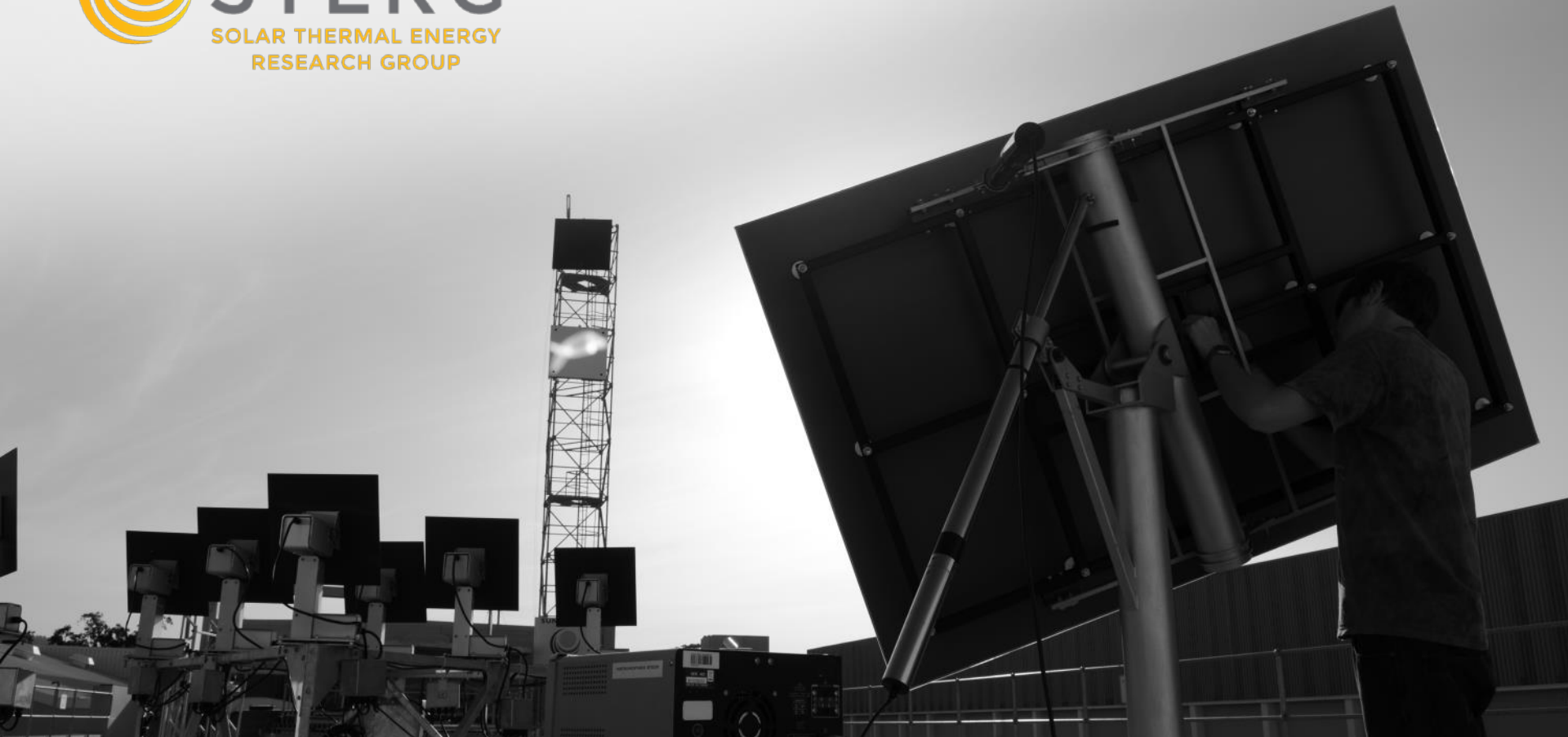
STERG

SOLAR THERMAL ENERGY RESEARCH GROUP



STERG Symposium 2017

Prof. Johan van der Spuy

Solar Thermal Energy Research Group (STERG),
University of Stellenbosch

Housekeeping

- Main organiser
  - Matti Lubkoll, matti@sun.ac.za
- Safety
- ECSA accreditation K-mech-0028

