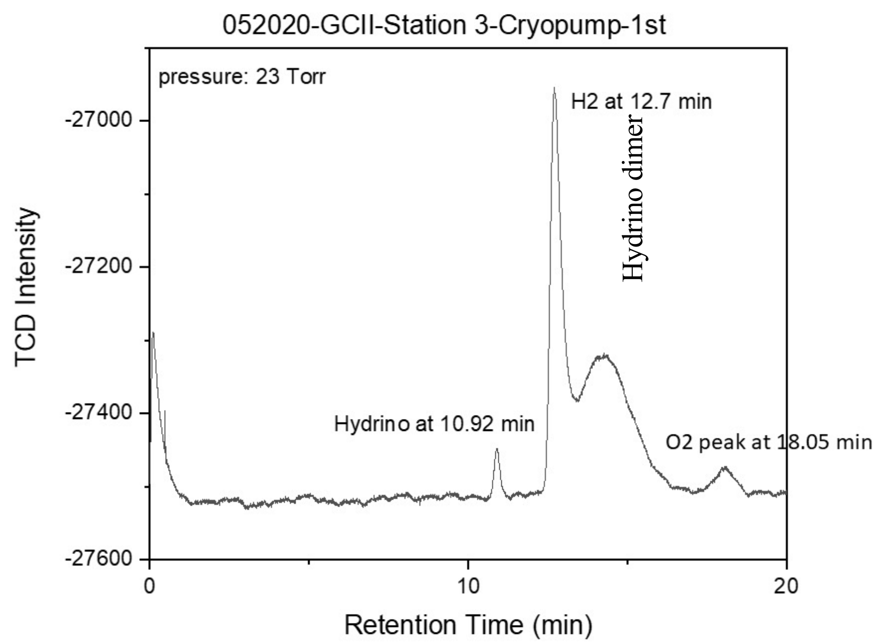


Isolation and Identification of Molecular Hydrino Gas Directly from SunCell® Gas Using a Cryopump

$H_2(1/4)$ gas was collected from a SunCell® operated at a cell pressure of 10-20 Torr over 100s using a valved microchamber connected to the vacuum line and cooled to 10.5 K by a cryopump system (Helix Corp., CTI-Cryogenics Model SC compressor; TRI-Research Model T-2000D-IEEE controller; Helix Corp., CTI-Cryogenics model 22 cryodyne). The SunCell® comprised a Type 347 stainless steel (SS) cylindrical tube measuring 7.3 cm ID, 19.7 cm in height, and 0.635 cm thick with 3.17 mm thick boron nitride (99%) liner and incorporating a 0.9 kg internal mass of liquid gallium wherein the gas flow rates were 2500 sccm H_2/50 sccm O_2, and the ignition current was 1500 A. Argon and trace oxygen were flowed before the reaction was initiated to serve as a solvent for hydrino gas $H_2(1/4)$.

The liquefied gas was warmed to room temperature to achieve 23 Torr chamber pressure and was injected into an HP 5890 Series II gas chromatograph with a capillary column (Agilent molecular sieve 5 Å, (50 m x 0.32, df = 30 μm) at 303 K (30 °C), argon carrier gas, and a thermal conductivity detector (TCD) at 60 °C.

- $H_2(1/4)$ was observed at 10.92 minutes, $[H_2(1/4)]_2$ was observed as a broad peak at 14-15 minutes, oxygen was observed at 18.05 minutes, and hydrogen that co-condensed with $H_2(1/4)$ gas was observed at 12.7 minutes.
- Hydrogen condensed under pressure and temperature conditions that violate the Clausius Clapeyron equation due to the raising of the H_2 liquefaction temperature by co-condensation with $H_2(1/4)$.



R. Mills, Z. Dong, J. Jenkins, R. Gandhi, N. S. Mehta, S. Mhatre, P. Sharma, "Hydrino states of hydrogen", Nature, supplemental data, in progress. [https://brilliantlightpower.com/pdf/Hydrino_States_of_Hydrogen_Paper.pdf]

Hydrino Industries

The hydrino products comprises a new field of chemistry that will be pursued commercially. Revolutionary electronics devices. Inorganic polymers.

The energetics of the hydrino reaction produces a shock wave that is the basis of an energetic materials business that will be pursued commercially.

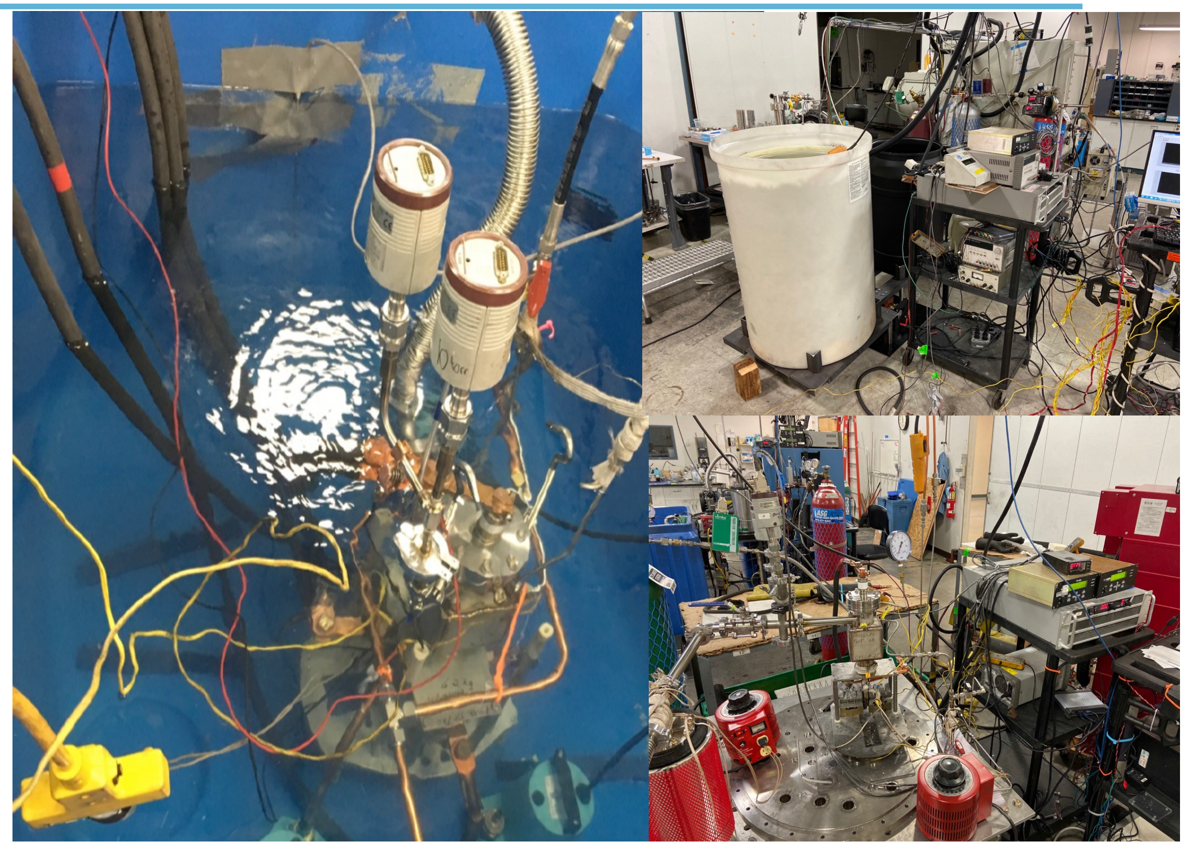
The energetics of the hydrino reaction produces extraordinarily intense short-wavelength light that is the basis of a light source for photolithography, chemical curing, bioremediation and other applications that will be pursued commercially.

The hydrino reaction power can be harnessed by engineered power systems such as the SunCell® having boiler and electrical converter components for the thermal and electrical power markets, respectively.

The molecular modeling software business based on the underlying classical theory will be pursued commercially. Currently 1000’s of users have tested the freeware with great satisfaction.

Validation: SunCell Run in Air to 1200°C and Submerged in Water Bath Calorimetry that Measured 340 kW of Hydrino Power Production from Heat Inventory

Stephen Tse, Ph.D. Department of Mechanical and Aerospace Engineering, Rutgers University validated up to 340 kW of power produced by BrLP's proprietary hydrino plasma reaction maintained in its SunCell® using molten metal bath and water bath calorimetry. (https://brilliantlightpower.com/pdf/Tse-Validation-Report-Brilliant-Light-Power.pdf)



Calorimeter	Duration (s)	Input energy (kJ)	Output energy (kJ)	Input power (kW)	Output power (kW)	Power Gain	Net Excess Power (kW)
Water Bath	2.115	192.95	915.35	91.2	432.8	4.74	341.6

Initial Hydrino® Markets are Staggering

Thermal

- **$4.8 T market**
- Leverages years of process and engineering development
- Platform for earlier products and revenue
- *Internal field trails of 250 kW-scale SunCells® ongoing, continuous long-duration operation on demand*

Electric Power Generation

- **$3.5 T electricity market**
- Leverages thermal SunCell® experience
- Innovative TPV and MHD SunCell design
- *Lease power versus capital purchase*

Novel Compounds

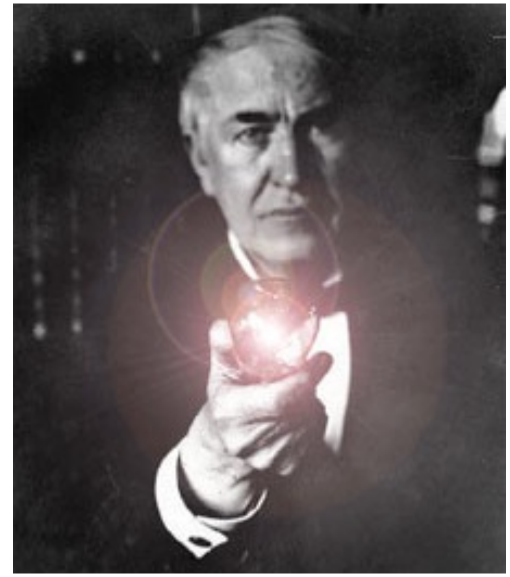
- **Market: $TBD**
- Analytical identification completed for Hydrino® gas and a Hydrino® compound
- Hydrino® exhibits prior unknown magnetic and other properties
- Samples available today and are being validated
- *Exploring applications with specialty firms*

Passenger Car

- **Market $0.5-1.0 T**
- Total addressable market of 87.3M units
- Typical ICE $2K to Battery $10K per vehicle
- Strong value for weight savings, range improvement, and operating costs
- *Direct OEM sales of TPV SunCell*

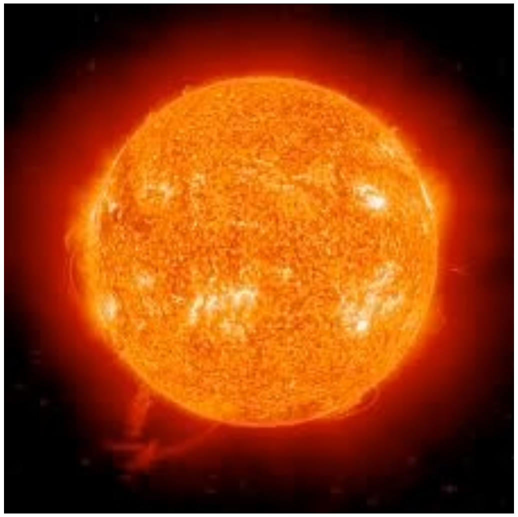
Brilliant Light Electric Power

- Power in a Box
- Reinventing electricity, independence of being completely off grid and independent of fuels infrastructure
- New, sustainable, nonpolluting energy
- Sales of electric power sources for electric vehicles
- Electricity company, sales via lease agreement, no metering
- Partnership & outsource business model
- Profound implications for electric and motive power – accessible, affordable, clean



The Electric Power Solution: SunCell®

- Continuous power source
- Non-polluting by-product Hydrino®, lighter than air, vents to space or isolated for commercial applications
- System is sealed with H_2 fuel obtained from H_2O as a less that 1% parasitic load
- Low operating cost, only consumable is minimal amounts of water
- Operates under vacuum, absolutely safe materials and operation
- Thermophotovoltaic (TPV) or magnetohydrodynamic (MHD) electricity conversion
- Scalable from 10 kW to 10 MWs, SunCells may be ganged
- Applications include stationary on-site electric, automotive, trucks, rail, marine, aviation, and aerospace
- Most Applications: No metering with electricity sold at about $0.05 per kWh on site via a per diem lease fee.
- Automotive: autonomous electric power source sold to vehicle OEM for the replacement value of fuel ~$20 k for a 250 kW unit.



SunCell Economics

Current Annual Gross Earning Capacity of Any Electrical Generator:

- $1/W

Capital Cost:

- $50/kW

Life Span:

- 20 years

Capital Cost Annually:

- $3/kW

Solar Capital Cost (2021):

- $1000/kW[a]

Maintenance Cost:

- $1.20/kW

Generation Cost:

- $0.001/kWh

https://www.nrel.gov/solar/solar-installed-system-cost.html

Solar Power

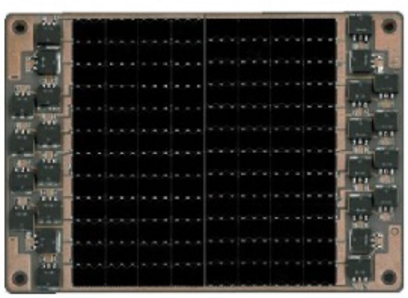
Solar cells have been optimized over five decades at a cost of more than one trillion dollars to convert sunlight into electricity. The capital cost of solar power is high due to the low power density of sunlight at the Earth's surface. Acres of land need be covered by panels to harvest a meaningful amount of power; thus, the appropriate namesake: "solar farm".

Jasper Power Project, South Africa's Northern Cape
96 MW on 247 acres (about 1 million m^2)

Concentrator Solar Power

To reduce costs by reducing the solar panel coverage area, less-expensive sunlight concentrators are employed to increase the sunlight intensity to a thousand times natural intensity. Concentrator solar cells of a dense receiver array typically comprise three layers or junctions of III-V elements engineered to be responsive to a selected wavelength region of the Sun’s spectral emission such that the triplet set covers a substantial portion of the total emission, and the conversion efficiency is greater with higher concentration.

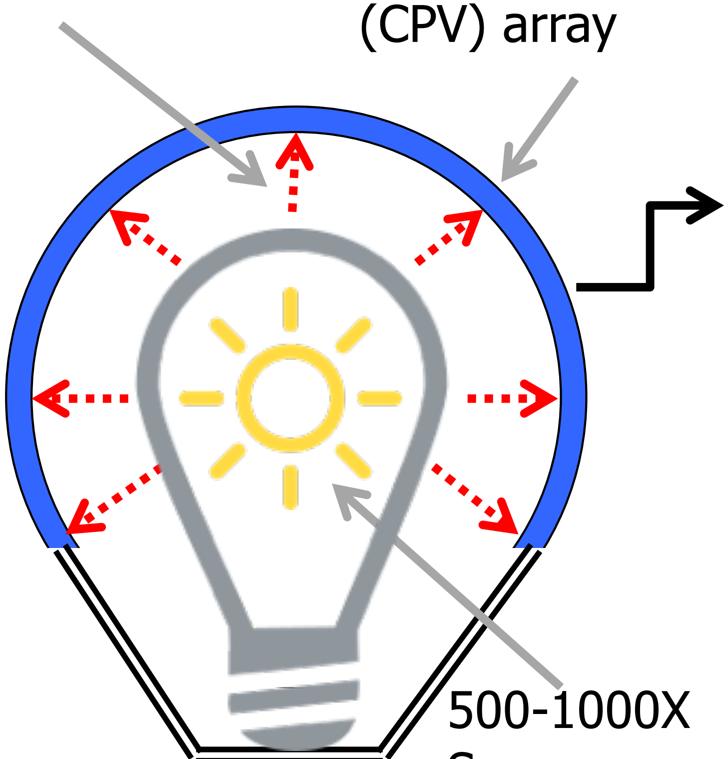
Due to the same low incident light concentration from the Sun, the typical scale is 100 MW on 250 acres (about 1 million m^2)

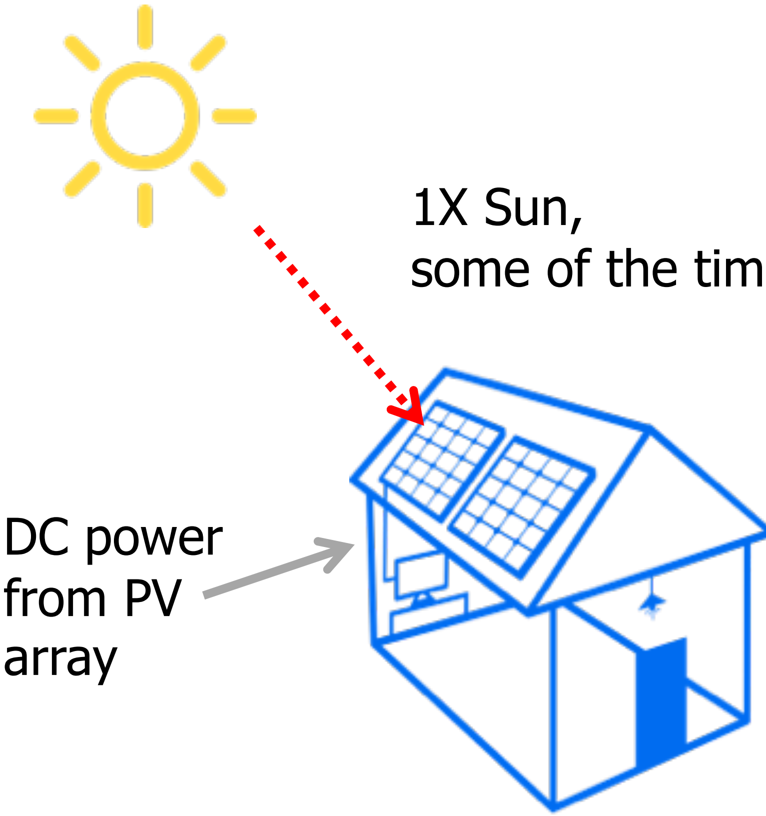


Front of Dense Receiver Array

Back of Dense Receiver Array
With Cooling Water Inlets and Outlets

SunCell® vs Solar PV





Thermophotovoltaic SunCell® vs Solar PV

An autonomous SunCell operating at up to 1000 Suns requires 5000 times less area and complexity than a matched conventional solar power station.

