# THUNDER ENERGIES CORPORATION

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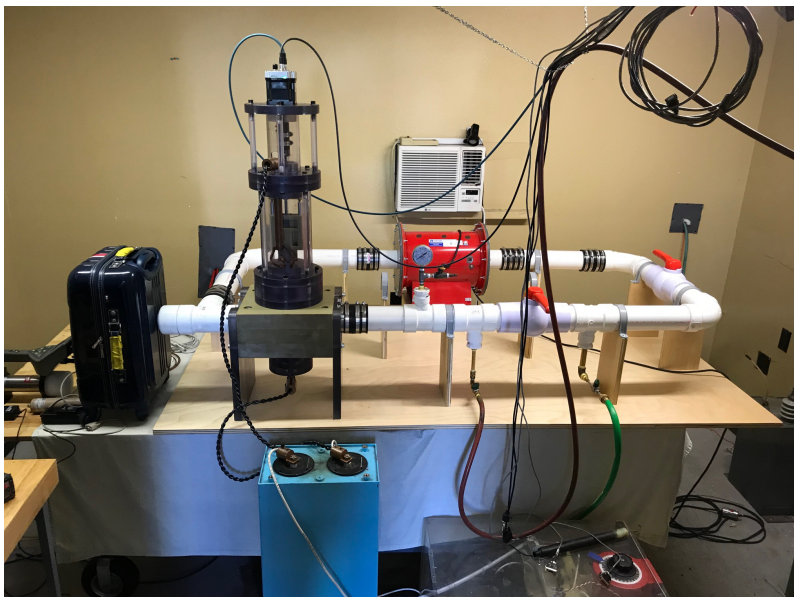
## SPECIFICATIONS OF THE DIRECTIONAL NEUTRON SOURCE

**Model: DNS-3b-5**

**Date: September 12, 2019**



### *FOREWORD*

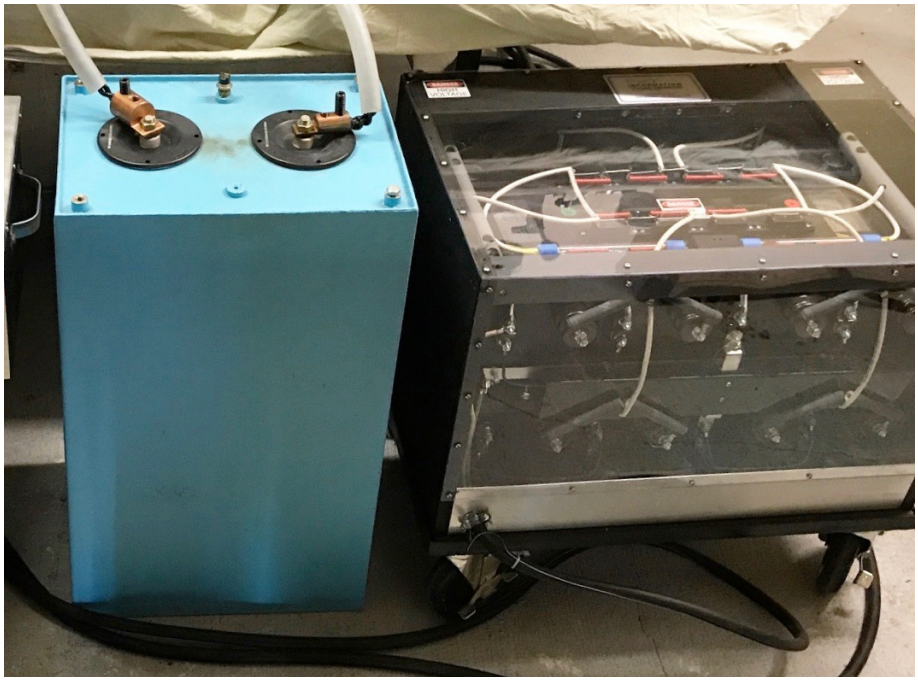
*The biggest threat facing nowadays our societies is the smuggling and detonation of a nuclear bomb in our soil. Our intelligence has done an incredible silent job to prevent this from happening despite the lack of scanners in our airports and ports providing a clear detection of fissile material that can be concealed in baggage. In fact, nuclear fuels such as Uranium 235 are stable metals that, as such, cannot be clearly distinguished from other metals via X-rays. microwave or other scanning equipment (see for details http://www.i-b-r.org/docs/Detection-fissionable-material.pdf). The most effective way for the detection of smuggled nuclear weapons is that of irradiating baggage or grounds with a flux of very low energy neutrons (in the range of a few eV) because, in this case, some of fissile nuclei disintegrate by releasing a shower of radiation which is clearly identified by available neutron, gamma and other detectors. A number of neutron sources are available these days, but they all release very high energy neutrons (in the range of several MeV) that cannot be used in public areas. The Italian American scientist Sir Ruggero M. Santilli (Biographical Noteshttp://www.i-b-r.org/Sir-Santilli-bionotes-05-15-21.pdfi) has conducted decades of mathematical and theoretical studies initiated n the early 1980s at Harvard University under DOE support on the synthesis of the neutron from the Hydrogen in the core of stars. More recently, as Chief Scientist of Thunder Energies Corporation (TEC), Sir Santilli has successfully achieved the industrial synthesis of very low energy neutrons (of the order of eV) from a commercially available hydrogen gas that can be used as duly shielded scanning equipment to detect fissile material that can be concealed in baggage or soils (see the picture above).*