Our Sponsors

RENEWABLE & SUSTAINABLE ENERGY STUDIES

GeoSUN AFRICA

iTi STELLENBOSCH

MinWaterCSP

NRF National Research Foundation

STERG

- Research group
  - 75 people: academics and researchers (about 55 post grad students)
  - 75 affiliates and alumni
  - 4 quarterly meetings
  - Symposium, display of research

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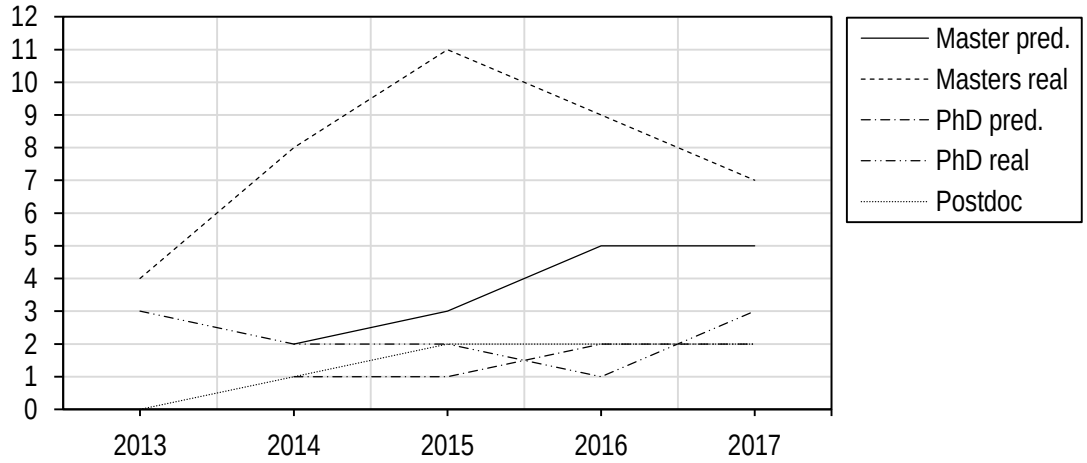
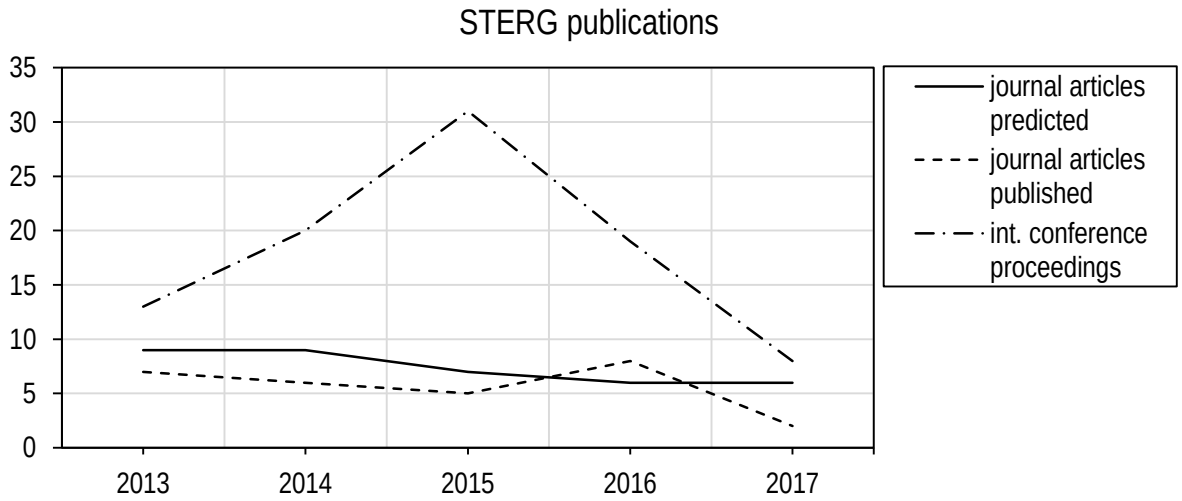
- 4 PhDs end 2016

