CONCENTRATED SOLAR POWER

A NEW TECHNOLOGY

RSA Patent Application No 2017/00xxx
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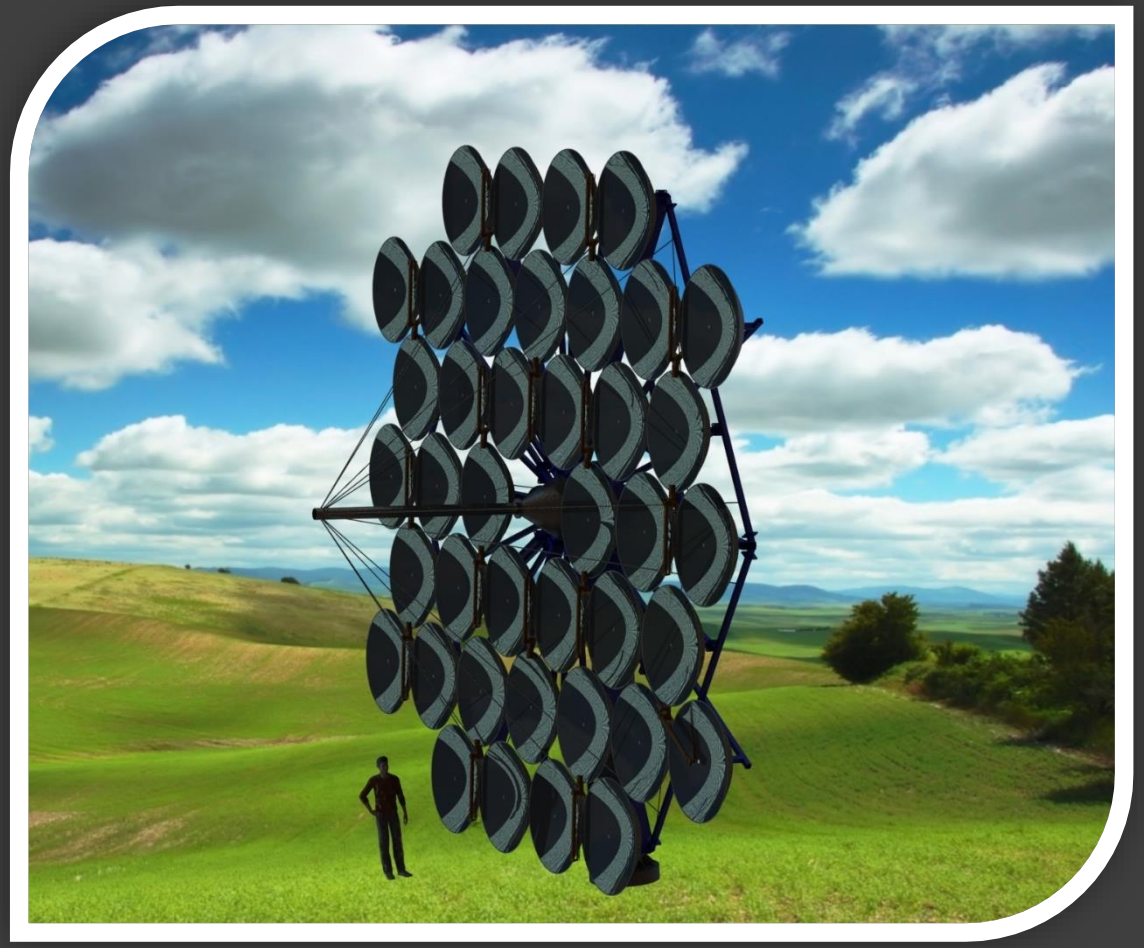
The CSP Collector