*Thunder Energies Corporation* ***Directional Neutron Source*** *(DNS) model TEC-DNS-3B-5 produces on demand a flux of neutrons synthesized from a hydrogen gas in the preferred direction, with energy ranging from 10 eV to 100 eV, and neutrons ranging from 5 CPS to 90 CPS. The directional character of the neutron flux is achieved via the circulation of the hydrogen gas through a submerged, special design, DC arc synthesizing neutrons; the desired neutron energy is achieved by varying the DC power from 5 kW to 12 kW; the desired neutron CPS are achieved by varying the hydrogen pressure from 5 psi to 20 psi. TEC-DNS-3B-5 is primarily intended for: 1) Scanning baggage or soil for possible concealed fissile material; 2) Use by academic, corporate or military nuclear physics laboratories; 3) Scanning large welding in civilian or military naval constructions; and other uses. Due to the general human presence in the vicinity, TEC-DNS-3B-5 has been designed and constructed to have the "minimal" possible neutron energy and counts. However, TEC-DNS with a smaller or bigger neutron energy range and smaller or bigger neutron CPS can be built on request, including DNS with a high energy neutron flux.*

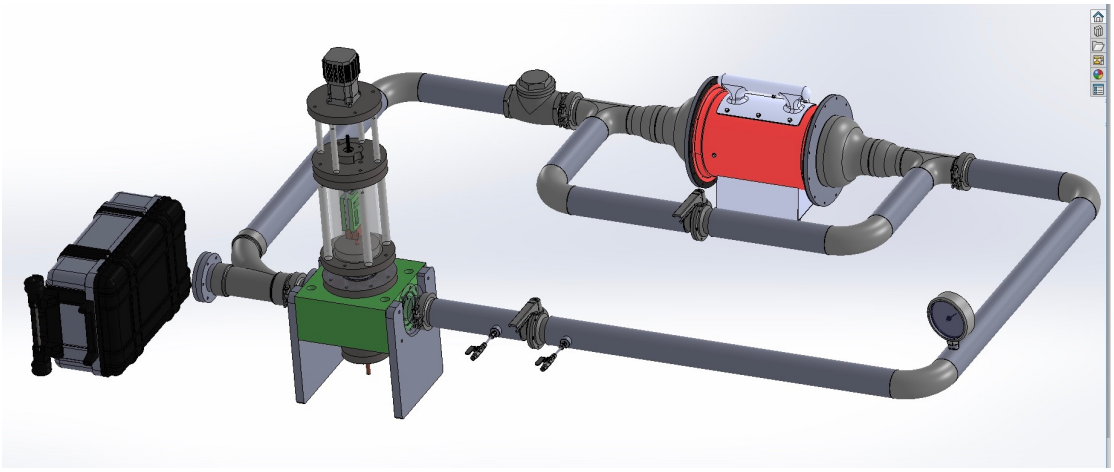

Sample of a Remote Control Station

A view of Santilli Process (international patent

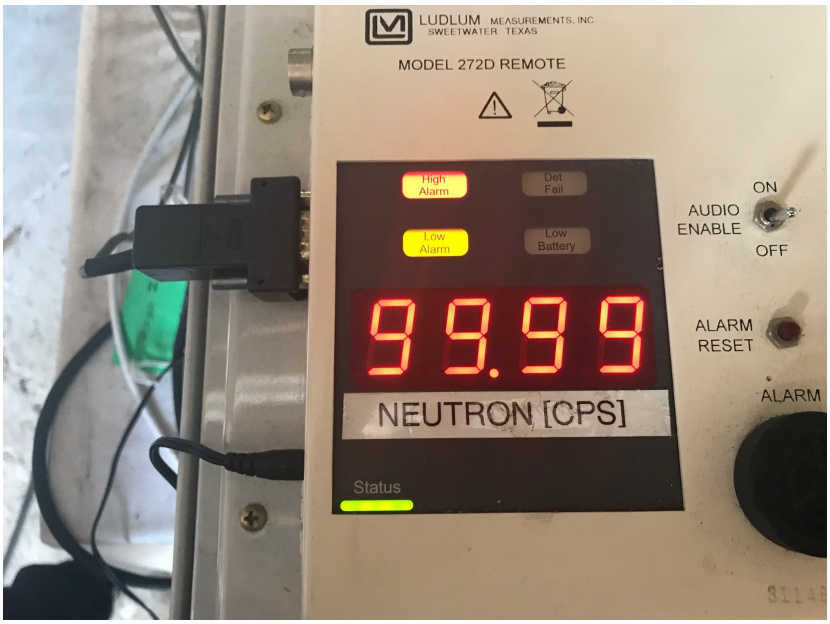
pending) synthesizing neutrons from the hydrogen



A View of the General Atomic capacitor on the left, and of the TEC-DC Power Unit on the right



A view of TEC-DNS-3b-5 showing the Arc Control Tower, the stainless steel hydrogen loop, the hydrogen blower and the exit of the neutron flux




A sample of neutron CPS detected by the Ludlum 375 detector in the remote control panel

Short movie on the operation of the neutron source
http://www.i-b-r.org/docs/MagnaPower.mp4
neutron counts per seconds detected by the Ludlum detector model 375
http://www.i-b-r.org/docs/Ludlum-Alarms.mp4
confirmation of such detection by the Berkeley Nucleonics SAM 940
http://www.i-b-r.org/docs/Sam-Alarms.mp4