- Results from NRF Spoke report



STERG's human capital output between 2013 and 2017

- Results from NRF Spoke report



STERG's publication output between 2013 and 2017

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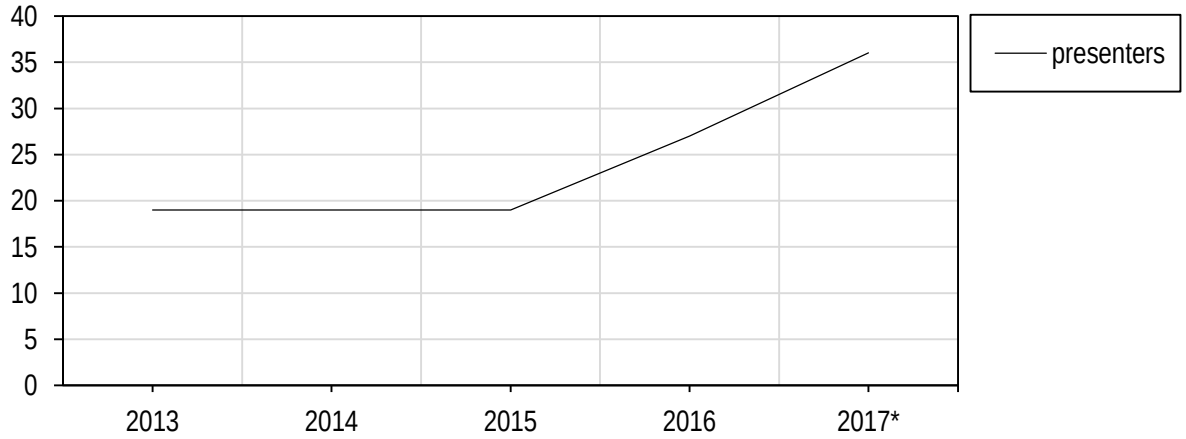
- Results from NRF Spoke report



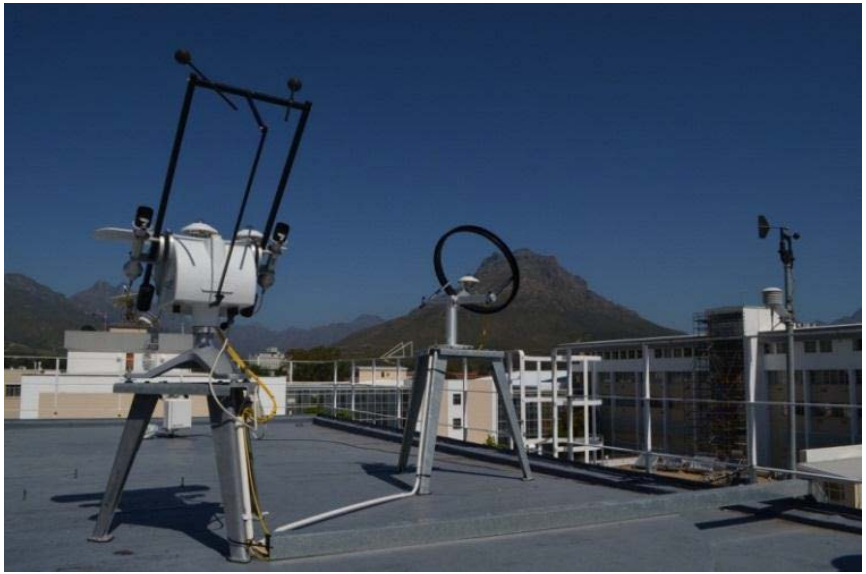
Presenters at STERG symposium between 2013 and 2017

STERG – rooftop

- Access to wide range of laboratories.
- A 1000 m² solar rooftop laboratory with 18 m high receiver tower.
- Helio40, 40 m² heliostat field.

STERG – rooftop

- Solar resource assessment and weather station with public website access
- State of the art solar water heater test facility for student research and commercial projects
- 25 kW McDonnel Douglas Sterling dish



STERG – labs

- 1000 °C Kiln with automated quick charge/discharge capabilities
- 5 cubic meter, 3 ton, 600 °C thermal storage test facility
- Differential Scanning Calorimeter capable of sampling to 700 °C
- Software: Fluent
  CFD, ArcGIS, TRNSYS, FLOWNEX etc.
- Further access to Departmental heat transfer and flow laboratories including multiple wind tunnel

