



Opening Session: Introduction of STERG

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STERG

Current Research & Development







STERG: First and biggest SA University CSP research group (I)









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STERG: First and biggest SA University CSP research group (II)



- ~ 75 Members mainly from SUN, but also international (~40 Master & PhD)
- Staff: 6+ (Eskom/Sasol researchers, administrative, engineering and technical support)
- 1,000 m² solar roof laboratory & control room, offices, workshop
- 18 m lattice tower (multi-use)
- 40 m² heliostat field
- 30 kW_{th} receiver test facility
 - 25 kW_e McDonnel Douglas Stirling Dish (donated by Eskom)
 - TIA Helio 100 (100 kW_{el} solar tower under construction)

Member of national and international CSP assosiations



STERG: First and biggest SA University CSP research group (III)

- ADA Solar water heating test facility
- Solar resource station with free web download (K&Z full tracker and shadow ring)
- 1,200 °C kiln for material tests
- 600 °C, 1.5 m³ packed bed storage rig









Why are we here?



 South Africa is one of the best sun spots on earth

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- Up to 50 % more than Spain
- Still 20 % more than US





• STERG

Current Research & Development





STERG research subjects



- System analysis for solar power plants (line and point focused with different HTF)
- Solar technology comparison including simulation, evaluation and optimization
- System and subsystem optimization in CSP power plants development and design of cost reduced components (collector-, receiver-, storage, cooling-systems) and their impact on energy production costs
- Prototype development of receivers, storage systems and other components
- Industrial heat applications with solar energy from 100 to 900 °C
- Scenario development and calculations for South African power demand

Optics and receiver test facility:



Thermodynamics:







HTF and Storage:













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Optics and receiver test facility:



Thermodynamics:







HTF and Storage:







STERG current research priorities Optics and receiver test facilities (I)

Helio 40 and Helio 100:







STERG current research priorities Optics and receiver test facilities (II)







STERG current research priorities Optics and receiver test facilities (III)









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Optics and receiver test facility:



Thermodynamics:





HTF and Storage:







HTF and storage

different HTFs (liquids: metals, salts and "air") rock bed storage









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Optics and receiver test facility:



Thermodynamics:







HTF and Storage:













Optics and receiver test facility:



Thermodynamics:







HTF and Storage:











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STERG* is positioned to help



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*: and friends



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Thank you ...

ACKNOWLEDGEMENTS:

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