confirmation of neutron detectors by the Polimaster PM17

Richard Norman, Anil A. Bhalekar, Simone Beghella Bartoli,
Brian Buckley, Jeremy Dunning-Davies, Jan Rak, Ruggero M. Santilli
"Experimental Confirmation of the Synthesis of Neutrons and Neutroids from
a Hydrogen Gas" , American Journal of Modern Physics, Vol. 6(4-1), page 85-104 (2017)
http://www.santilli-foundation.org/docs/confirmation-neutron-synthesis-2017.pdf

R . M. Santilli, Reduction of Matter in the Universe to Protons and Electrons via the Lie-isotopic Branch of Hadronic Mechanics, Progress in Physics, Vol. 19, 73-99 (2023),\\
https://www.santilli-foundation.org/docs/pip-6.pdf

## SPECIFICATIONS OF THE DNS MODEL TEC-DNS-3B-5

DNS MAIN TOWER
Stainless Steel base Module

Cathode Assembly with adjustable cathode
Heavy duty copper connection
High voltage cable for connection to capacitor
Two heavy duty seals

Anode control tower including:
servomotor for anode control
high voltage cable for connection to capacitor
two heavy duty seal

DNS HYDROGEN LOOP
Stainless steel construction
Valves, inlet and outlet ports
Explosion proof incorporated blower
Final port for neutron flux
Hydrogen pressure gauge

DNS RADIATION SHIELD
2" thick neutron absorbing panel
3 mm. thick metal shield

DNS POWER SYSTEM
12 kW proprietary DC power unit
Variac for remote control of power
100 muF capacitor

DNS REMOTE CONTROL STATION
30 ft away from the shielded DNS
Includes the remote control or monitoring of
Sequential activation switches
Hydrogen pressure detection in loop
Touch screen for arc control
Neutron CPS
Gamma CPS
Variac for power control
Variac for blower control
Switch for rapid disconnect of all functions

DETECTORS
Ludlum 375 neutron and gamma detector
Berkeley Nucleonics 940 neutron and gamma detectors
Two hydrogen alarms
Additional detectors can be purchased by buyer

USER MANUAL WITH PICTURES

SPARE PARTS
Four spare seals
TWO sets of spare electrodes

ATTACHMENT
PDF illustrating the above parts

LIST PRICE
Price on request because it depends on selected accessories such as detectors, capacitors, etc.

