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Barbara holds an MSc in Aerospace Engineering from the University of Pisa, Italy, and a PhD in Mechanical Engineering from the University of Pretoria (UP), South Africa, with a specialisation in turbine endwall cooling. She lectures **Aerodynamics and Flight Mechanics** at the UP Department of Mechanical and Aeronautical Engineering, where she has also received the 2023 Faculty's "Teaching and Learning Award".

Her current work explores **innovative tailless aircraft configurations aimed at enhancing aerodynamic efficiency**. Barbara leads a team of master's students - both South African and German - who actively contribute to her research initiatives. She has presented her findings at numerous international conferences and has published in leading international scientific journals.

INNOVATION: *The investigation into the **Tailless Aircraft Configuration** began in 1994, with a primary focus on handling qualities and stability characteristics. A key challenge was identifying a control method that would sustain optimal flight efficiency.*

*More recently, her research has shifted to a novel **Stable & Lifting Fuselage** design, capable of contributing to wing lift. Two prototypes were built and tested to assess its potential for more efficient flight. A new collaboration between UP and the University of Stuttgart aims to develop a **Gull-Wing Configuration** suitable for use as an energy kite. Wind power - one of the fastest-growing renewable sources - can be harnessed by aircraft equipped with onboard wind turbines, flying in loops to access high-altitude winds. Many current designs rely on fabric-based kites with limited onboard systems, often restricting efficiency and control. This project seeks to test a tailless, rigid-wing prototype, which has demonstrated improved aerodynamic performance and controllability over fabric-based alternatives.*