44 ganged 250 kW SunCells

11 MW

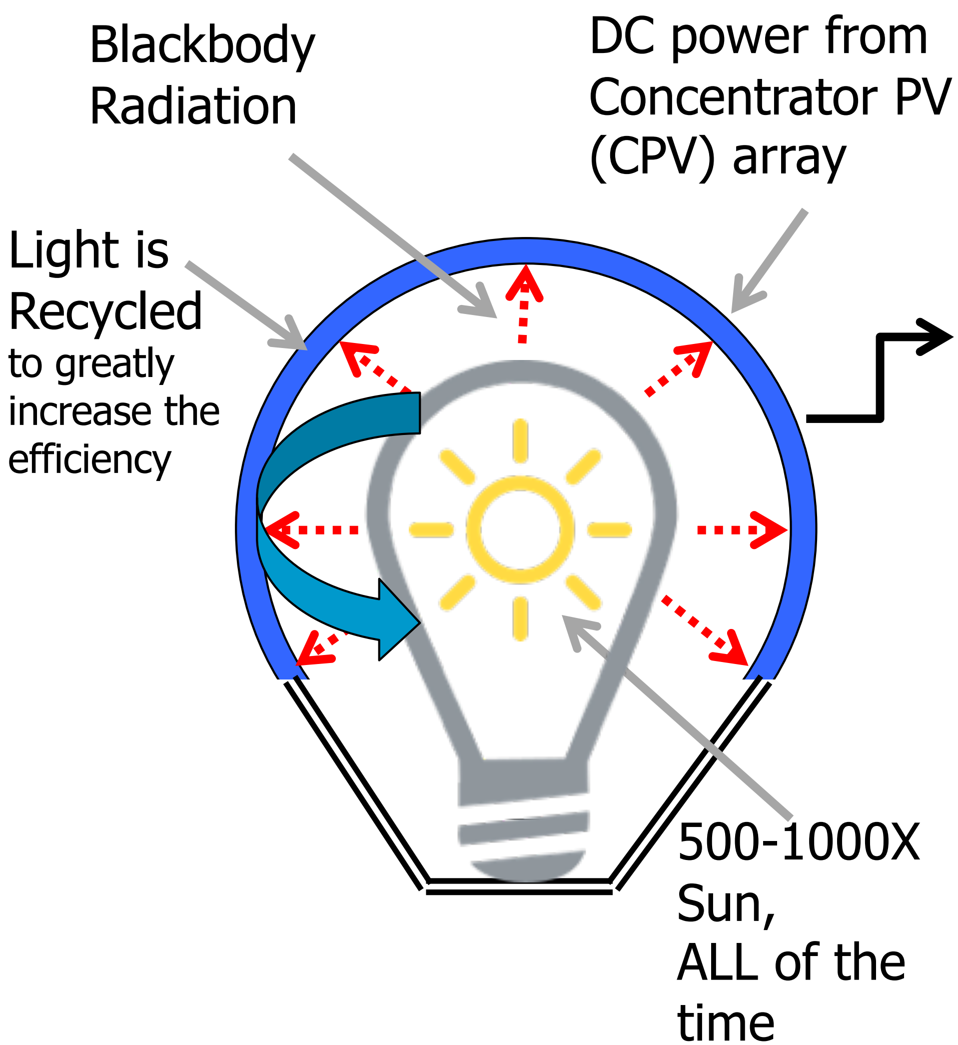
15 m^2

Planta Solar 10, Sevilla, Spain

11 MW

75,000 m^2 (nrel.gov)

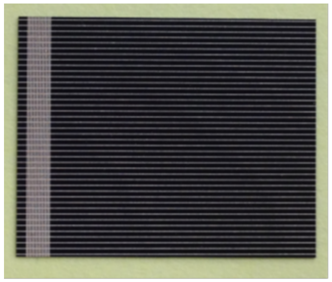
SunCell® ThermoPhotovoltaic with Light Recycling

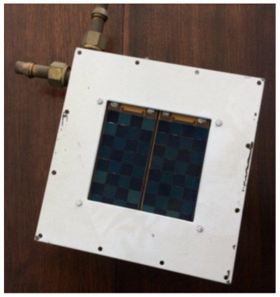


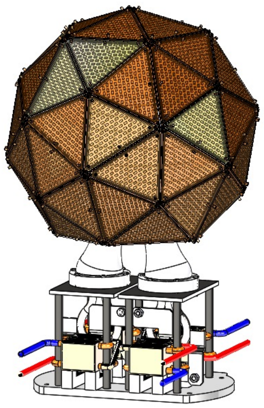
- Infrared light from the SunCell that is too low energy to be PV converted to electricity is reflected back to the SunCell and recycled.
- With light recycling the thermophotovoltaic efficiency radically increased by a factor of over 3.5 times, and with cell optimization the increase is projected to be about six times[a]

[a] Test of infrared light recycling: Z. Omair, et al., "Ultraefficient thermophotovoltaic power conversion by band-edge spectral filtering", PNAS, Vol, 116, No. 3, (2019), pp. 15356-15361.

Silicon Concentrator Cells and DRAs

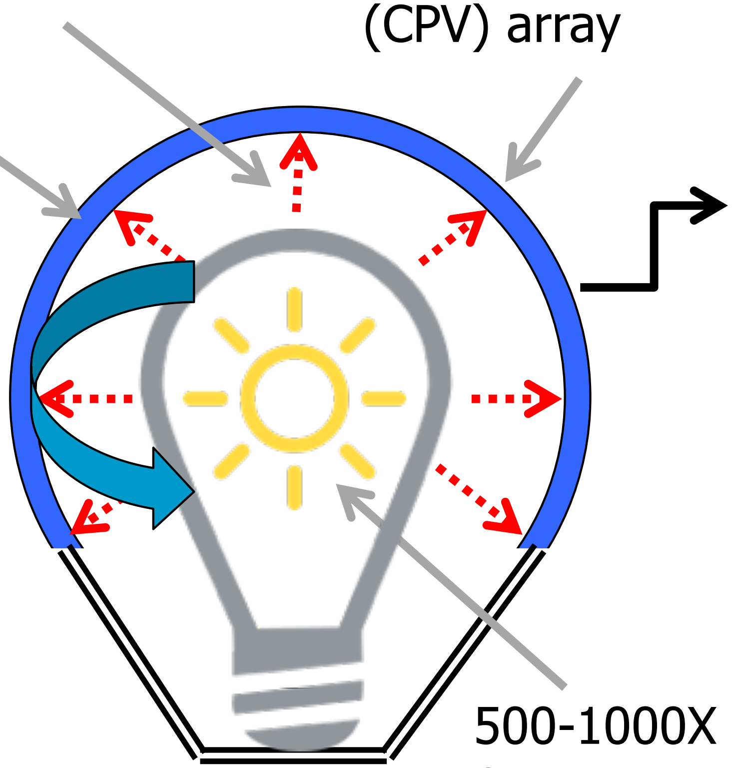






- Single junction (1J) silicon concentrator cells with light recycling can replace three junction (3J) III-V cells
- Si technologies are best choice; widely available
- Si-ideal band gap of 0.86 eV at the ideal operating temperature for cooling of 140°C (Cooling technology readily exists)
- Si paradoxically becomes more efficient at higher temperatures, due to collecting more of the 3000K blackbody radiator light
- The conversion efficiency for 3000K SunCell emission by a single junction concentrator silicon PV cell operating at 120 °C was calculated to be 84% with a practical expectation of 50%
- Commercially available cells
- Concentration- 500 Suns
- Better fit with SunCell Generator System Requirements
  - Less demanding cold plate solutions and cooling complexity
  - Higher operating temperature (smaller and less costly cooling equipment)
  - Lower cost PV cells
  - Existing mass production Si cell manufacturing capacity

How the SunCell® Works



The Process….

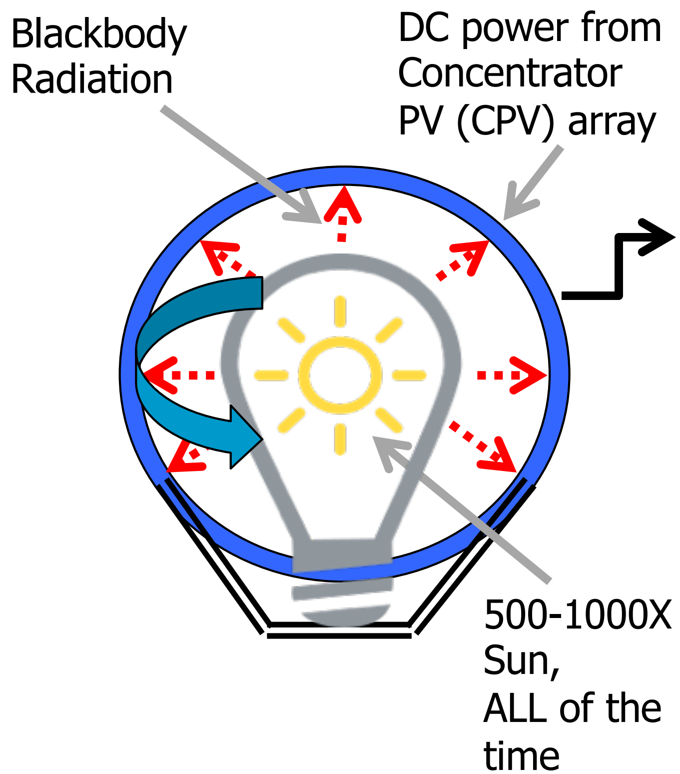
- Plasma is generated through Hydrino® process.
- Plasma comprises a 3000-5000 Kelvin blackbody radiator or heats a blackbody radiator to between 3000 and 3500 Kelvin. Alternatively, the reactor chamber wall at 1475K-2275K serves as the blackbody emitter.
- Blackbody radiator emits brilliant light, similar to the operation of a tungsten filament in a halogen bulb.
- Light emitted is converted by dense receiver array of concentrator PV cells delivering the power output.
- Infrared light that is PV inactive is reflected back to the blackbody, absorbed, and recycled as more blackbody radiation to greatly increase the efficiency.

Product Development Foundation

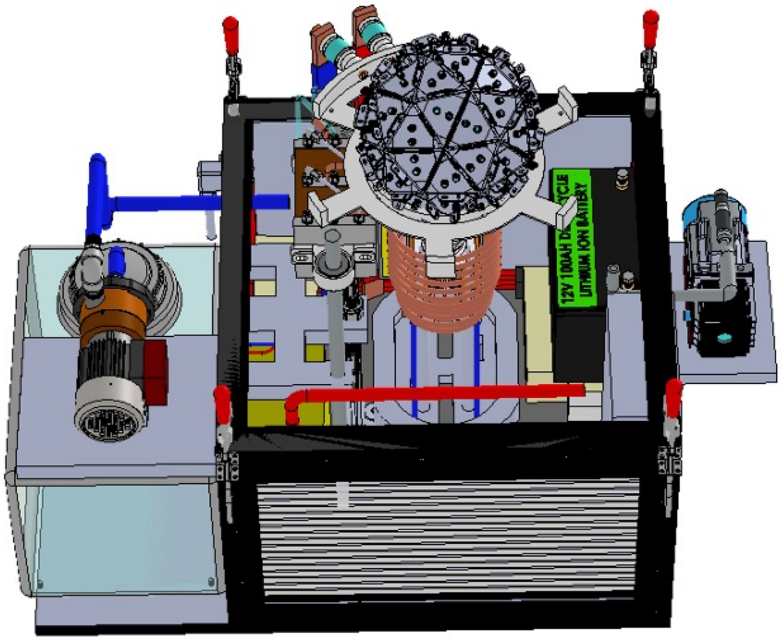
- SunCell blackbody radiation replaces the emission of the Sun
- Blackbody temperature and response spectrum of commercial PV is adjusted to more closely match each other
- Rapid, low cost development approach

Established Foundation

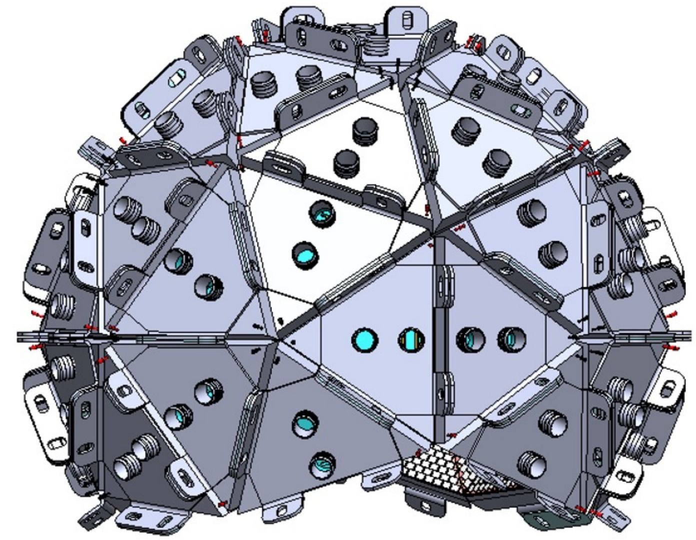
- Theory solved, IP issued
- Light source demonstrated
  - Internally certified
  - Externally certified
- Advanced thermophotovoltaic (CPV)
  - Suppliers selected
  - CPV cell design
  - Dense receiver array design
  - Cooling design
- SunCell radiator design
- Costed bill of materials
- Continuous 100-200 kW SunCell prototypes