TERMS OF SALE
30% at the purchase; 30% upon notification of completion of construction and balance at inspection prior to shipment. All costs are FOB TEC factory in Tarpon Springs, Florida. Packing, shipment and customs to be paid by buyer.

TRAINING
The above sale price includes the training of buyer's technician(s) by TEC technicians. All travel costs of buyer's technicians to be paid by buyer.

DELIVERY TIME
Three months from the date of arrival at TEC bank of the 30% down payment.

WIRE TRANSFER INFORMATION UPON REQUEST

Thunder Energy Corporation signature

IMPORTANT NOTE: TEC DNS are manufactured in the USA for their primary function under Federal regulation, that of ionizing gases. The completion and test of the DNS into neutron producing equipment is performed by our European associates.

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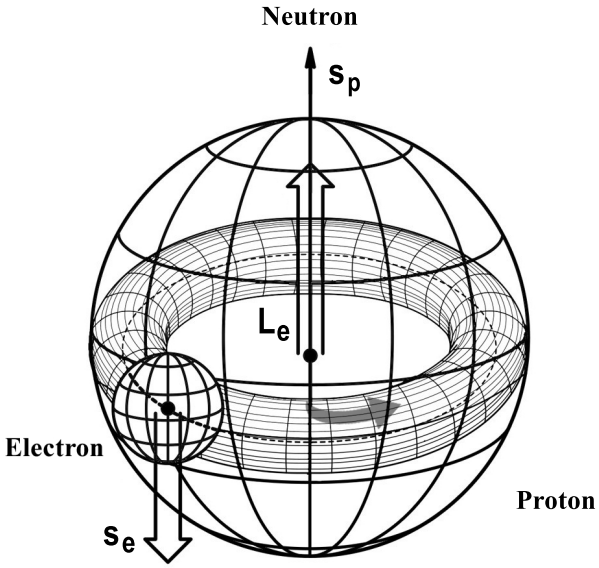
## RESEARCH

### THE LABORATORY SYNTHESIS OF THE NEUTRON FROM THE HYDROGEN

TEC-DNS-3B-5 is the first and only equipment capable of the laboratory synthesis of the neutron from a proton (p) and an electron (e) as occurring in the core of stars

(1) $e + p \rightarrow n + v$

with ensuing large number of possible basic research ,




Stars initiate their lives as an aggregate of hydrogen atoms. When the pressure and temperature in their center reaches certain values, the electron is compressed inside the proton resulting in the synthesis of the neutron. TEC DNS reproduce this synthesis exactly as predicted by Rutherford in 1910.

## THE LABORATORY SYNTHESIS OF THE PSEUDOPROTON FOR NUCLEAR TRANSMUTATIONS WITHOUT HARMFUL RADIATION

Following basic reaction (1), TEC-DNS-3B-5 admits the second reaction with evidently a smaller probability

(2) $e + n \rightarrow p^* + v$

or the synthesis of a valence electron pair (e, e) with null total angular momentum

(3) $(e, e) + p \rightarrow p^* + v$

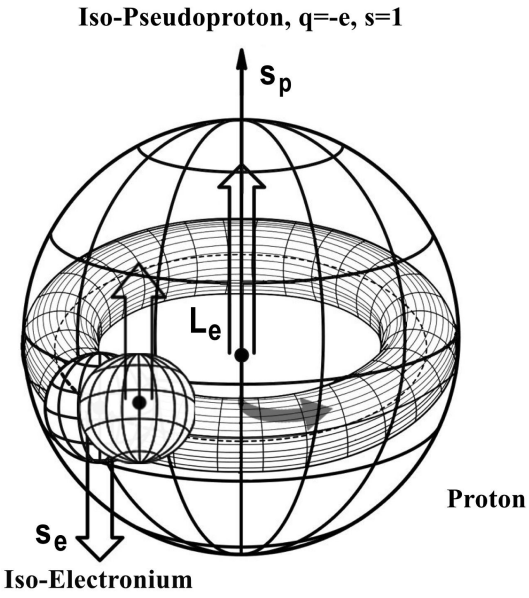
which produces the first known "negatively charged" strongly interacting "particle "(rather than known negatively charged "antiparticle") p* called Santilli pseudoproton.