Introducing SolarTEAM

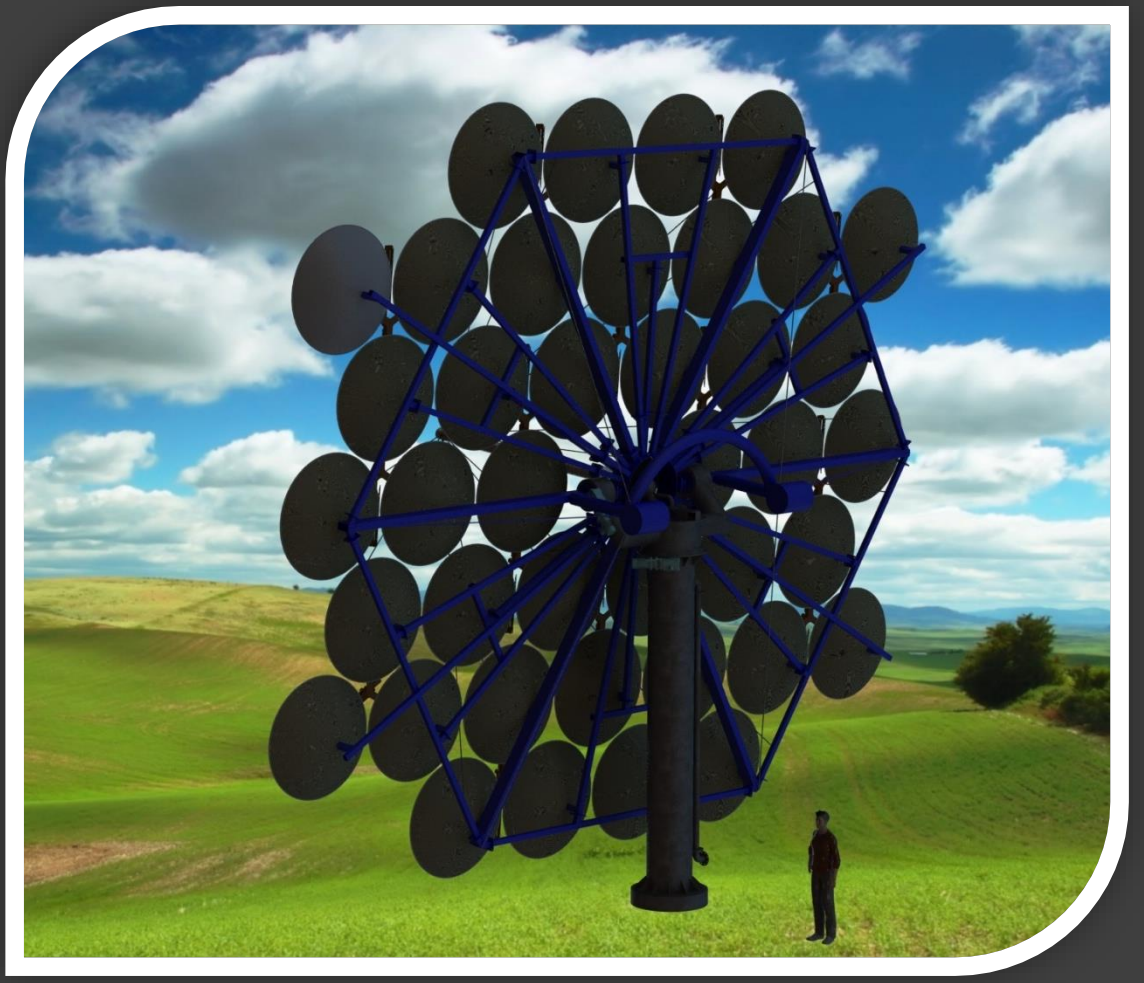
Thermally Enclosed Arrayed and Modular - T.E.A.M.



A WHOLE NEW APPROACH

The CSP Collector

- A self-contained concentrator
- Very high temperatures up to 900 °C
- Very low environmental impact - essentially waterless
- No heat or light exposure to birds, insects or pilots
- No levelling of ground or removal of natural vegetation necessary
- Heat transfer to storage using piped air
- Heat storage in rock aggregates for 3-5 days of use
- Conversion to electricity using Brayton Cycle through heat exchanger
- Renewable Electricity generated on demand
- Universal application for heat and power generation



Main DIS-ADVANTAGES of existing CSP technologies besides their cost

Six existing Technologies

PARABOLIC TROUGH & LINEAR FRESNEL

- Low temperature
- Long plumbing runs
- Freeze control needed if salt HTF used
- Exposure to hail damage
- Expensive earthworks

Main DIS-ADVANTAGES of existing CSP technologies besides their cost

Six existing Technologies

CENTRAL TOWER (HIGH)