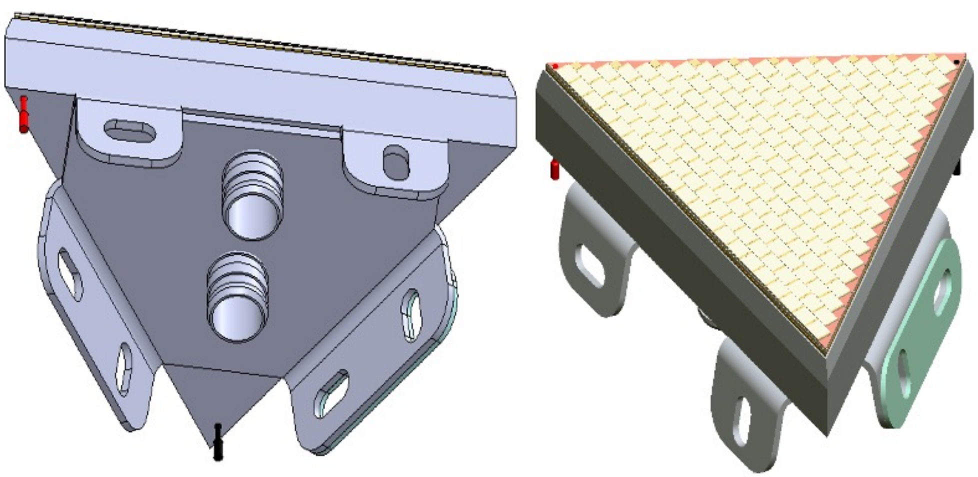
ThermoPhotovoltaic (TPV) SunCell®



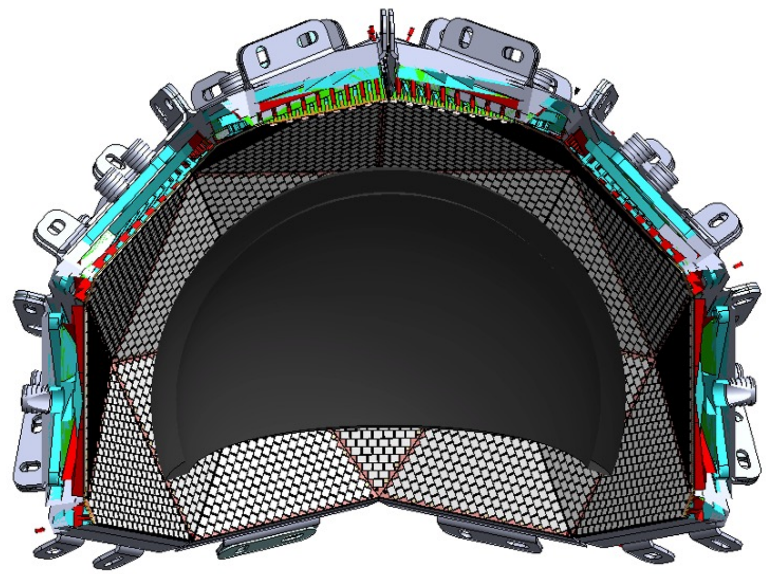
SunCell ® with TPV Converter



Cooling Side of Geodesic-Dome TPV Converter



Dense Receiver Array Element



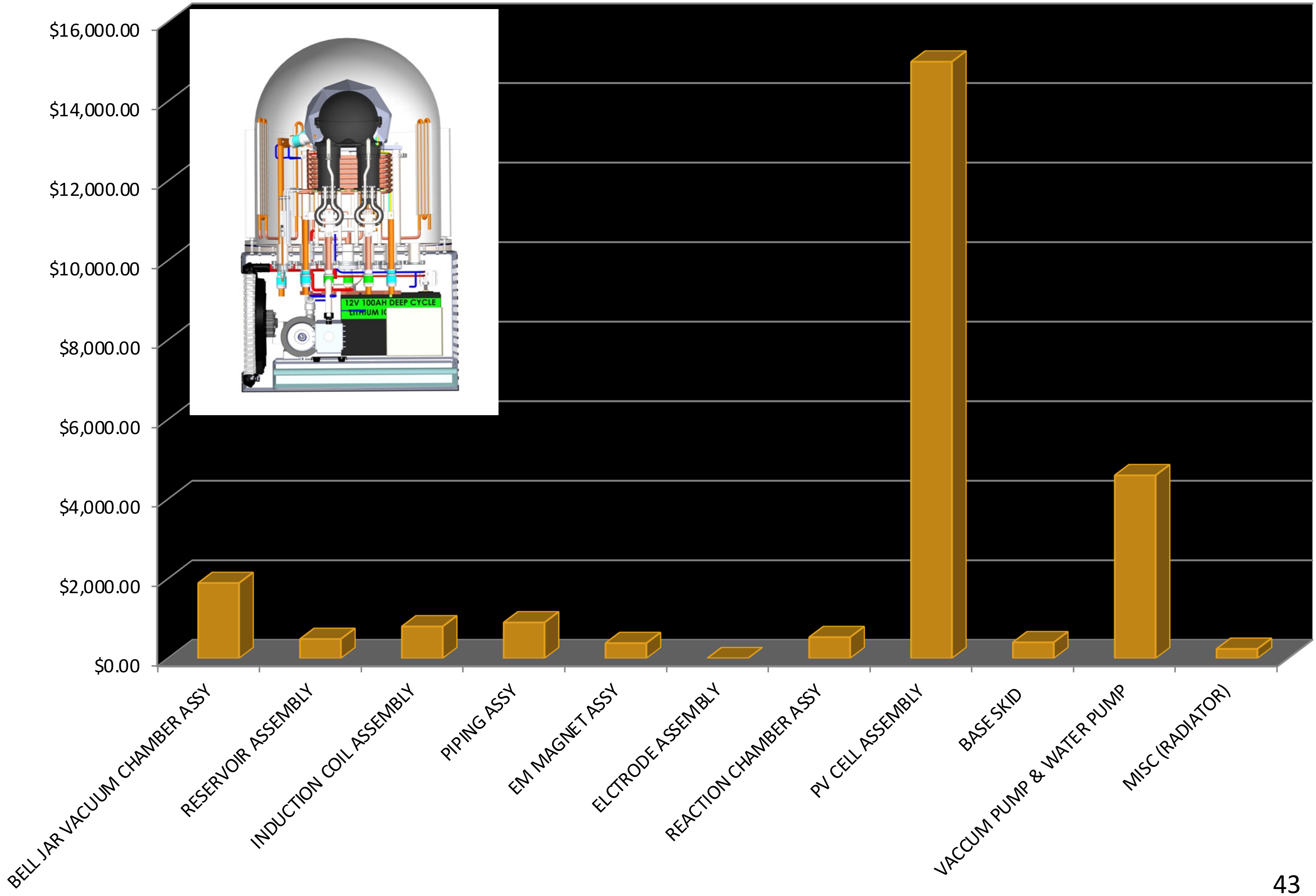
Dense Receiver Array Side of Geodesic-Dome TPV Converter

SunCell® CPV Cost Drops Dramatically with Scale

- At a volume of ~100 MW/yr, a three junction (III-V) SunCell® CPV converter is estimated to cost less than $75 per kW (1000 Suns concentration, 60% efficiency with light recycling of 3000K blackbody emitter).
- At 10 GW annual production which is equivalent to the global annual deployment of c-Si solar, the cost of SunCell® CPV converter is estimated to cost less than $32 per kW.
- The cost of single junction concentrator silicon at 500 Suns is estimated to be $60 per kW with a dramatic drop with large production volume.

(Cost: Kelsey Horowitz, "A Bottom-up Cost Analysis of a High Concentration PV Module", CPV-11, 2015; NREL/PR-6A20-63947)

TOTAL COST 250KW SUN CELL AT SUB ASSEMBLY LEVEL



COST ANALYSIS FOR FIRST OF A KIND 250KW (500 Suns)

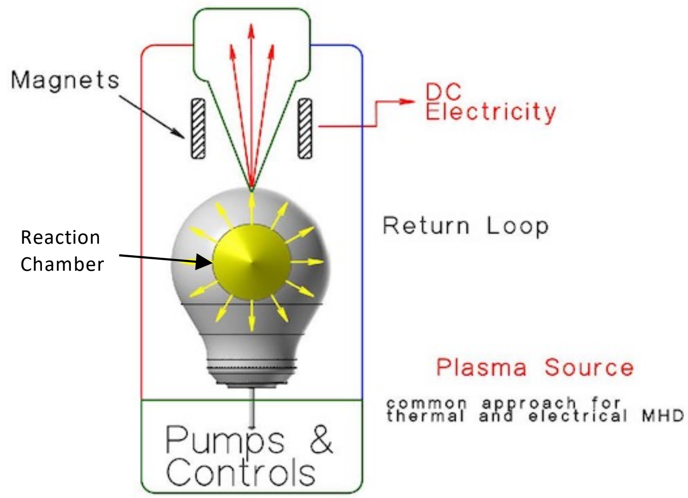
brilliant LIGHT POWER

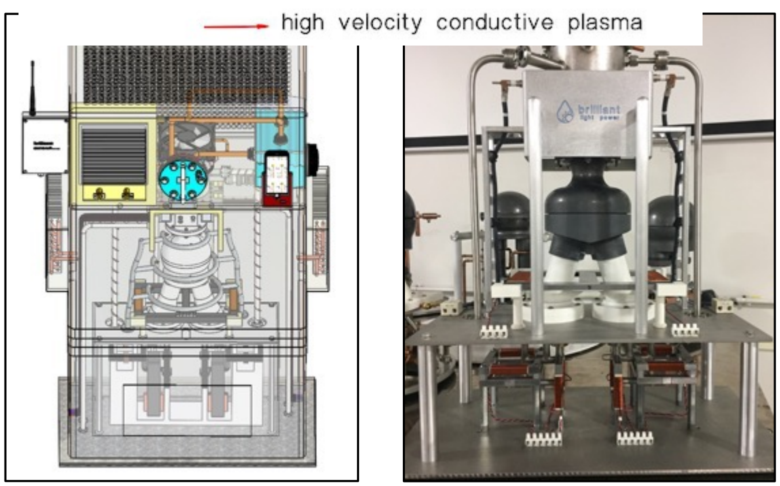
250KW SUN CELL COST ANALYSIS	
DESCRIPTION	**TOTAL COST AT SUB ASSY LEVEL**
BELL JAR VACUUM CHAMBER ASSY	$1,891.47
RESERVOIR ASSEMBLY	$484.17
INDUCTION COIL ASSEMBLY	$800.00
PIPING ASSY	$900.00
EM MAGNET ASSY	$380.00
ELCTRODE ASSEMBLY	$0.00
REACTION CHAMBER ASSY	$530.00
PV CELL ASSEMBLY with PV WINDOW	$15,000.00
BASE SKID	$400.00
VACCUM PUMP & WATER PUMP	$4,600.00
MISC (RADIATOR)	$236.00
DESCRIPTION	TOTAL COST 250KW
TOTAL COST	$25,221.64

Future Development: How the MHD SunCell® Works

Revolutionary DC Power Solution Potential for Even Higher Power Densities

Direct power extraction (DPE) with no moving parts: breakthrough MHD cycle technology enabled by the SunCell® to directly convert thermal & kinetic power to electrical power

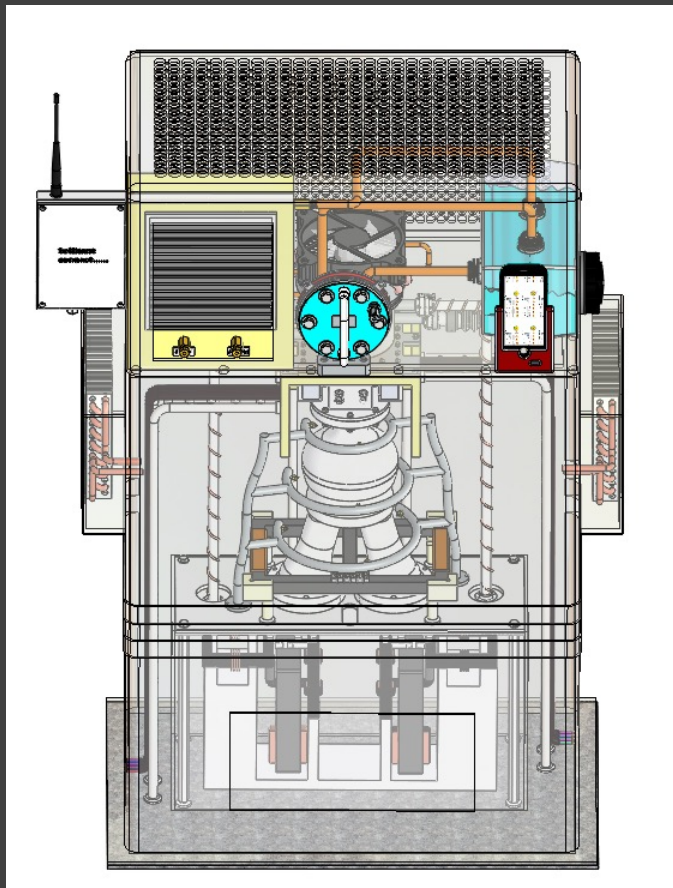


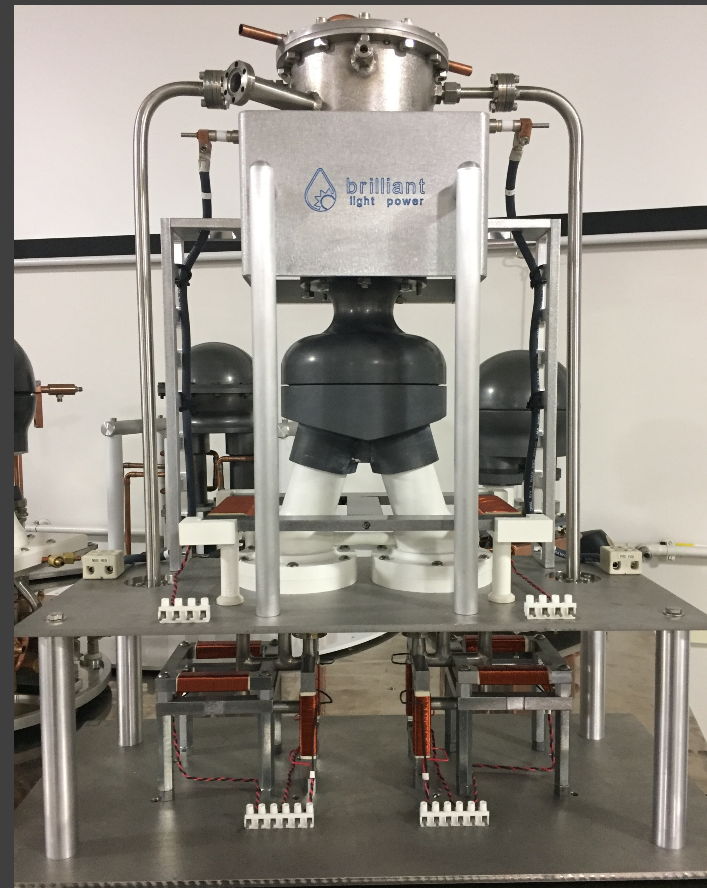


Development Models of MHD Electrical SunCell® Units

- We have invented a proprietary liquid metal nanoparticle magnetohydrodynamic (MHD) technology that has the prospect of power conversion at 23 MW/liter at near unity efficiency and costing less than 1/10 that of convention power conversion hardware.
- Oxygen absorbed by molten silver is released by the high temperature of the Hydrino®-reaction plasma.
- Oxygen causes molten silver to form molecular-like nanoparticles which in combination with released oxygen develop a high reaction chamber pressure.
- Expansion through a nozzle converts the power of the plasma into an extremely highly conductive kinetic flow at nearly unity efficiency.
- Supersonic flow through a magnetized channel with perpendicularly positioned electrodes converts the flow's kinetic energy into electricity at near unity efficiency.
- The silver reabsorbs oxygen and is pumped back to the reaction chamber as a liquid to close the power cycle.
- Prototype engineering design, drawings, and models have been developed.

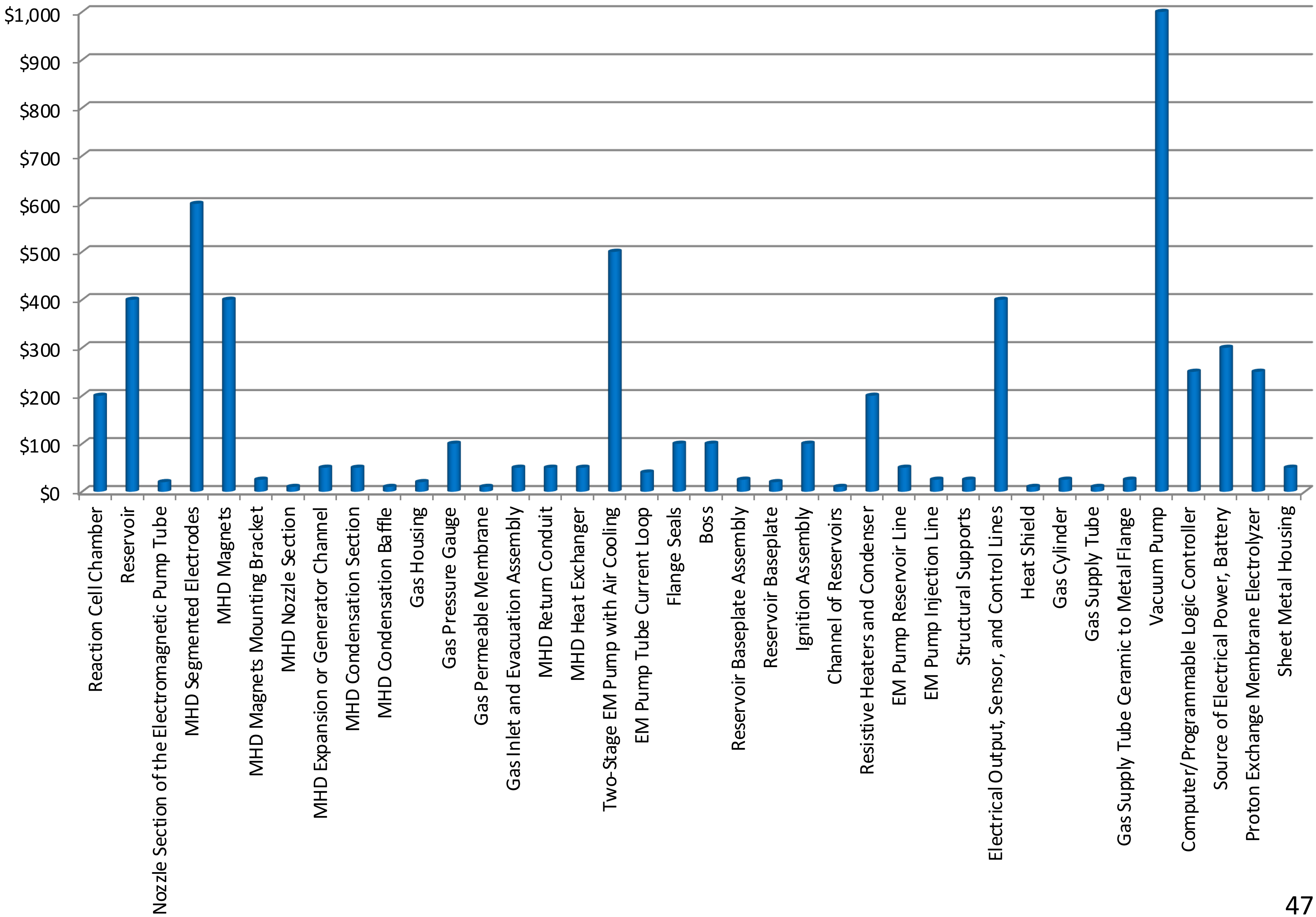
https://brilliantlightpower.com/pdf/MHD_Paper.pdf



