



## Prof Josua Meyer

Prof Meyer is professor, Hoof van die Departement Meganiese en Lugvaartkundige Ingenieurswese en voorsitter van die Skool vir Ingenieurswese in die Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie. Sy navorsingsterrein is konvektiewe warmte-oordrag, stromingsleer en termodinamika. Hy en sy student en kollegas het dit moontlik gemaak om die warmte-oordragkenmerke in die voorheen onbekende oorgangsvloeieregime te voorspel. Die span het ook die eienskappe bepaal van kondensasie in skuins buise, wat belangrik is vir die optimalisering van droë koelrings wat gebruik word by kragopwekking. Een voorbeeld is Medupi, 'n droëverkoelde, steenkoolaangedrewe kragentrale wat ses eenhede sal bevat wat 4 800 MW elektrisiteit genereer. Die kondenseerbuis van die droogverkoelde kondensator is skuins geïnstalleer om die waaiers en konstruksie van die eenhede te akkommodeer. Die optimale hoek om maksimum warmte-oordrag en minimum drukval sal verseker, was nie voorheen bekend nie.

Prof Meyer het die Termovloei-stowwe-navorsingsgroep aan UP gestig, wat die jongste tegnologie gebruik om vyf unieke eksperimentele opstellings te ontwikkel, te ontwerp en te bou. Geen soortgelyke eksperimentele opset bestaan elders ter wêreld nie. Die Groep onderneem en publiseer gesamentlike navorsing met navorsers by die École Polytechnique Fédérale in Lausanne, Switserland (EPFL), die Massachusetts-instituut vir Tegnologie in die VSA (MIT), die Universiteit van Gent (België), Duke-universiteit (VSA) en die Nasionale Instituut vir Toegepaste Wetenskap (INSA) in Toulouse, Frankryk. Prof Meyer is die outeur of mede-outeur van meer as 400 navorsingsartikels, konferensiereferate en patente en het talle vooraanstaande toekennings vir sy navorsing ontvang. Hy is bygestaan in sy navorsing en publikasies van baie van sy artikels deur 73 nagraadse studente wat onder sy toesig of medetoesig gestudeer het. Prof Meyer is 'n genoot of lid van verskeie professionele institute en verenigings en tree gereeld as hoofspreker op by plaaslike en internasionale konferensies. Hy was die redakteur, gasredakteur of mederedakteur van etlike vaktydskrifte op die gebied van warmte-oordrag. Hy en 'n kollega het 'n toekening ontvang vir hul ontwikkeling van 'n KOIO/CDIO- (Konseptualiseer, Ontwerp, Implementeer en Opereer) laboratorium in samewerking met 'n internasionale konsortium van universiteite. Die KOIO/CDIO-laboratorium was so geslaagd dat 'n soortgelyke laboratorium as deel van die nuwe Ingenieurswese 3-gebou ingerig is. Die konsep word herhaal in die nuwe Studentesentrum wat onder Ingenieurswese 1 in aanbou is. Prof Meyer het vier opeenvolgende toekennings as Uitmennende Presteerder ontvang. Hy het 'n gradering van B1 van die NNS ontvang.

Prof Meyer is a professor, Head of the Department of Mechanical and Aeronautical Engineering, and chair of the School of Engineering in the Faculty of Engineering, Built Environment and Information Technology. His area of research is convective heat transfer, fluid mechanics and thermodynamics. He and his students and colleagues have made it possible to predict the heat transfer characteristics in the previously unknown transitional flow regime. The team has also characterised condensation in inclined tubes, which is important to optimise dry cooling towers that are used in electricity generation. An example is Medupi, a dry-cooled coal-fired power station, which will have six units generating 4 800 MW of electricity. The condenser tube of the dry-cooled condenser is installed at an angle to accommodate the fans and construction of the units. The optimum angle that ensures maximum heat transfer and minimum pressure drop had not been known previously.

Prof Meyer established the Thermoflow Research Group at UP, who have developed, designed and built five unique, state-of-the-art experimental set-ups, which are being used for leading-edge heat transfer research. No other similar experimental set-up exists in the world. The Group conducts joint research and publishes with scholars at EPFL, MIT, Ghent, Duke and INSA Toulouse. The author and co-author of more than 400 research articles, conference papers and patents, Prof Meyer has received numerous prestigious awards for his research. Assisting him in his research and publication of many of his articles were 73 postgraduate students, whom he has supervised or co-supervised. Prof Meyer is a fellow or member of various professional institutes and societies, and is regularly invited as a keynote speaker at local and international conferences. He has also been the editor, guest editor or associate editor of various heat transfer journals. At the University of Pretoria, he was nominated twice for teaching innovation awards. With the last nomination, he and his colleagues received an award for their development of a CDIO (Conceive, Design, Implement and Operate) laboratory in cooperation with an international consortium of universities. The CDIO laboratory concept was so successful that a new CDIO lab was built as part of the new Engineering 3 Building. The concept will be repeated in the new Student Centre, currently being constructed underneath Engineering 1. He has received four consecutive Exceptional Achiever Awards. Prof Meyer has a B1-rating from the NRF.