- Very high engineering cost of tower
- Large helio-stat array less efficient
- High bird fatalities

Main DIS-ADVANTAGES of existing CSP technologies besides their cost

Six existing Technologies

CENTRAL TOWER (SHORT)

- Helio-stat clusters present cleaning challenges
- Low collector height increases bird fatalities
- Relatively low temperature for storage

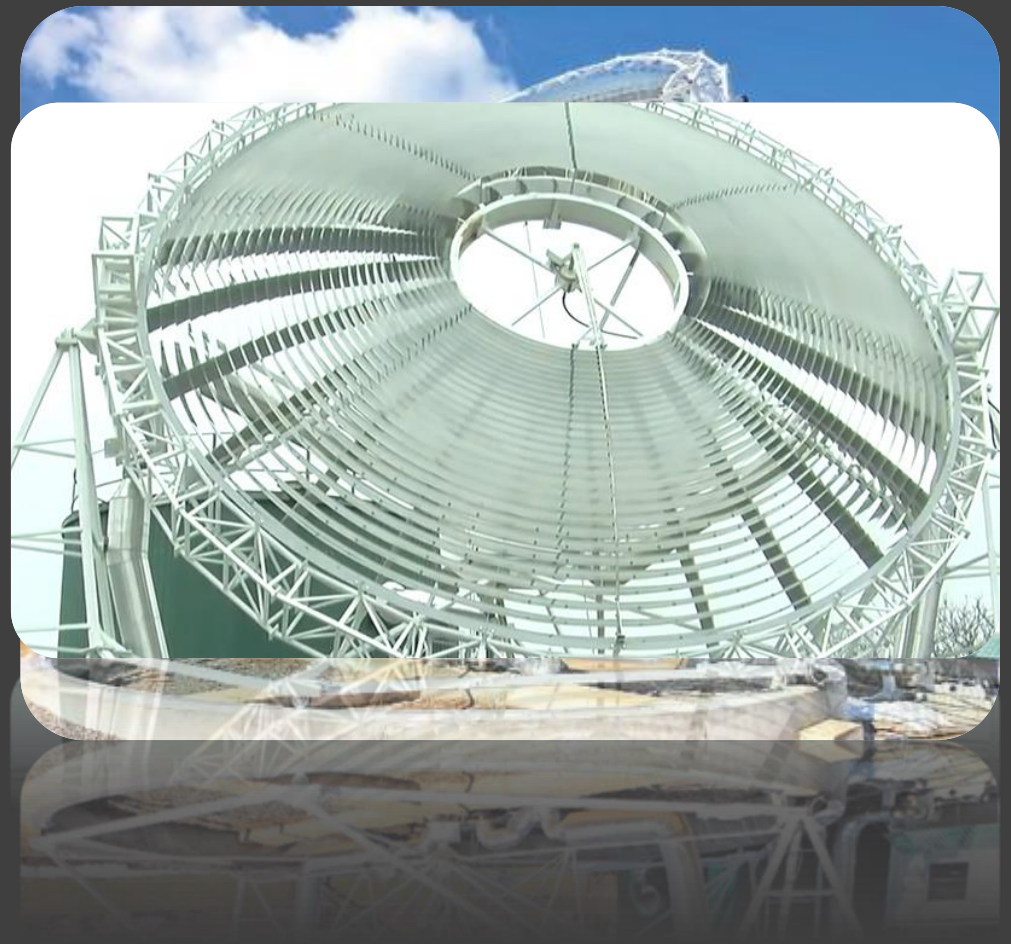
Main DIS-ADVANTAGES of existing CSP technologies besides their cost

Six existing Technologies

PARABOLIC DISH

- Large precisely-made support structure
- Relatively small motor-generator- no storage

Main DIS-ADVANTAGES of existing CSP technologies besides their cost



Six existing Technologies

RING ARRAY COLLECTOR

- Large mirror to collector area ratio
- Relatively massive support structure
- Complicated to clean