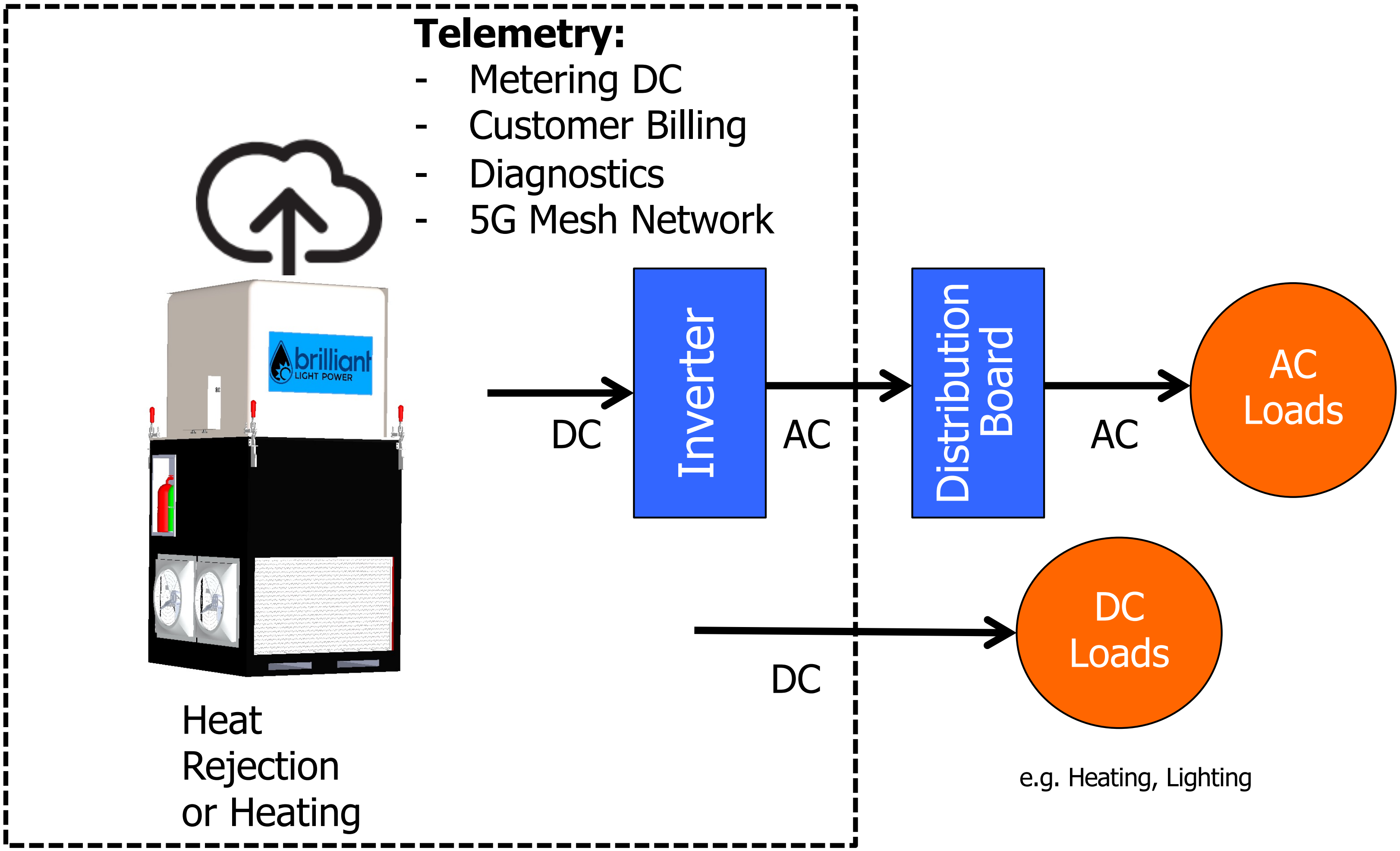


SunCell® with MHD Converter

FIRST OF A KIND MHD COMPONENT COST (<$25/kW electric)



SunCell-TPV Turnkey System (Basic)



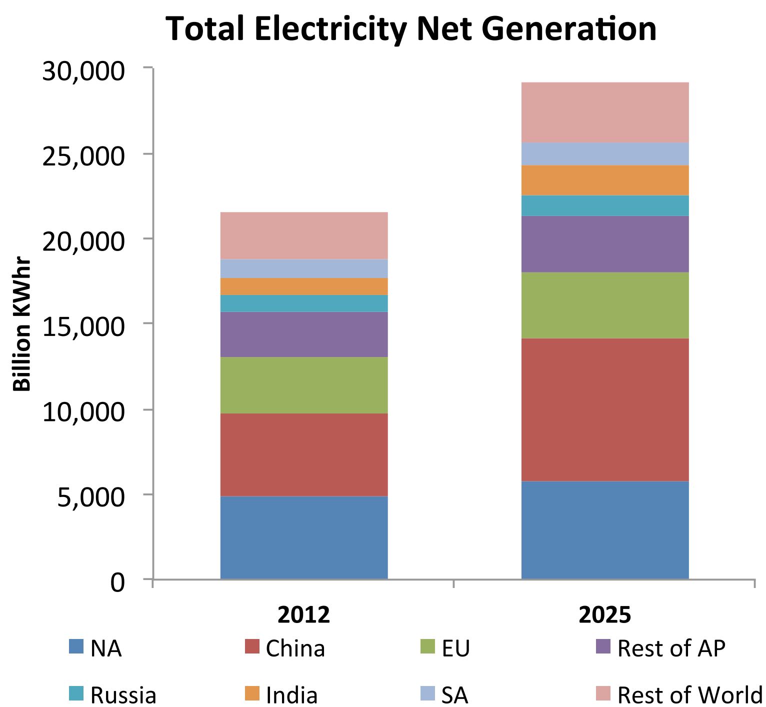
The SunCell® with an TPV converter can support either direct DC loads or AC loads with the addition of standard inverter technology as used by the solar industry today.

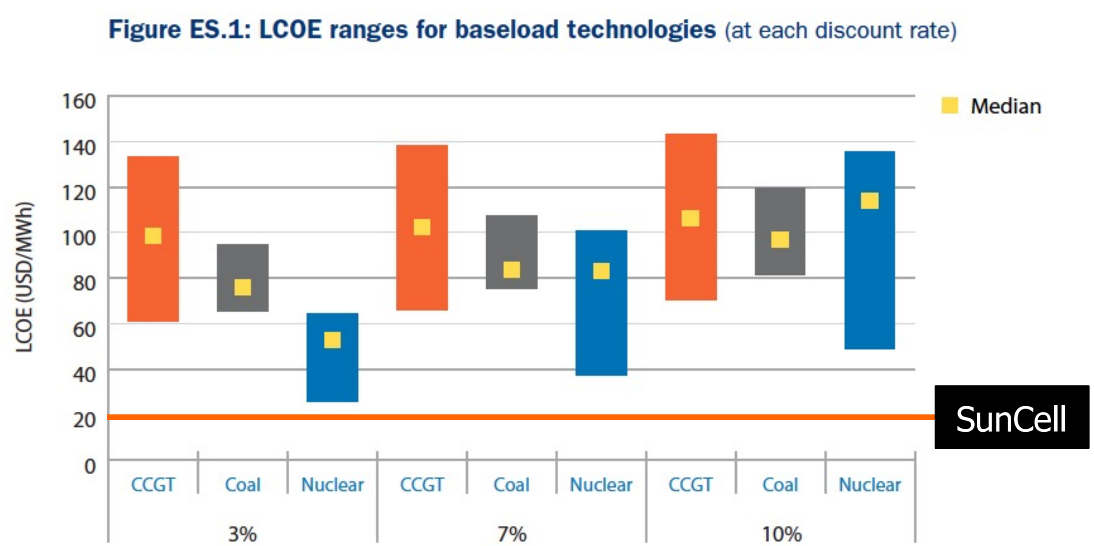
Global Established Accessible Market with Expansion Opportunities

- Reinvent electrification as autonomous, completely off grid, mass produced personal power.
- Flat per diem lease charge with no metering.
- Using cell redundancy being off grid is much cheaper than any grid connection and avoids all related utility regulatory leverage.
- Behind the meter during a short temporary learn out phase in the United States, then global push.

Global Electricity

- $3.5 trillion~ global market at $0.12 per kWh at site
- $1.5 trillion addressable market for SunCell at breakthrough rate of ~$0.05 per kWh
- 28% demand increase by 2025

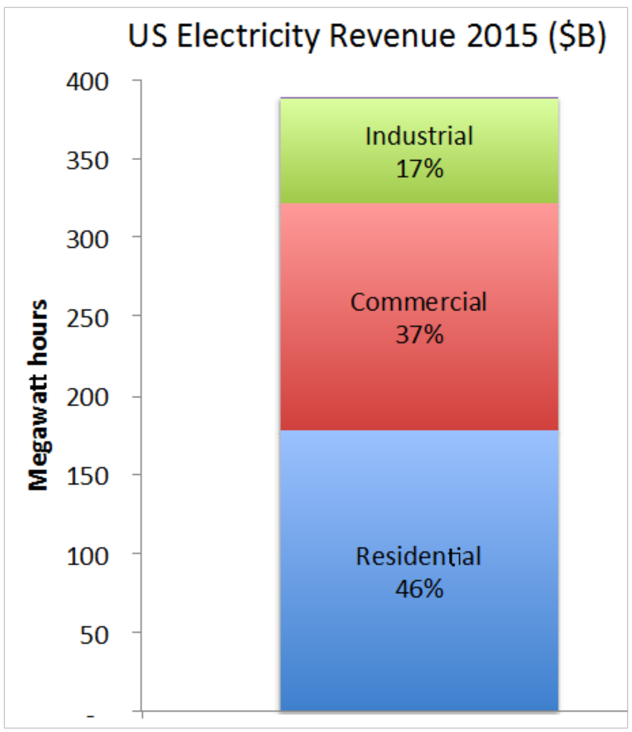




Sources: EIA Total Electricity Net Generation 2012,
IEA Projected Cost of Generating Electricity, 2015 Edition.

US Electricity

- $387~ billion market
- Average consumer price of $103 per MWh, double SunCell goal of $50 per MWh
- US residential larger percentage than Global markets
- SunCell breaks entry barriers:
  - Always on power, low capital cost, low operating cost, huge power density, no pollution
  - Off grid without corresponding regulations or transmission and distribution costs of >$38 per MWh



Levelized Avoided Cost of Electricity (LCAE) New Generation

Advanced Coal	NG w/ Combined Cycle	NG w/ Advanced CC	Advanced Nuclear	Solar PV
$70.9	$71.4	$71.4	$72.1	$80.4

Levelized Cost of Electricity (LCOE)

Advanced Coal	NG w/ Combined Cycle	NG w/ Adv. CC	Advanced Nuclear	Solar PV	SunCell
$116	$75.2	$72.6	$95.2	$114.3	**$50-70**

Reference: EIA Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2015 (June 2015)

Stationary Market Launch

% Global Electricity	51%	12%	18%
			
	Industrial	Commercial	Residential

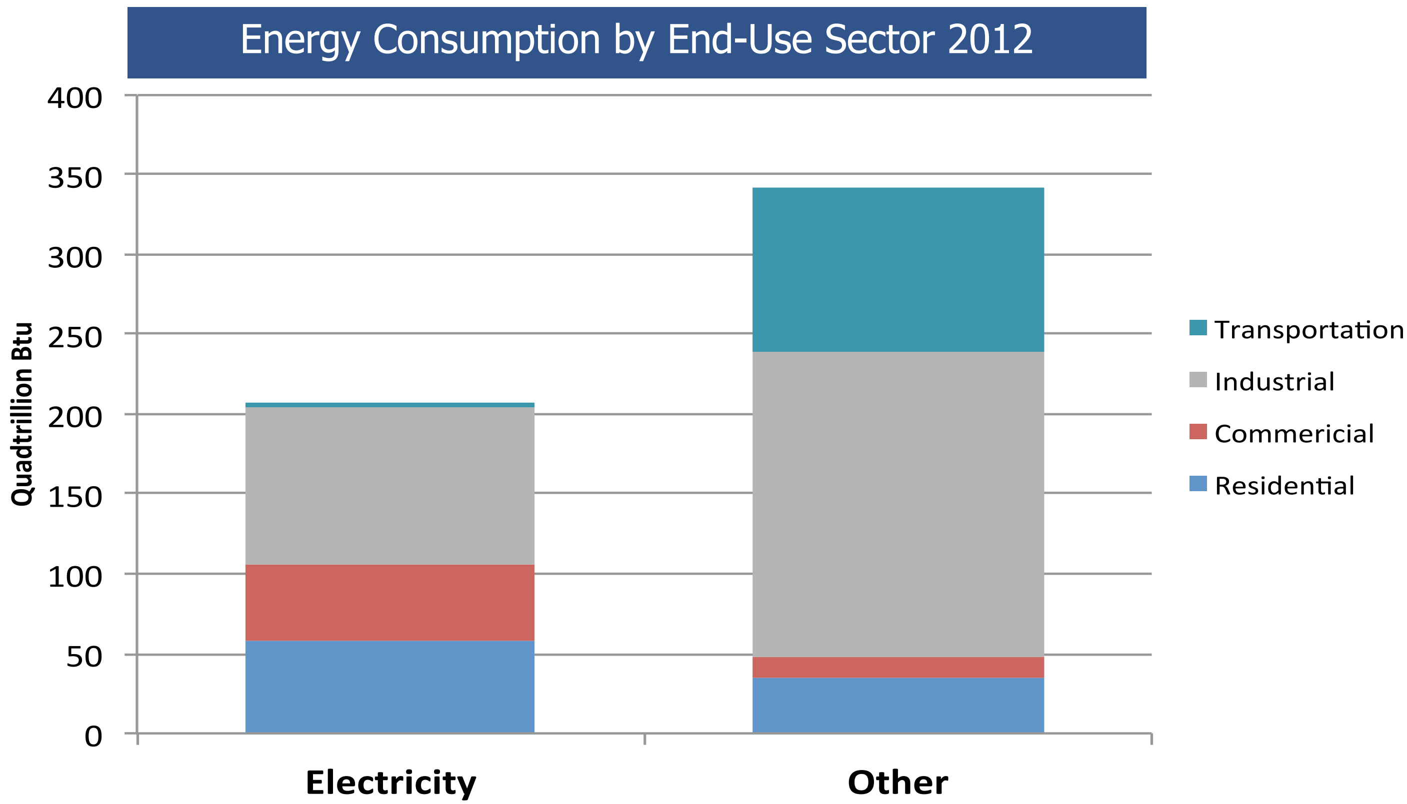
- DER (Distributed Energy Resource)
  - Multi SunCells off grid
  - No metering, only per diem lease fee based on capacity to suit historic and anticipated maximum load at peak
  - Ganged/Networked SunCell DERs within a large building, complex of buildings, or industrial or commercial site; interconnected by low voltage private grid.
  - Provide capacity, demand response
  - Redundancy, avoid disruption
  - Flexible ramping, smart controls to smooth peaking

SunCells:

- Core Power:
  - Paralleled systems: 250kW-2MW

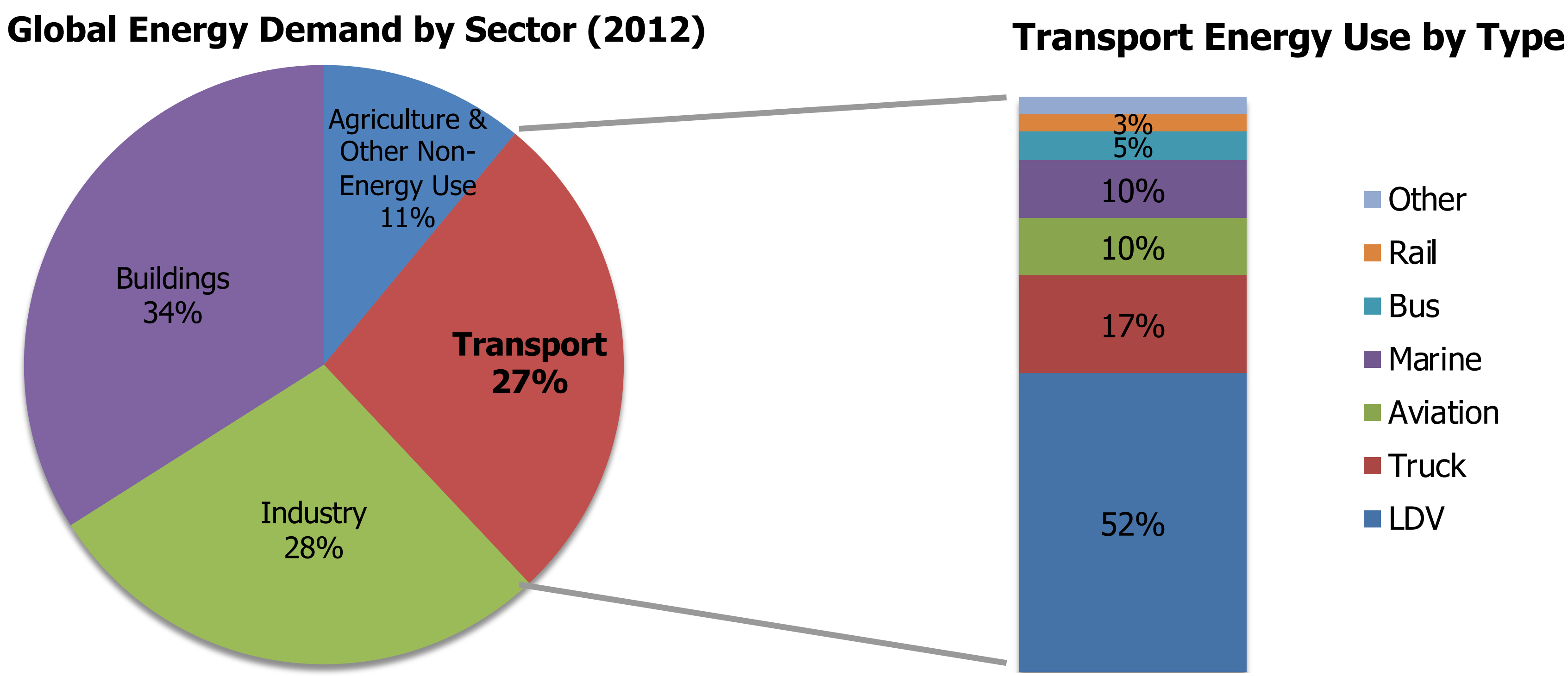
Global Electricity and Other Energy Sources

