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The Design of a Kerosene Turbopump for a South African Commercial Launch Vehicle

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Abstract

A South African turbopump design capability would be critical to any future indigenous commercial launch capacity. This paper describes the initial work being done at the University of KwaZulu-Natal (UKZN) to design a kerosene turbopump for a hypothetical commercial launch vehicle capable of inserting 50-500kg payloads into 500km sun synchronous orbit. A preliminary design is presented with the focus on the turbopump impeller geometry and its predicted performance.