Main ADVANTAGES of existing technology

1. ALL EXISTING TECHNOLOGIES HAVE ENVIRONMENTAL PROBLEMS WHEN SCALED TO THE GW LEVEL
   - SolarTEAM collectors can be built on non-arable land without significant removal of natural vegetation. Therefore normal grazing practices can co-exist with power generation. Compatible with bushveld, grassland, semi-desert and desert conditions.
2. MOST CSP TECHNOLOGIES REQUIRE EITHER A VERY FLAT OR FLATTENED TERRAIN
   - SolarTEAM collectors can be built on terrain with up to a 10% gradient without performance loss. Low value land with rocky out-crops acceptable.
3. ALL EXISTING TECHNOLOGIES PRESENT HIGH RISK EXPOSURE TO STRONG WINDS AND HAIL
   - SolarTEAM collectors can be turned sideways to the wind and tilted near vertically to virtually eliminate exposure to hail and wind damage
4. MOST EXISTING TECHNOLOGIES HAVE CHALLENGING MIRROR CLEANING PROBLEMS TO REMOVE DUST, ETC.
   - SolarTEAM collectors are self-cleaning with a set of simple rotary wipers. Cleaning can take place automatically at night using a recoverable amount of water and local RE power. Very low operational maintenance.

Main Cost Advantages of SolarTEAM COLLECTOR Technology

1. Parabolic dishes can be mass-produced at a low cost and transported to site stacked together
2. Low iron pre-cut glass can be fitted with secondary reflector then transported stacked together
3. Structural steel can be made at a standard engineering works without sophisticated jigs
4. All items for a 40 reflector collector can be delivered to site in a single 6 metre container
5. Collimation alignment of dishes takes place on site after assembly in a simple quick procedure
6. Central receiver temperature can be easily adjusted within a broad range to suit various applications
7. Single pile or foundation support structure is quickly built with a minimal amount of concrete.
8. Multiple collectors feed a central thermal storage unit with optional Power Unit. Customised Module

Main Cost Advantages of SolarTEAM STORAGE Technology

1. Storage medium is a graded rock aggregate source locally and packed in a simple cylindrical tank
2. Insulation uses a special preparation of inexpensive minerals
3. Structural components can be made at a standard engineering works without sophisticated jigs
4. All manufactured items can be delivered to site in a single 6 metre container
5. Tank storage medium is long lasting and disposed of or recycled easily
6. Centralised storage tank is placed alongside turbine and generator with minimal heat losses
7. Single pile or foundation support structure is quickly built with a minimal amount of concrete. SolarTEAM Industrial Collectors are light and can be erected on nearby columns or roofs with the storage below in a factory. This can produce reliable high quality process heat up to 900° C, 24/7 at a very low cost