- Global electricity markets an obvious fit for SunCell – 42% value and 38% of total energy use
- SunCell applications in non-electric markets even bigger potential
- Energy use expected to expand with disruptive technology, as seen in telecommunications



Ref: DOE/EIA International Energy Outlook 2016

Global Motive Energy Use



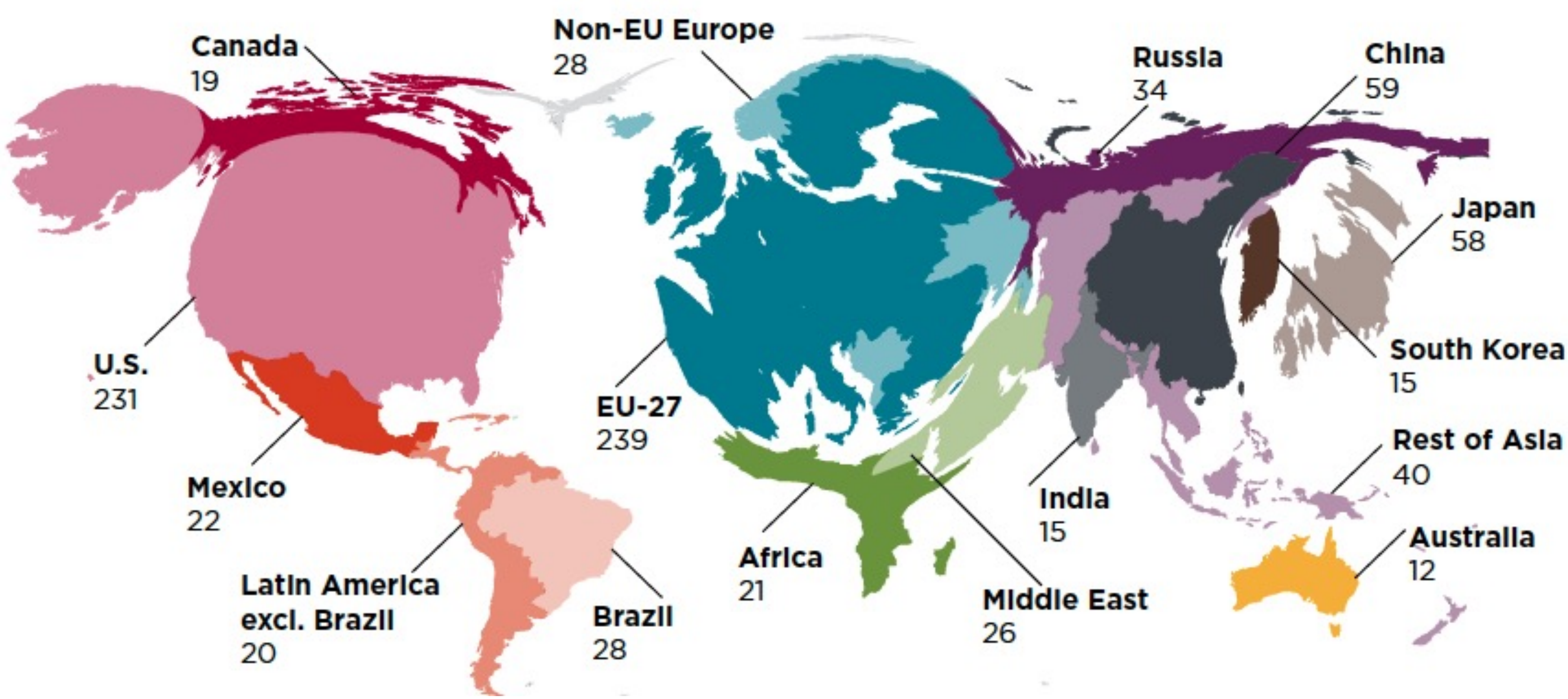
- Transportation consumes ~2,200 million tons of oil equivalent (Mtoe) of energy each year or 25,586 Terawatt hours.
- 700M+ Passenger Car population drives energy use, but hours of operation relatively low (~5% of time)

Light Duty Vehicles includes Passenger Cars and Light Duty Trucks <3.5T

Source: IEA, World Energy Outlook (2012), World Economic Forum, Repowering Transport April 2011 Ward's Automotive Group, Vehicles by Country 2011

Vehicle Population Provides Large Opportunity

Passenger Car Vehicle Stock 2013 (millions)



2015 Production: 68M Passenger Cars and 18M Light Duty Trucks

Source: European Vehicles Market Statistics, Pocketbook 2013
International Organization of Motor Vehicle Manufacturers 2016

Motive Markets

- 3.4M medium & heavy duty trucks per year
- 0.3M buses per year
- Average of 200kW power, utilized 30-70% of time
- 3,500 terawatt hour electricity potential (add per year)
- **> EU existing electricity generation**

- 86M automobile & light duty Trucks per year
- Average of 100kW power, only used on road 5% of time
- SunCell generate power other 95%
- 46,000 terawatt hour electricity potential (added per year)
- **2X existing global electricity generation**

- Trains and ships comprise mobile electric power plants and have a substantial electric hotel load
- Unique requirements for aviation, unmanned aerial vehicles (UAV) and business jets may be entry points, early electric jets have been demonstrated as the industry moves towards electrification

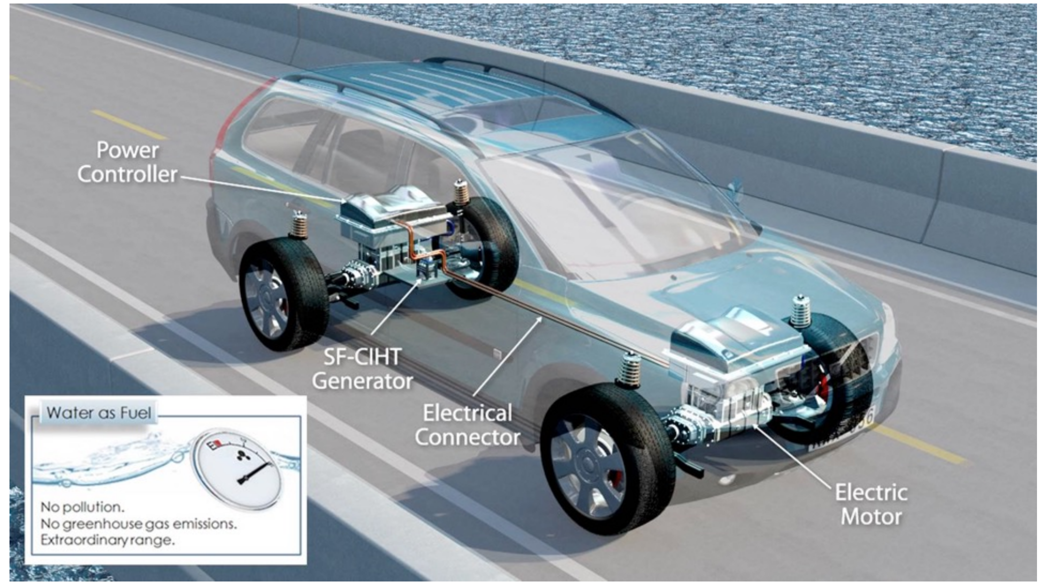
Source: ATKearney – Global Truck Study – Perspectives towards 2030
International Organization of Motor Vehicle Manufacturers 2016

Motive EV Charging: Car Market Launch

- EV's can replace internal combustion engine cars, but convenient high-power electricity is needed
- The cost of the required massive power plant and grid build out that would be in the trillions (doubling of the current infrastructure) is avoided by deploying autonomous distributed SunCell charging stations
- Batteries are more expensive than a SunCell of the same power, but a charging station can be run continuously such that the SunCell economics based on high utilization are better
- Charge $0.05 per kWh with savings of about half the current cost of electric battery charging
- We get paid per kWh. If we put a 250 kW SunCell in a car that is driven 1 hour per day we earn 250 kWh/day X $0.15/kWh = $37.5/day
- If we charge batteries, we earn 250 kW X 24 hours/day X $0.15/kWh = $900/day
- And, the capital cost is 1/24th that of putting 24 SunCells in 24 cars to earn the equivalent of one battery charging SunCell.

Motive Car Market Launch

- Over 2200 miles per liter of water.*
- Projected cost of $~20 per kW electric.
- One third the weight of an internal combustion engine (ICE).
- Projected 250 kW (333 HP) SunCell and electric drive system is less than that of a comparable combustion system.
- Has the potential of unsurpassed capability in terms of range, capital cost, power, logistics, and pollution abatement to zero including zero carbon dioxide emission.

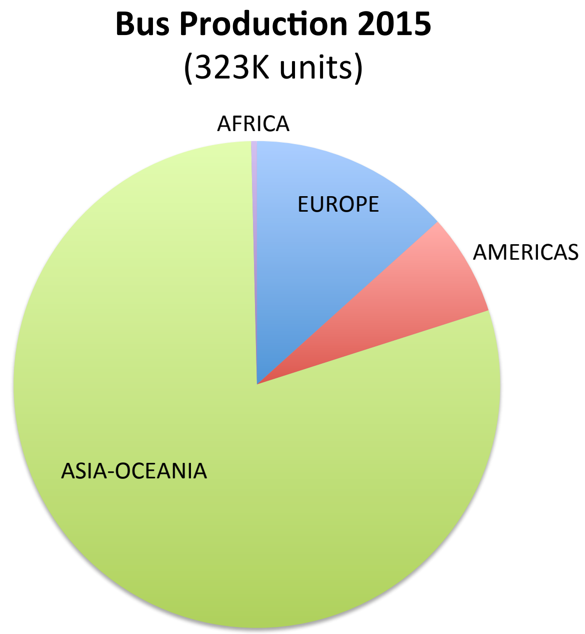


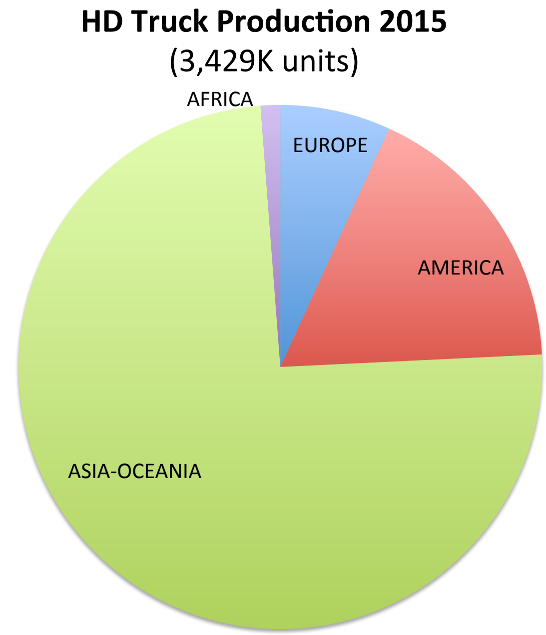
Given that cars only use about $20k in fuel ($2000/y), it makes more sense to sell with restrictions on use. Using the cost of the electric car battery, $20k which is also the fuel savings to the buyer, as a reasonable price for a car SunCell and given the volume of 100M cars/year, the projected annual revenue is 100M x $20k = $2T/y.

****Calculations:*** H_2O to $H_2(1/4)$ + $1/2O_2$ (50MJ/mole or 2.78 GJ/kg, 2.78 GJ/liter); Model S energy consumption rate of 291 Wh/mile (http://www.teslamotors.com/goelectric#savings)

1 Whr = 3600 J; Model S energy consumption rate of 1 MJ/mile; 2780 MJ/liter /(1 MJ/mile) X 0.8 (PV efficiency) = 2224 miles/liter

Trucks & Buses Have High Power Utilization



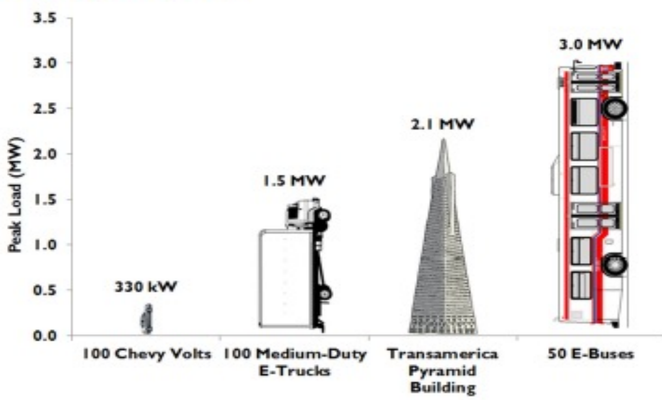


- 3.8 million units per year
- 22% of global transportation energy use with 4% of annual volume
- #1 cost driver is fuel; 39-71% of total operating cost
- High utilization rates
  - Buses: 12-20 hours of operation per day
  - Trucks: 8-14 hours of operation per day
  - Autonomous driver technology has potential to drive up utilization

Source: ATKearney – Global Truck Study – Perspectives towards 2030
International Organization of Motor Vehicle Manufacturers 2016

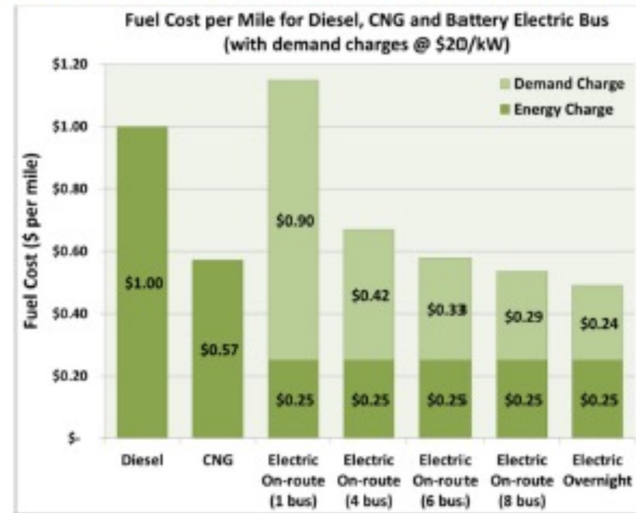
Motive EV Charging: Bus and Truck Market Launch

Figure 14: Peak loads for various electric vehicle fleets (without mitigating grid impacts)



Assumptions: the Chevy Volt charging rate is 3.3 kW, the medium-duty E-Truck charging rate is 15 kW and the E-Bus charging rate is 60 kW. The peak load for the Transamerica Pyramid building is from [26].

Figure 11: Impact of peak demand charges on E-Buses



Source: CALSTART [19]

Assumptions:
Each bus drives 40,000 miles per year. The diesel bus has a fuel economy of 4 MPG and diesel is priced at $4.00 per gallon. The CNG bus has a fuel economy of 3.5 MPDGE and CNG is priced at $2.00 per DGE. The electric transit buses have an efficiency of 2.5 AC kWh/mile and electricity is priced at $0.10/kWh. One electric bus charging on-route draws 150 kW from the grid, 4 draw 280 kW, 6 draw 330 kW and 8 draw 380 kW. The electric bus charging overnight draws 40 kW from the grid.

- Municipalities are rapidly adopting electric buses
- Freight trucks are also being electrified
- SunCell charger eliminates demand charge, transmission charge, utility regulations and bureaucracy, electrical infrastructure build out
- Charge per kWh with savings of about half the current cost of electric battery charging
- Batteries are more expensive than a SunCell of the same power, but a charging station can be run continuously so the SunCell economics based on utilization are better

SunCell® Energy Solutions

Advantages	Thermal SunCell®	Power SunCell®
Technology	Proprietary SunCell®.	Proprietary TPV or MHD SunCells®.
Environmental	Non-polluting, water or hydrogen as fuel.	Non-polluting, water or hydrogen as fuel.
Operation	Autonomous of fuel and grid infrastructure. Continuous thermal.	Autonomous of fuel and grid infrastructure. Continuous DC.
Safety	Safe, sealed system.	Safe, sealed system.
Lease Model	1/10th Capital Cost. Lease power model with revenue (~$0.06/kWh thermal).	1/10th Capital Cost (TPV or MHD). No metering, lease power model per diem (~$0.05/kWh DC).
Scale	100kW to MWs thermal.	10kW to MWs DC or AC with converter.

Thermal

- We have developed a 250 kW, direct SunCell® to steam boiler to produce hot water and steam for the corresponding thermal markets. The steam boiler is also capable of powering refrigeration, air conditioning, and cooling of data centers using absorption chillers to serve those markets.
- We have developed 250 kW, direct SunCell® to air heat exchanger to produce variable heated air in the range of 100 °C to 400 °C to service the balance of the $4.8T/y thermal markets which corresponds to 1/2 of the world's power market with elimination of 1/3 of the world's CO_2 emissions.


World's First Closed SunCell 8/2018


250 kW Commercial Design

We believe that Brilliant's SunCell® is the most important energy technology ever.