Prof Meyer ke moprofesa, Hlogo ya Kgoro ya Boentsenere bja Mekhenikhale le Aeronotikhale ebile ke wa modulasetulo wa Sekolo sa Boentsenere ka gare ga Lefapha la Boentsenere, Tikologokago ya Boagi le Theknolotši ya Tshedimošo. Lekala la gagwe la dinyakišišo ke phetišetšo ya phišo ka gare ga diela, mekhenikhi wa diela le temotaenamiki. Yena le baithuti ba gagwe le basomimmogo ba gagwe ba kgontšhitše go akanyetša pele dika tša phetišetšo ya phišo ka gare ga mokgwa wa kelelo ya phetogo ye e bego e sa tsejbe pele. Gape sehlopha se na le kopano ka gare ga ditšhupu tšeo di sekamego, tšeo di lego bohlokwa go matlafatša ditora tša go fodiša ntle le meetse tšeo di šomišwago phehlong ya mohlagase. Mohlala ke Medupi, setišo sa mohlagase sa go fehlwa ka malahla ntle le meetse seo e tlogo ba sengwe sa makala a tshela a go fehla 4 800 MW ya mohlagase. Tšhupu ya go kopantšha ya sekopantšhi e loketšwe ka enkele go akaretša difene le kago ya makala. Enkele ya godimo yeo e kgonthišišago phetišetšo ya phišo ya maemo a godimo le phokotšo ya kgatello ya maemo a fase di be di sa tsejbe pele.

Prof Meyer o hlomile Sehlopha sa Dinyakišišo sa Thermoflow Yunibesithi ya Pretoria, bao hlabolotše, hlamile le go aga mafelo a diteko a mahlano a moswananoši a maemo a godimo, ao a šomišetšwago dinyakišišo tša phetišetšo ya phišo tša ketapele. Ga go na le lefelo le lengwe la diteko la go swana le mo lefaseng. Sehlopha se dira dinyakišišo tša mohlakanelwa, gomme se gatiša mmogo le dirutegi tša EPFL, MIT, Ghent, Duke le INSA Toulouse. Mongwadi le mongwadimmogo wa diathikele tša dinyakišišo tša go feta 400, dipampiri tša khonferentshe le dipheitente (patents), Prof Meyer o amogetše difoka tša maemo a godimo tša go balega sebakeng sa dinyakišišo tša gagwe. Dinyakišišong le dikgatišong tša gagwe tša diathikele tša gagwe o be a thušwa ke baithuti ba dialoga ba dithuto tša godimo ba 73, bao a ba hlahlilego goba a thušanego le ba bangwe go ba hlahlala. Prof Meyer mogweramoleloko goba lelolo la mekgatlo le diinstištšhute tša profesenale tša go fapafapana, gomme o laletšwa kgafetšakgafetša bjalo ka seboledisegolo mo dikhonferentsheng tša mo gae le tša boditšhabatšhaba. O ile a ba morulaganyi, morulaganyi wa moeng goba morulaganyi wa setswalle wa ditšenale tša go fapafapana tša phetišetšo ya phišo. O amogetše difoka tša go ruta tša go fapafapana bjalo ka mofahloši wa ngwaga Yunibesithi ya Bokone-Bophirima le Yunibesithi ya Johannesburg. Mo Yunibesithi ya Pretoria, o kgethilwe gabedi difokeng tša maithomelo a ka lehlakoreng la go ruta. Ka kgetho ya mafelelo, yena le basomimmogo ba gagwe ba amogetše sefoka bakeng sa tlhabollo ya laporatori ya CDIO (Thoma, Hlama, Phethagatša, le Diriša) ka tšhomišano le khonsotiamo ya boditšhabatšhaba ya diyunibesithi. Kgopolo ya laporatori ya CDIO e atlegile kudu ka gare ga Sekolo go dira gore laporatori ya CDIO (lab) e mpsha bjalo ka karolo ya Boentsenere 3 bjo o boswa. Kgopolo e tla boeletšwa ka Senthareng ya Baithuti, yeo gabjale e agwago ka fase ga Boentsenere 1. O amogetše Difoka tša Mošomedi wa go atlega kudu makga a mane ka tatelano. Prof Meyer o na le maemo a B1 go tšwa go NRF.