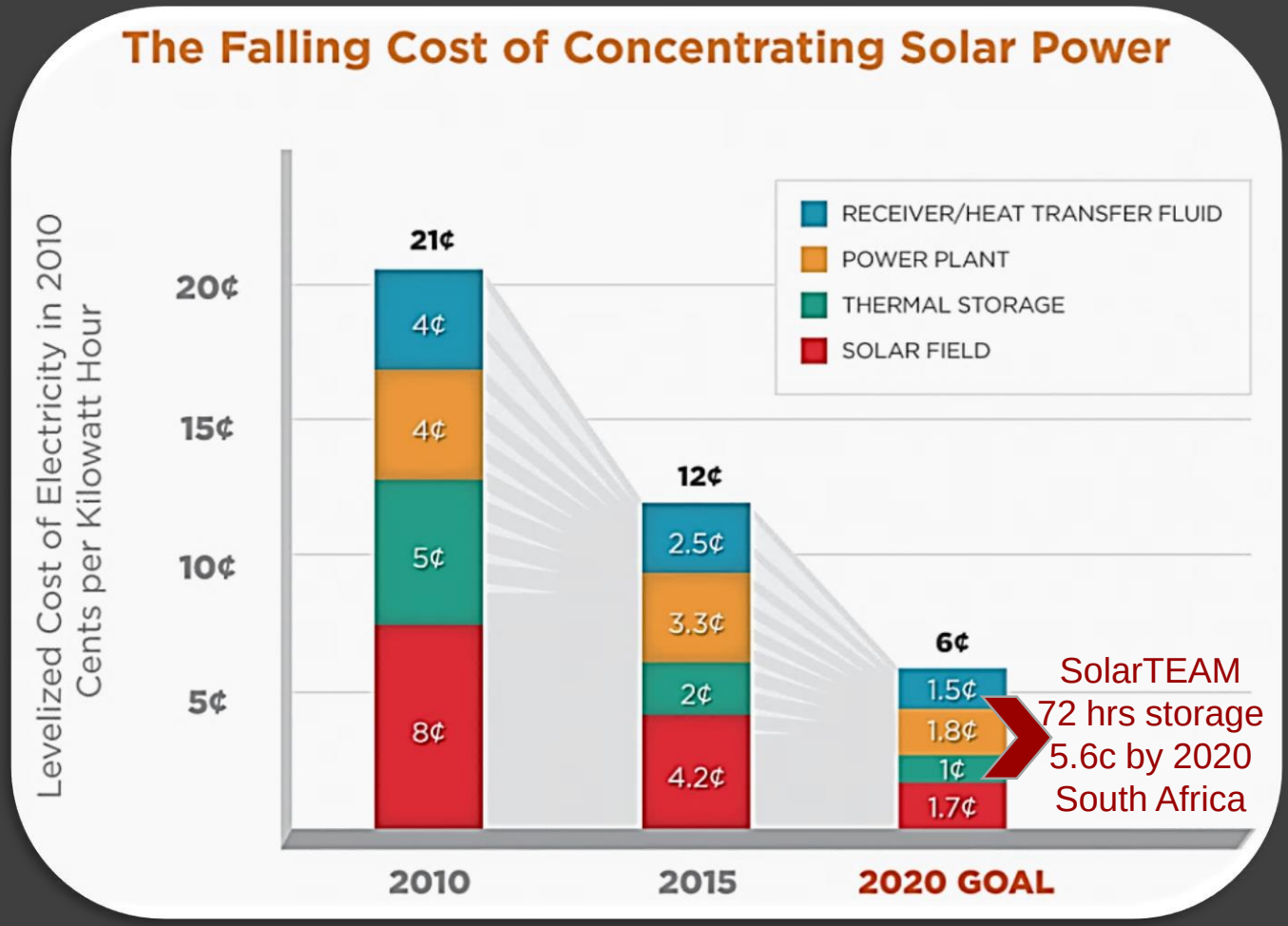
Main Cost Advantages of SolarTEAM TURBINE & GENERATOR Technology

1. Will use a modified Brayton Cycle micro-turbine - various existing options available from 100-200kW. This is very suitable for mini-grids, industrial use or scaling up to highly reliable grid input
2. Stored hot air is piped to a heat exchanger where ambient air, collected by the compression side of the turbine is then heated and forced through the power section of the turbine. No steam cycle required
3. No cooling required, neither dry nor wet, which saves substantial capital and maintenance costs
4. All items can be delivered to site in a single 6 metre container. AC or DC generation at similar cost
5. Output can be easily modified to suit demand and maximum output can be maintained for 72 hours-a unique advantage over existing CSP plants that cannot maintain full output during inclement weather
6. High input temperature makes the micro-turbine more thermally efficient. Servicing is staggered
7. Zero exhaust pollutants and noise generation can be easily insulated

Advantages of SolarTEAM Over Future CSP & Other RE Sources

1. Solar thermal is more reliable than nuclear as it has a far greater capacity factor (no planned or unplanned outages plus exceptional redundancy)
2. Solar thermal is dispatchable unlike wind or solar PV – complements well
3. No battery or capacitor storage required
4. Hydro-electricity, whilst low cost, is an environmental concern and is often unreliable in periods of drought

Most significant advantage is that it comes at the right cost to displace all forms of fossil-fuelled generation, baseload or intermittent duty, bringing well placed GWhr storage capacity to a national grid in regions with good solar resources