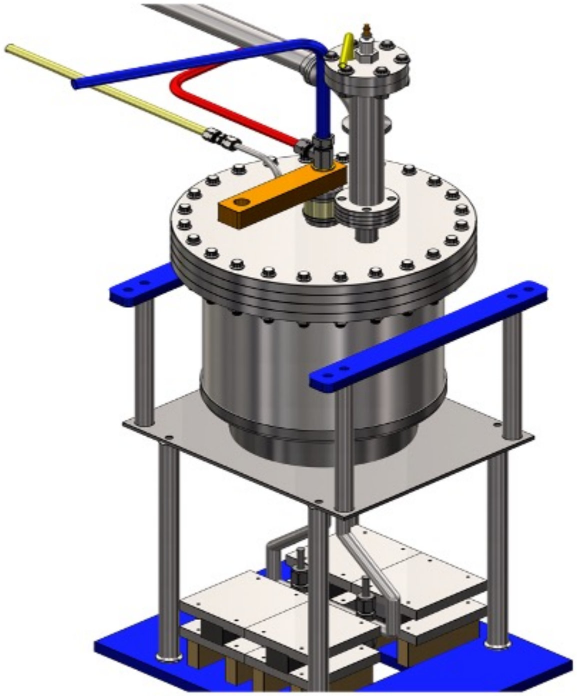
brilliant LIGHT POWER

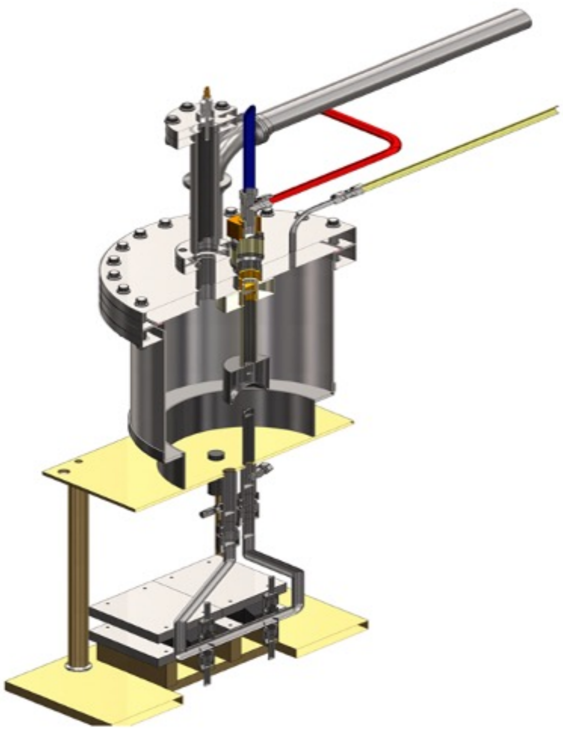
Validation: Steam Loss Calorimetry Measured 210 kW of Continuous Steam Production by the Hydrino Reaction Maintained in a SunCell® Operated as a Boiler

Dr. Mark Nansteel, Ph.D. University of California, Berkeley and heat transfer expert validated 210 kW of excess power produced by a hydrino plasma reaction maintained in a SunCell® using mass balance in the production of steam. The hydrino reaction was shown to be dependent on operating temperature and activation of the gas reactants by a glow discharge plasma. (https://brilliantlightpower.com/pdf/Report_on_Water_Bath_Calorimetry_12.04.20.pdf)

Steam production was maintained over a 100-hour duration in an internal field trial demonstrating the utility of SunCell® towards the goal of a commercial heater of over hundred kilowatts to service the greater than $4.8T/y thermal market.

Discharge	Gallium Temperature (°C)	Duration (s)	Input Energy (kJ)	Output Energy (kJ)	Input power (kW)	Output Power (kW)	Power Gain	Net Excess Power (kW)
Yes	196	302	10,346	16,480	34.26	54.57	1.59	20.3
Yes	177	296	9341	18,708	31.56	63.2	2	31.7
No	458	167	6951	16,264	41.62	97.39	2.34	55.8
Yes	425	200	7800	26,392	39	131.96	3.38	93
Yes	716	50	3232	10,480	65	274.2	4.22	210





250 kW SUNCELL BOMS & COGS

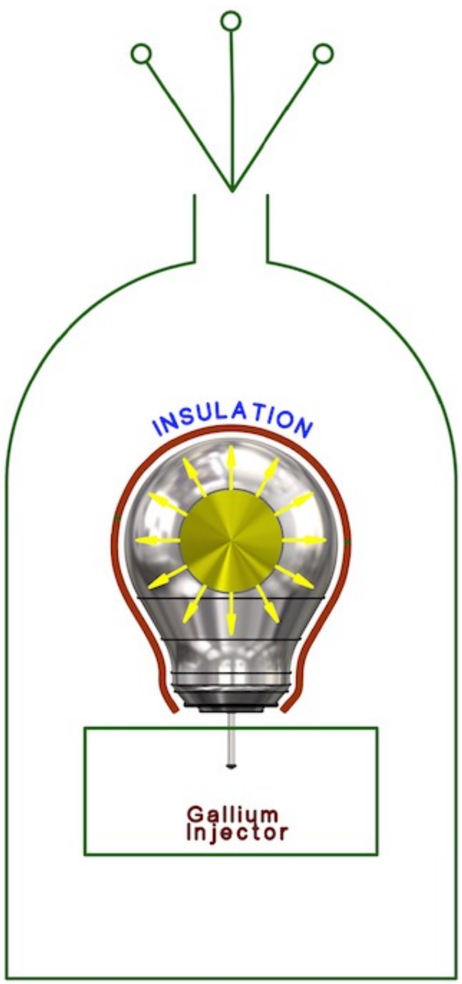
Magnet Assembly	$200
Pump tube	$11.81
EM Pump tube Brackets	$0.11
CF Flange Blank	$82.61
CF Flange Bore Through	$67.35
Reactor Chamber	$27.12
Carbon/Tungsten Double Liner	$400
Tungsten Electrode	$118
Feedthrough	$175
Nozzle	$15
Gallium	$150
Controller	$150
Vacuum Pump	$500
EM Pump Power Supply	$1000
Ignition Power Supply	$2000
Insulation	$20
Total	$4917

No moving parts, all parts are reusable or recyclable.

How the Thermal SunCell® Works

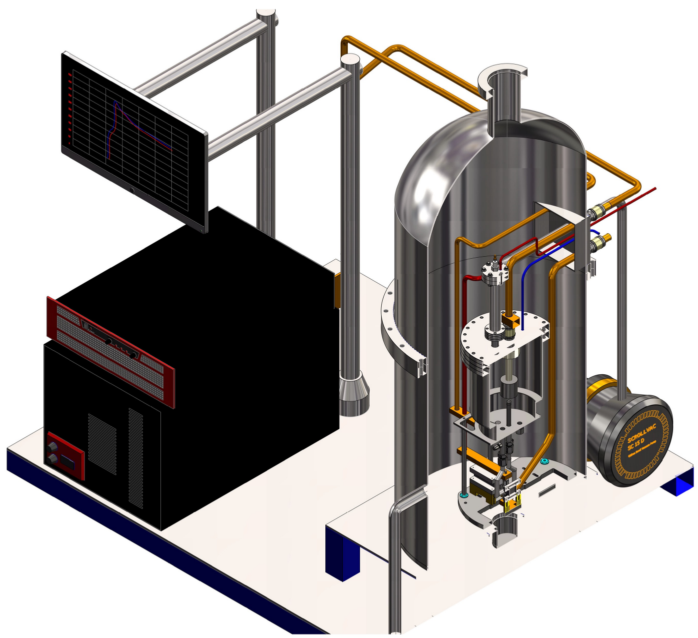
Thermal SunCell® Units with Steam Boiler

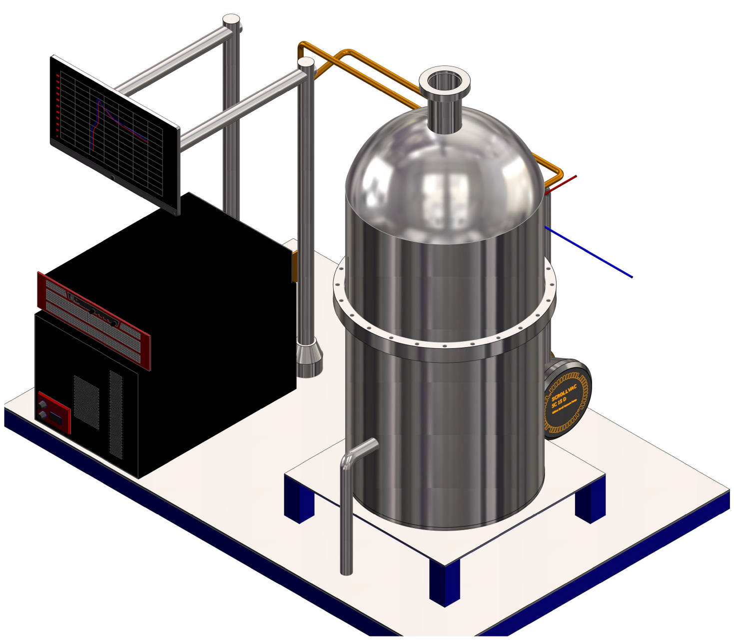
- A hydrogen and catalyst injector and an electromagnetic pump serves as an electrode that further injects molten gallium against a counter electrode to form a Hydrino®-reaction plasma in a reaction chamber that heats the gallium inventory in a reservoir to a high temperature such as 1000 °C.
- The gallium is recirculated internally to distribute the heat in the reaction chamber and the reservoir.
- The plasma and gallium become very elevated in temperature due to the power release with the reaction chamber thermally insulated.
- Heat exchange occurs at the outer surfaces of the reaction chamber and reservoir to cause water to boil to steam.
- The steam in a controllable pressure range of 0.5 to 15 atm exits a pipe at the top of the steam boiler pressure vessel containing the SunCell®.



250 kW SunCell with Steam Boiler (0.5-15 atm)

250 kW SUNCELL Steam Boiler BOMS & COGS

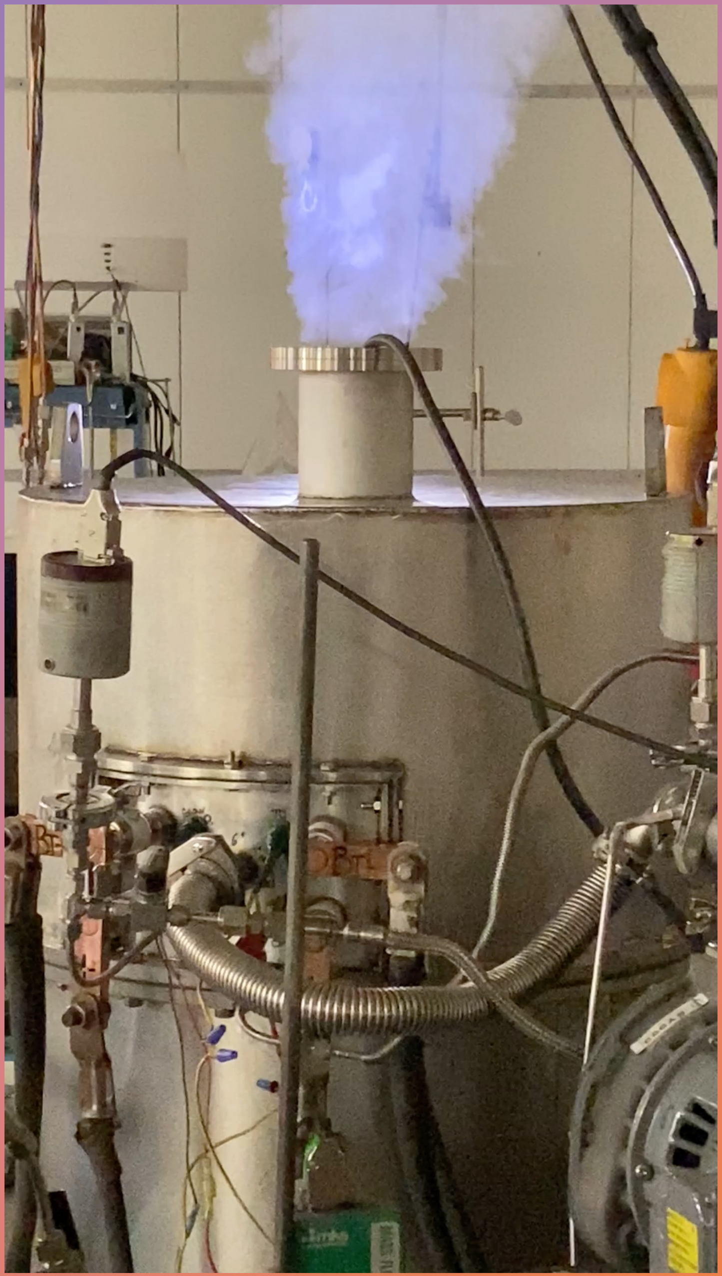




Frame	$551
SS Steam chamber	$1000
Electrical Connection Assembly	$200
Magnet Assembly	$200
Pump tube	$11.81
EM Pump tube Brackets	$0.11
CF Flange Blank	$82.61
CF Flange Bore Through	$67.35
Reactor Chamber	$27.12
Carbon/Tungsten Double Liner	$400
Tungsten Electrode	$118
Feedthrough	$175
Nozzle	$15
Gallium	$150
Controller	$150
Vacuum Pump	$500
EM Pump Power Supply	$1000
Ignition Power Supply	$2000
Insulation	$20
Total	$6668

No moving parts, all parts are reusable or recyclable.

Commercial Pilot Steam Boiler



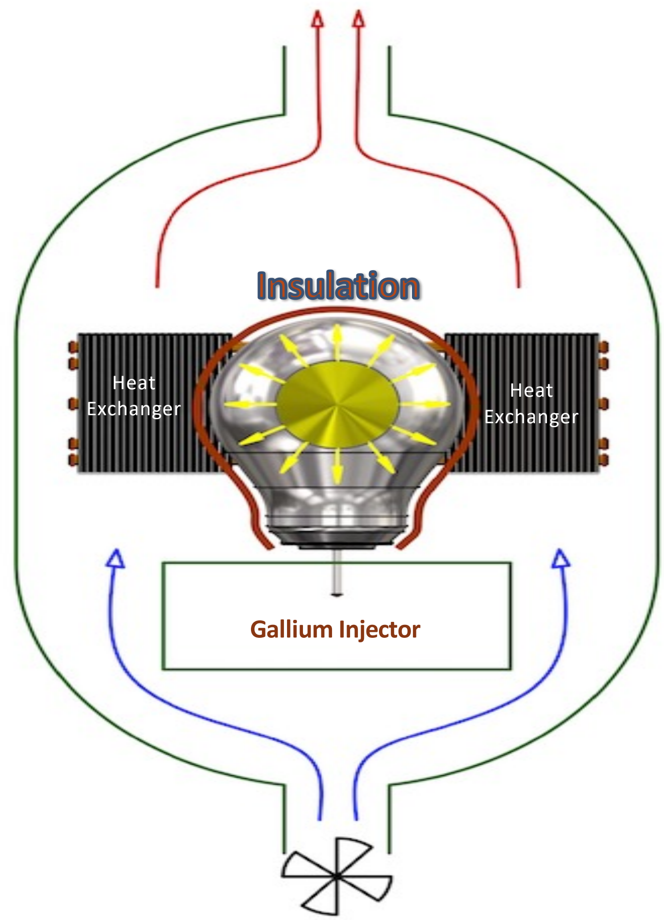
Cooling Market

- Beyond direct thermal, the heat from the SunCell® can serve cooling markets.
- A low pressure (1 -3 atm) steam boiler thermally powered by a SunCell® has cooling applications such as refrigeration, air conditioning, and cooling data centers by mating the boiler to a commercial absorption chiller.
- The economics, maintenance, logistics, and environment aspects may be superior compared to electrical-powered chillers.

How the Thermal SunCell® Works

Thermal SunCell® Units with Surface-Mounted Heat Pipe Heat Exchanger

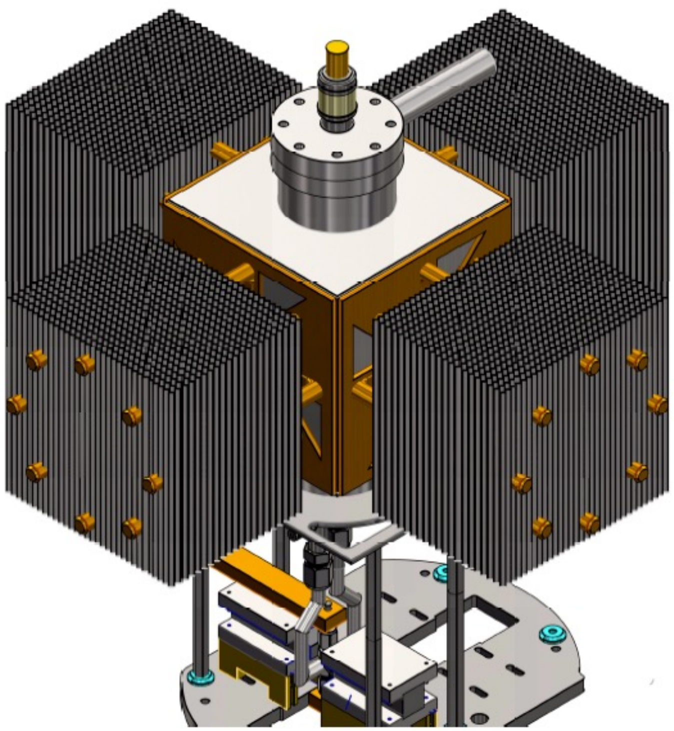
- A hydrogen and catalyst injector and an electromagnetic pump serves as an electrode that further injects molten gallium against a counter electrode to form a Hydrino®-reaction plasma in a reaction chamber that heats the gallium inventory in a reservoir to a high temperature such as 1000 °C.
- The gallium is recirculated internally to distribute the heat in the reaction chamber and the reservoir.
- The plasma and gallium become very elevated in temperature due to the power release with the reaction chamber thermally insulated.
- Heat exchange occurs at the outer surfaces of the reaction chamber and reservoir wherein plasma and molten metal transfer heat to the surfaces at very high rates.
- Heat is removed from the surfaces by surface-mounted heat pipe heat exchangers
- The heat is transferred to air flowed through the heat exchangers by a blower.
- Variable temperature heated air in the controlled temperature range 100 °C to 400 °C exits a pipe at the top of cowling containing the SunCell® and heat exchangers.