STERG – SUNREC

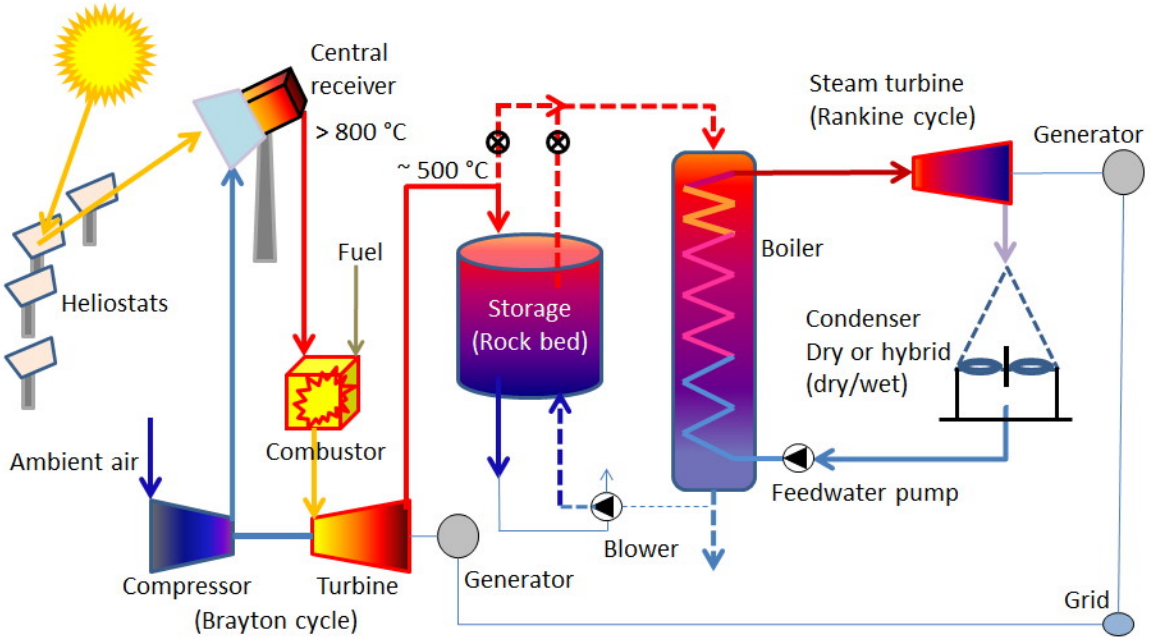
- 100 kW Helio100 facility at Mariendahl, Stellenbosch.
- SU, TIA initiative to develop smaller, smarter and modular heliostats locally.

STERG – SUNREC

- 15 kW single axis tracking PV system
- Packed bed 300 kW thermal storage pilot with gas combustor designed to be retro-fitted to an air receiver

Research topics

– SUNSPOT Stellenbosch University Solar Power Thermodynamic Cycle



Research topics

– Optics and receivers

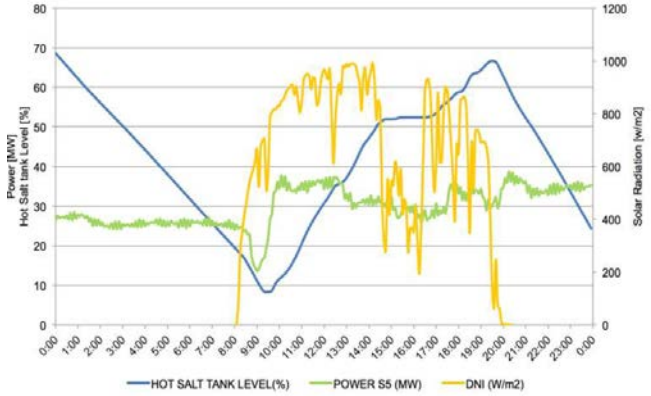
– Storage

Research

- Dry and hybrid cooling
- MinwaterCSP

Research

– Solar cycle analysis and simulation



– Solarised gas turbines

Front right view

STERG Tour

20 attendees from SU, 5 from UP, 2 from UCT

Visited the following power plants:

- Sishen PV
- Kathu Solar Park
- Khi Solar One
- Ilanga
- Bokpoort

Photos by Frank Duvenhage

STERG Tour

Special thanks to:

- CRSES
- all the supervisors for contributing,
- all of the power plant operators,
- construction managers,
- staff at the power plants

Photos by Frank Duvenhage

STERG Tour

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