The importance of the pesudoproton is that, having a meanlife of the order of seconds (like the neutron), permits industrial applications, such as the first study of nuclear energies without harmful radiations via the new transmutation of "light natural, stable elements" into "light natural and stable elements with smaller mass" of the type

(4) p* + Si-28 -> Al-29 (stable isotope) +8.337MeV;

(5) p* +f C-40 -> K-41 (stable isotope) + 8.383 MeV ;

(6) p* + Fe-54 -> Mn-55 + 8.347 Me




A view of Santilli pseudoproton synthesized via the compression of an electron pair inside the proton.

R. M. Santilli, "Apparent Experimental Confirmation of Pseudoprotons and
their Application to New Clean Nuclear Energies,"
International Journal of Applied Physics and Mathematics
Volume 9, Number 2, April 2019
http://www.santilli-foundation.org/docs/pseudoproton-verification-2018.pdf

**THE SYNTHESIS OF POSEUDODEUTERON FOR A CLEAN HELIUM FUSION**

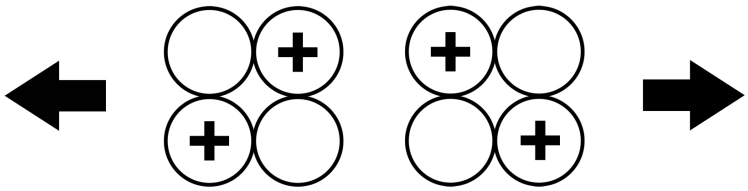
In addition to the the use of hydrogen as feedstock, TEC-DNS-3B-5 can be filled up with deuterium gas resulting in the synthesis of the "negatively charged" pseudo-deuteron

(7) (e, e) + D(1, 2, 1) -> D*(-1, 2, 1),

which are "attracted" (rather than repelled) by nuclei, thus permitting
the study of their fusion into the helium

(8) D*(-1, 2, 1) + D(1, 2, 1) -> He(2, 4, 0)

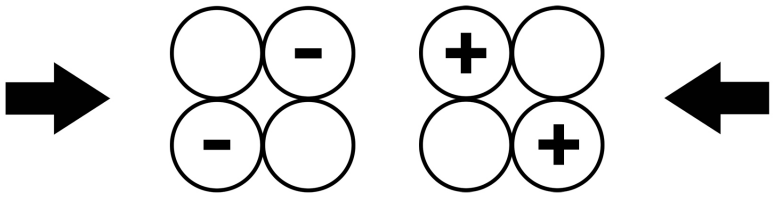
where the null final spin is caused by the opposite charges of D-D* coupling, with the production of 0.02560 amu = 23.84640 MeV of clean nuclear energy without any possible harmful radiation (such as neutrons) and without any conceivably possible radioactive nuclear waste.



Coulomb Repulsion

$F = +K\, q_1\, q_2 \times 10000000000000000000000000000000$

A reason for the lack of achievement of the controlled nuclear fusion to date is that nuclei repel each other due to their positive charges with an extremely big Coulomb force proportional to the inverse of the square of the very small distances needed to achieve the fusion.



Coulomb Attraction

$F = -K\, q_1\, q_2 \times 10000000000000000000000000000000$

TEC DNS-3B-5 permits the study of the synthesis of "negatively charged" nuclei that, in this case, are strongly attracted by natural nuclei resulting in a basically new approach to the controlled fusion.

See for details the paper

R. M. Santilli, "Apparent Resolution of the Coulomb Barrier for Nuclear Fusions Via the Irreversible Lie-admissible Branch of Hadronic Mechanics," Progress in Physics, Vol. 18, 138-163 (2022), https://www.santilli-foundation.org/hyperfusion-2022.pdf

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