250 kW SunCell with 100°C to 400 °C variable temperature air

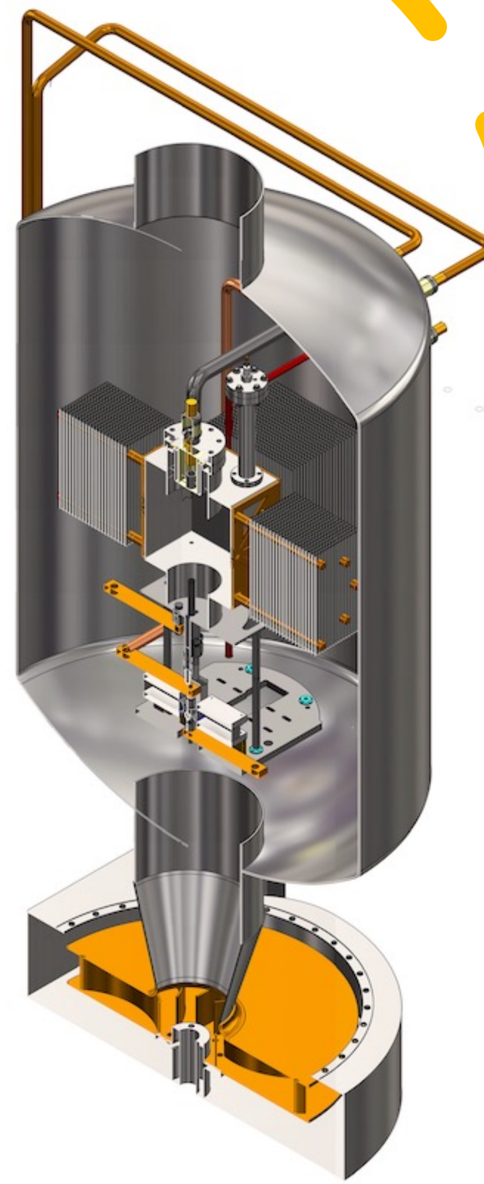
brilliant LIGHT POWER

250 kW SUNCELL-Heat Pipe Heat Exchanger BOMS & COGS

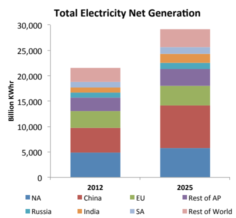


Aluminum Sheet	$482.32
Copper Plate	$378
Alloy 600 Tube	$500
Capillary Wicks	$2,165
Potassium Working Fluid	$10
Frame	$551
Chamber	$250
Electrical Connection Assembly	$200
Magnet Assembly	$200
Pump tube	$11.81
EM Pump tube Brackets	$0.11
CF Flange Blank	$82.61
CF Flange Bore Through	$67.35
Reactor Chamber	$27.12
Tungsten Double Liner	$300
Tungsten Electrode	$118
Feedthrough	$175
Nozzle	$15
Tin	$20
Controller	$150
Vacuum Pump	$500
EM Pump Power Supply	$1000
Ignition Power Supply	$2000
Insulation	$20
Total	$9,223.32

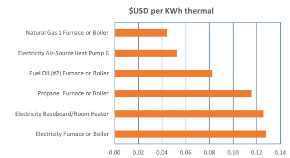
No moving parts, all parts are reusable or recyclable.



Why Heat?



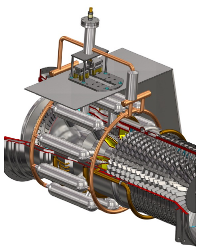
$4 Trillion USD Heat market vs. $3.5 Trillion USD Electric



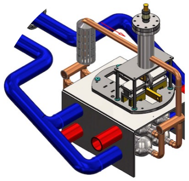
Bigger Market

150kW Electric SunCell® = 500kW Heat

3x Efficient



SunCell® capital cost much less



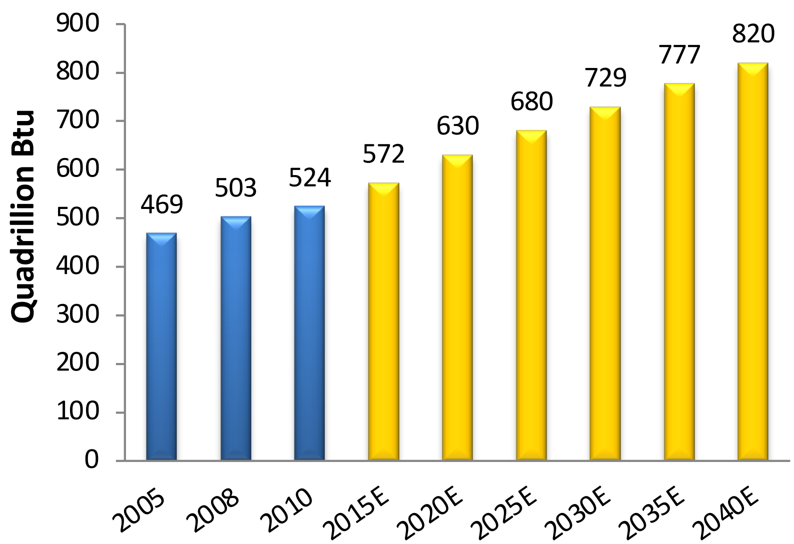
50 x Less Cost

Reduced time-to-market generating the same revenues from per diem leases per SunCell® a higher margin than electric applications…

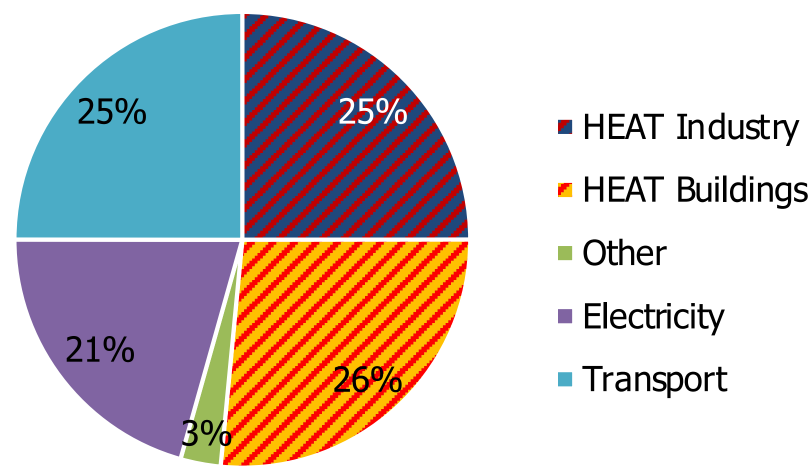
Global "Heat" Market

- $4.8 trillion~ expended on total fossil fuels globally in 2013
- 1/2+ of final energy consumption for Heat applications in Industry and Buildings
- 3/4 Heat from fossil fuels
- 1/3 of worldwide CO2 emissions from Heat sources
- Modest average annual growth of 2.6% from 2008-2012

Global Energy Consumption



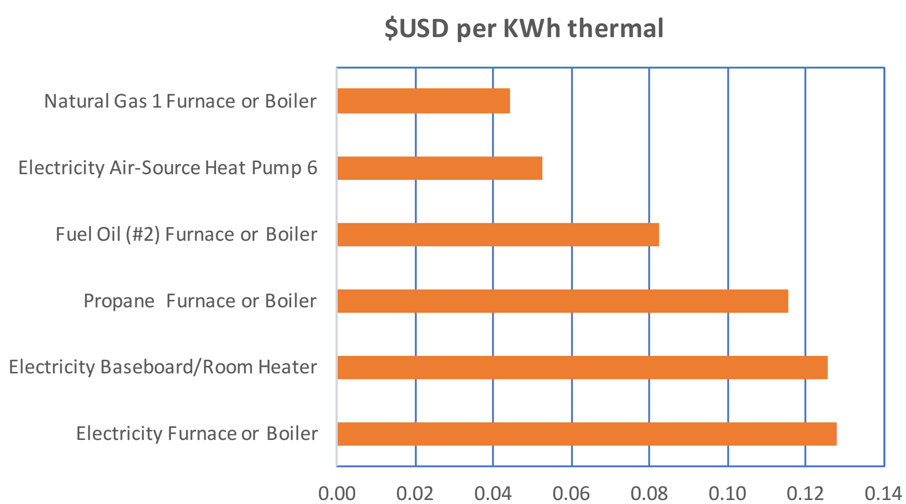
Final Energy Use



Sources: EIA IEO 2013, International Energy Agency and management estimates, Heating Without Global Warming – International Energy Agency 2014
172 EJ for Heat = 163 Quadrillion Btu
Carbon emissions from burning biomass for energy, Partnership for Policy Integrity

Heat Costs & Equipment Vary Widely

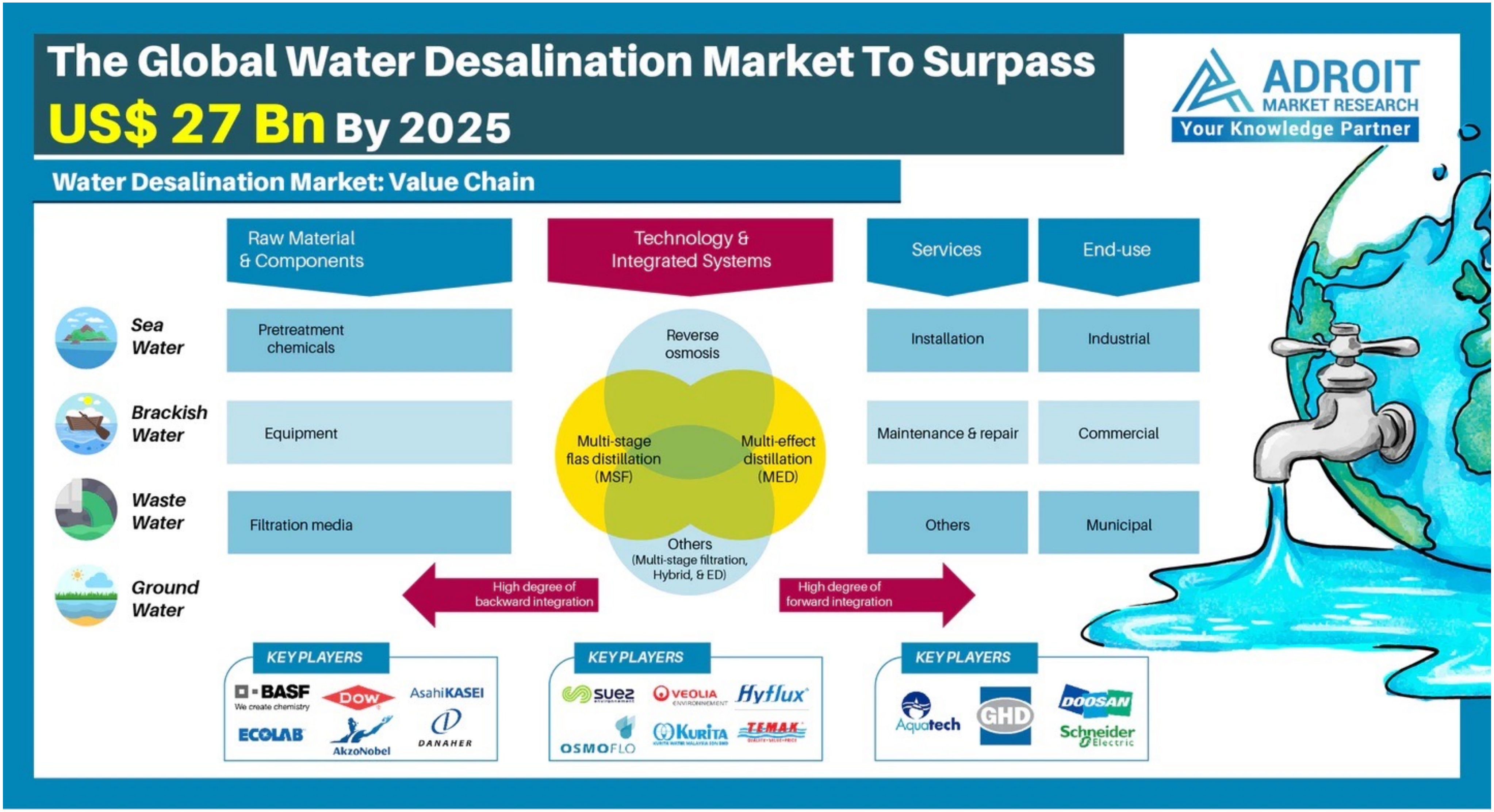
- Existing heat fuel sources are diverse
- Equipment offerings range from primitive to massively complex:
  - Biomass stoves & furnaces
  - Natural gas furnaces
  - Electrical heat pumps
  - Low-grade solar heat for air and water
  - Landfill gas for boilers,
  - Resistive electrical heaters
  - Direct geothermal
  - Co-gen power plant district heat
- US residential heating example
  - Costs vary almost 3X depending on the fuel and equipment combination
  - Small unit power for a SunCell®, but consider Buildings and Industry



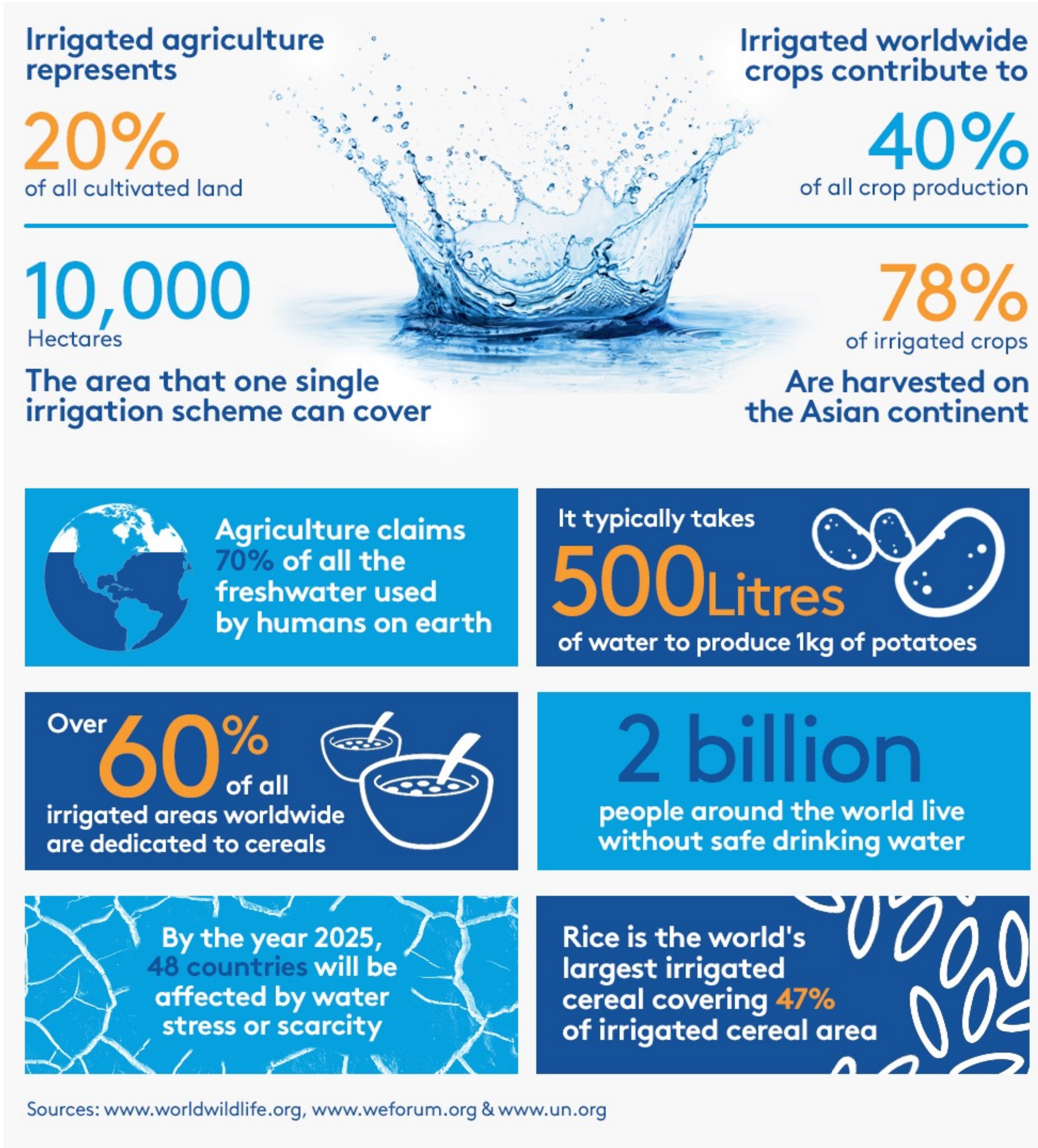
- Target high fuel cost segments & customers that match SunCell thermal output (200KW to 1MW)
- Target high-value industrial partners for applying SunCell to "standardized" segments

Sources: modeled cost using Heating Cost Calculator Auburn University
https://ag.purdue.edu/extension/renewable-energy/Documents/ON.../heatcalc.xls