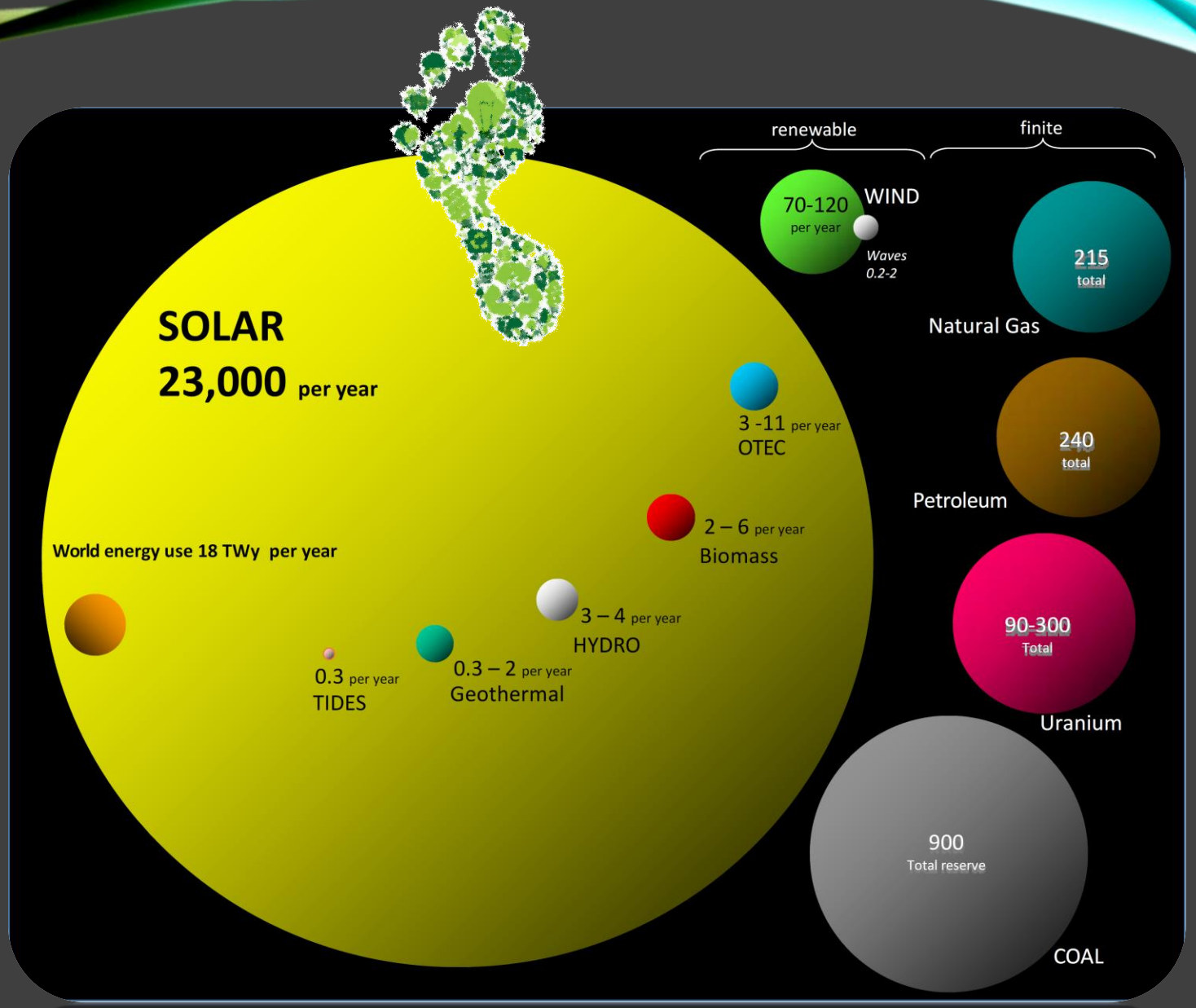


"Fossil-fuelled energy use is contraindicated by the endangerment to our Planet – it's continued use threatens the very currency of life on Earth and is actually not needed.

Fortunately we are given an over-abundance of sunlight energy every day to provide for our sustainable needs through crops and direct use. Bio-fuels can meet essential liquid fuel needs and wind energy will assist too.

SolarTEAM harvests the sun's thermal energy in a way that does not harm our environment and stores this heat for reliable use and conversion to electrical energy when required. We believe it is entirely possible for modern humankind to return to our original sustaining purpose."

Gavin Lloyd – co-founder of **SolarTEAM**



Contact link: http://thoughtality.com/contact-us/

Interested parties and investors will be required to sign a Non-disclosure

Confidentiality Agreement before further documentation is made available

The following documents are available:

- Full patent
- Technical drawings
- Cost estimate for a development programme
- A prospectus

We are seeking investors to support prototype development over two years

Created and patented by
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