Lecturer: Prof Chris (CJ) Meyer	***Email*:**	cjmeyer@sun.ac.za
Faculty: Engineering	***Department:*** Mechanical and Mechatronic Engineering	

Division:
Design & Mechatronics / Mechanics / Thermofluids / Renewable Energy

Research field:
Computational Fluid Dynamics (CFD), Axial Flow Fans, Air-Cooled Condensers, Steam Expander, Solar Collector, high-speed marine craft (high speed boats)

General description of research field:
Axial flow fans form an integral part of Air-Cooled Condensers (ACCs) as well as other fan-heat exchanger configurations. My research is focussed on the design and optimization of axial flow fans as well as the integration of the fans into ACCs or general air-cooled systems. To this end a suite of CFD routines (implemented in OpenFOAM) have been developed to not only model fans, but large ACC systems where the effect on performance of, for example, wind can be investigated.

The development of a reciprocating steam expander for the specific use in solar thermal electricity generation is an ongoing body of work that is attracting attention due to a move towards more modular solar thermal systems. Both academic and commercial efforts are currently under way to develop a 100 kW working prototype of such a steam expander. There is also an ongoing effort to develop a heat pipe solar collector for solar thermal systems that would greatly reduce the pump losses associated with these systems.

Various topics of interest in the development of high-speed marine craft (boats) are in progress. To this end new concepts are being tested and developed in the Stellenbosch towing tank.

Individual topics listed:	**MEng** ***(Structured)***	**MEng** ***(Research)***	**PhD**	**Funding**
1. Configuration and testing of a steam expander / generator demonstrator for medium-scale CSP applications (w C McGregor).		X	X	1 x MEng or PhD
2. Design and testing of a solar receiver based on heat pipes (w C McGregor).		X	X	
3. Various topics in CFD modelling of axial flow fans and systems incorporating axial flow fans.		X	X	
4. Various topics in the development of high-speed marine craft.		X	X	

***Specific requirements*:**