

Postdoctoral Research Fellowship in Renewable Energy Thermal Heating of Industrial Processes

Stellenbosch University's Centre for Renewable and Sustainable Energy (CRSES), hosted within the Faculty of Engineering, is seeking a Postdoctoral Research Fellow in the field of hybrid solar-thermal heating for industrial processes.

The Centre for Renewable and Sustainable Energy Studies (CRSES) at Stellenbosch University enables a sustainable future for Africa through world-class renewable and sustainable energy research, advisory services, awareness campaigns and training programmes. It was established in 2007 to facilitate and stimulate activities in renewable energy studies and research at the world-class Stellenbosch University and works in partnership with other universities and research entities in South Africa and internationally.

One of the emerging and dynamic research areas for the CRSES and the Solar Thermal Energy Research Group (STERG) is industrial decarbonisation, with the aim of introducing renewable and sustainable energy solutions to replace South Africa's use of fossil fuels for industrial heat. Industrial heat accounts for some 60-70% of industrial energy needs, and while the remaining electricity requirements are increasingly met with solar and wind solutions, little has been done to reduce coal use for thermal energy.

For some years, solar heating for industrial processes has been piloted to harness solar energy for various manufacturing and industrial activities. However, to date, the adoption has been limited. The introduction of hybrid solar systems with heat pump-driven by green electricity has improved economics and reduced perceived operational risks. This sustainable approach utilises high-temperature heat pumps as the primary mechanism for delivering thermal energy. The system's efficiency is increased by utilising solar thermal technologies, such as solar collectors and concentrators, to increase the heat pump's coefficient of performance.

Industrial processes that require heating, such as drying, sterilisation, and material processing, can benefit from these hybrid solar heat pump systems. As the global emphasis on clean and renewable energy continues to grow, integrating renewable energy heating into industrial processes becomes an essential step toward environmentally friendly, economically viable production methods. As such, the CRSES/STERG and its collaborators have recently secured funding for demonstration systems that complement the efforts of the Austrian Development Agency-funded Soltrain initiative with larger systems capable of meeting the full thermal energy requirements of production facilities.

Hosts:

- Prof Craig McGregor (craigm@sun.ac.za)
- Dr Francois Rozon (frozon@sun.ac.za)

Location: [Centre for Renewable and Sustainable Energy Studies](#), Stellenbosch University, Stellenbosch, South Africa.

Duties and responsibilities:

The research fellow will be expected to:

- Perform research and publish the results at local and international conferences and in high-impact journals.
- Apply and secure research grants to support the design, modelling, optimisation, and, where possible, the demonstration of hybrid solar thermal energy systems.
- Assist with demonstration projects and the implementation of hybrid solar thermal energy systems at various locations across the Western Cape and more broadly in South Africa.
- Collect and monitor data and optimise the thermal systems after installation. Data needs to be analysed to optimise the system for effective use. This monitoring data will compare expected and achieved performance indicators (including energy, cost and CO₂/GHG savings), serving as

the basis for optimisation and reporting.

- Co-supervise post-graduate students
- Assist with awareness-raising and training events as well as publishing results and research through relevant conference papers, webinars, presentations, etc.
- Assist with project administration, including setting up meetings with industry, enrolling industry partners, project budgeting and overall project coordination.

General requirements:

- A PhD in a relevant field (preferably mechanical or mechatronic engineering):
 - must have graduated within the last five years,
 - candidates with a confirmed examination outcome who have not yet graduated may apply (proof required);
- Excellent communication skills in English (both written and verbal);
- Expertise in industrial decarbonisation
- A proven publication record in high-impact journals and a demonstrated capacity to conduct independent research.

Fellowship: CRSES currently has funding for one fellowship of R 400 000 for 2026/27. The fellowship is renewable for up to three years, subject to satisfactory performance and funding availability. Please note that postdoctoral fellows are not appointed as Stellenbosch University employees. The fellowship is thus exempt from tax, and the appointment does not include employee benefits.

Commencement of duties: June 2026 or as soon as possible after that.

Application closing date: 17h00 on 15 May 2026.

Application process: Send a letter of application, accompanied by a comprehensive curriculum vitae, including a list of publications, a link to the candidate's PhD thesis, and the names and contact details of two referees, to Prof Craig McGregor (craigm@sun.ac.za).