Desalination



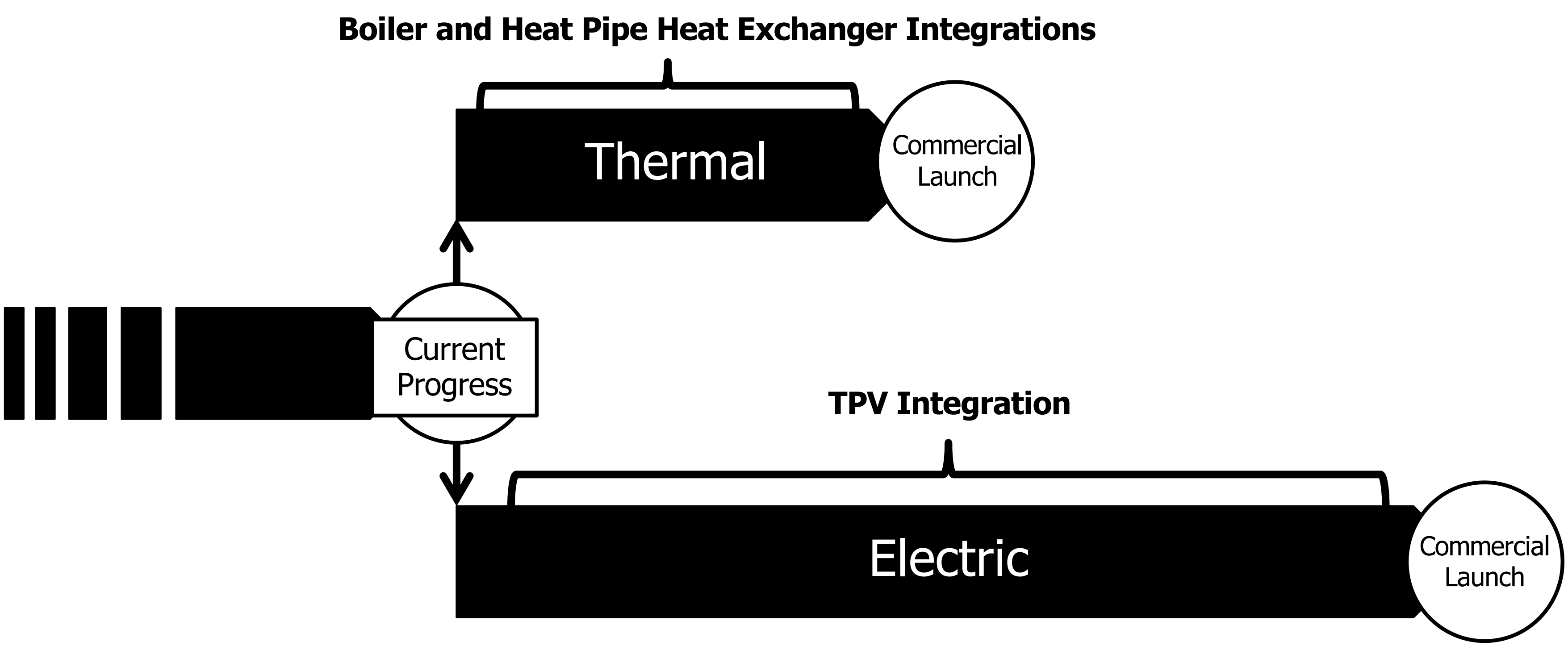
Desalination cont'd



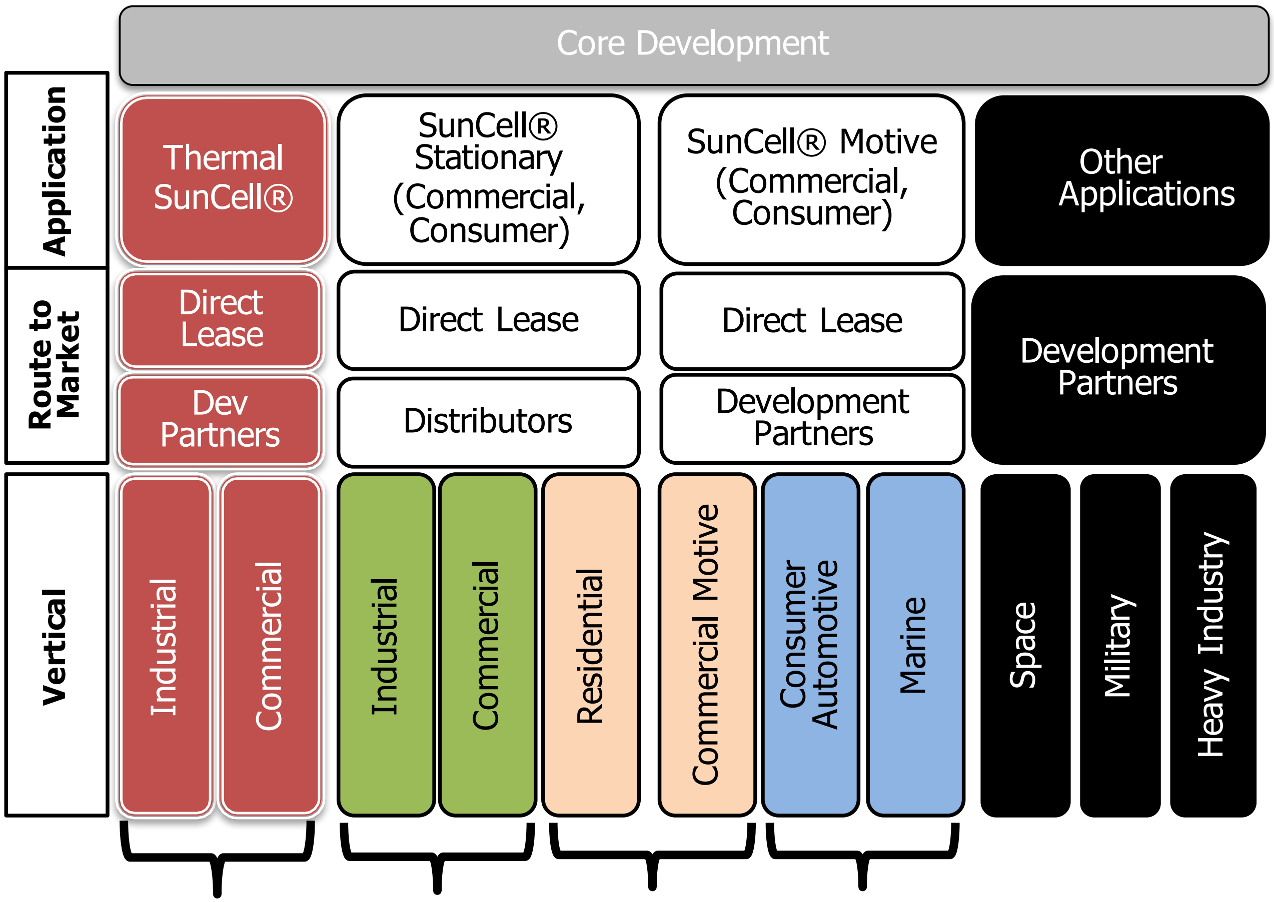
SunCell® development program

The SunCell® development program is broken into commercial pathways:

- **Thermal** – 250 kW SunCell® that outputs boiling water and atmospheric pressure steam. SunCell® with heat-pipe heat exchanger comprises a commercial heater capable of delivering 250 kW^{+} 100°C to 400°C variable temperature hot air. Integrations for commercial packaging and regulatory approvals
- **Electric** – Direct SunCell® to TPV integration engineering in progress to output 150kW^{+} of DC power. SunCells® can be ganged to any desired power level.



Brilliant Light Power Go-To-Market Model



GTM Launch Phases

Phase 1 – 250 kW Thermal Unit- Launch to Industrial, Commercial and Multi-tenant residential markets

Phase 2 – 150kW Electric Unit - Launch to Industrial, Commercial and Multi-tenant residential markets

Phase 3 – launch to Residential through Direct Lease and Commercial Automotive with Development Partner

Phase 4 – Improved/Modified Units – launch to Consumer Automotive Sales and Marine leases through Direct Lease and Development Partner models

***Development Partners –** *Engaged at any phase under Development Partner agreement*

Patent Portfolio Summary

International Application No.	National Phase Countries Pending/Granted	Currently Granted In
PCT/US08/61455	AU, GC, HK, ID, IN, KR, MX, SG, TW, US, ZA	AU, HK, IN, ID, KR, MX, SG, ZA, TW
PCT/US09/52072	AR, AP, AU, BS, CN, CG, EA, GC, HK, ID, IN, IL, JM, JP, KR, MO, MX, PA, PK, SG, US, TH, VE	AP, AU, CN, EA, GC, HK, ID, KR, MO, MX, PA, TW, ZA
PCT/US10/27828	AP, EA, HK, ID, IN, MX, SG, US, ZA	AP, EA, ID, MX, ZA
PCT/US11/28889	AU, CN, EP, HK, ID, IN, IL, KR, MX, SG, US	CN, EP (DE, ES, FR, GB, IR, IT, ND), HK, ID, IL, MX, SG
PCT/US12/31639	CN, EA, AW, EP, GC, HT, HK, ID, JM, SG, US	AW, GC, ID
PCT/US2013/041938	CN, EA, JP, TW, US, ZA	EA, JP, TW, ZA
PCT/US2014/032584	AU, BR, CA, CN, EA, EP, HK, ID, IN, IL, JP, KR, MX, TW, US, ZA	CN, EP (DE, DK, CH, ES, FR, GB, IR, IT, ND), TW, ZA
PCT/IB2014/058177	AR, BR, CA, CN, EA, EP, HK, ID, IN, IL, JP, KR, MX, TW, US, ZA	CN, HK, TW, US
PCT/US2015/033165	AU, BR, CA, CN, EA, EP, HK, ID, IN, IL, JP, KR, MX, PK, SG, TW, US, ZA	CN, HK, ZA, US
PCT/US2016/012620	AE, AU, BR, CA, CN, EA, EP, HK, ID, IN, IL, JP, KR, KW, MX, OM, QA, SA, SG, TW, UE, US, ZA	JP, ZA
PCT/US2017/13972	AU, BH, BR, CA, CN, EA, EP, ID, IN, IL, JP, KR, KW, MX, OM, QA, SA, SG, TW, US, ZA	ZA
PCT/US17/35025	CA, CN, EP, JP, KR, MX, US, TW	
PCT/US18/17765	AU, BR, CA, CN, EA, EP, ID, IN, IL, JP, KR, MX, SG, TW, US	
PCT/IB2018/059646	AR, AU, BR, CA, CN, EA, EP, ID, IN, JP, KR, MX, SG, TW, US, ZA	
PCT/US04/010608	EA, JP, KR, SG, ZA	EA, KR, SG, ZA
PCT/US02/06955	AP, EA, KR, MX, TR, ZA	AP, EA, MX, ZA, TK
PCT/US04/035143	US	US
PCT/US01/09055	AU, IN, ZA	
PCT/US18/12635	US, EP, HK	
PCT/IB20/50360	TW, 30 Month Date in June 2021	

Brilliant Light Power's Path Forward

- Our first goal is to pursue commercial thermal and absorption chiller power sources and electrical power sources for essentially all power markets at the modular scale of 100-250 kW.
- SunCell-Boiler, SunCell-Air Heat Exchanger, and SunCell-TPV Electric Power systems are capable of being commercialized using known vendor-supplied components given in the corresponding bill of materials.
- The commercial packaging is being performed internally while incorporating changes from a certification company such as Intertek to be contracted to process UL approval.

We believe that Brilliant's SunCell® is the most important energy technology ever.

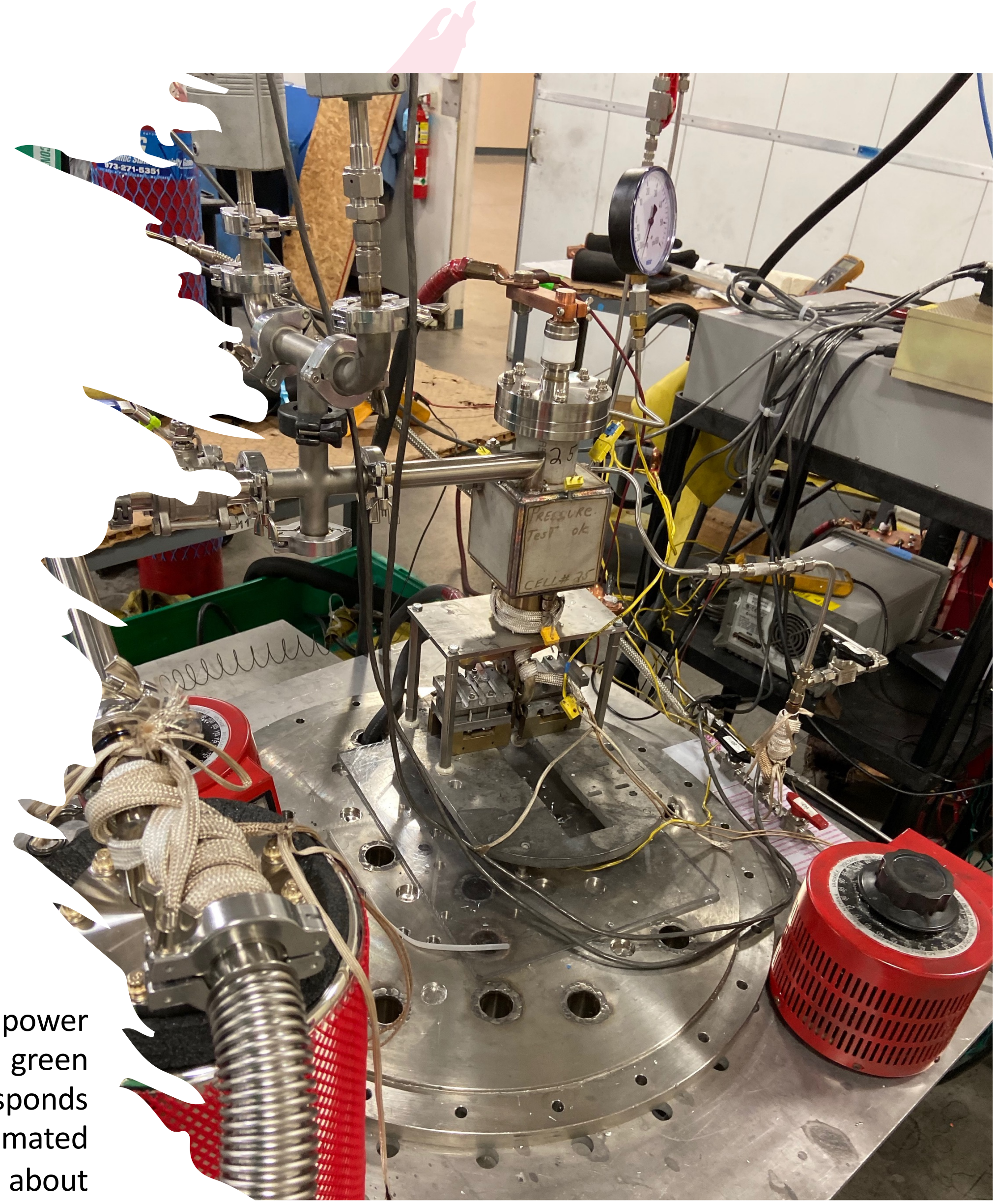
Brilliant Light Power's Path Forward

- We are outsourcing control systems to a service automation company such as Beckhoff.
- We plan to outsource fabricated parts and assembly to large contract manufacturers such as Sanmina and Jabil.
- To launch commercialization, we are pursuing validation through industry testing of the steam boiler.
- Theory resistance will be addressed by further independent Hydrino analytical validation.

We believe that Brilliant's SunCell® is the most important energy technology ever.

THE SUNCELL® can Revolutionize Renewable Power Prices and Deployment

Drop-in and Pay for Itself in a Week of Operation



- The SunCell® is dirt cheap, ($20-200 per KW depending on the application), the fuel is water, there is no pollution, no fuel infrastructure connection, and no grid connection which means no Federal regulation. With a time-based lease and no metering, a local installation permit is all that is needed.
- The formula for revenue is Cell power in kilowatts X 24 h/day X 365 d/y X $/kWh
- So take our cells that make 300 kW at a typical $0.1/kWh for either heat or electricity, the corresponding projected revenue is
- 300 X 24 X 365 X 0.1 = $263,800 per year
- In the case of $0.12/kWh, the projected revenue is
- 300 X 24 X 365 X 0.12 = $315,360 per year
- In Hawaii, Japan, Germany, Caribbean, power cost can be $0.35/kWh, and the corresponding projected revenue is
- 300 X 24 X 365 X 0.35 = $919,800 per year
- As an approximate rule, the SunCell is projected to generate a dollar per watt per year.
- We believe that 100 M cells can be manufactured per year.

An interesting aspect of the SunCell when considering that the world power capacity is about 15 terawatts is that the cost to convert the world to green power is inexpensive and can occur quickly since world capacity corresponds to only 60 M SunCells which can be manufactured in a year at an estimated cost of $210 B. (cost of thermal and electrical are expected to be about equivalent using an TPV converter).

Summary

- Brilliant Light Power, Inc. is developing a new zero-pollution, primary energy source applicable to essentially all power applications based on breakthrough chemistry of energy release from atomic hydrogen forming Hydrinos®, a more stable chemical form of hydrogen. Using the hydrogen from water molecules serving as the fuel source, the SunCell® cell harnesses this extraordinary power source at up to 5 MW/liter power density and 200 times the energy release compared to burning the hydrogen.

- *Brilliant Light Power's path forward is to:*
  - *Prove our power source to the world in the near term through power field trials, identification of the Hydrino® products of the reaction, and engineered power systems.*
  - Engineer products
  - Commercialize solutions

493 Old Trenton Road · Cranbury NJ 08512 · Phone: 609-490-1090 · Fax: 609-490-1066

- Reinventing thermal and electrical power:
- *safe, accessible, affordable, clean*