

SPACE LIFE SCIENCES SYMPOSIUM (A1)  
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## DEVELOPMENT OF A ROTARY GAS/LIQUID SEPARATOR FOR CHINESE SPACE APPLICATION

**Abstract**

Separation of a two-phase gas/liquid flow stream is a necessary and challenging requirement in space application in a microgravity environment. A technology program has been initiated to address this concern for China future manned missions. A rotary gas/liquid separator was designed, fabricated and tested by Astronaut Center of China(ACC), as part of the ECLSS(Environmental Control and Life Support System). The rotary separator design scenario was confirmed via prior analyses and on-ground testing. The performance of such a rotary separator under micro-g conditions was evaluated by two parabolic flights. Testing of the first parabolic flight demonstrated that a rotary separator was feasible and problem of liquid carryover had been identified. Based on the results of the first parabolic flight campaign, the re-design and optimization of the rotary separator was made. The second parabolic flight test confirmed that separator design had met the performance requirements. This paper describes the design, development, and performance of the rotary separator. This paper also discusses testing of the separator, including descriptions and results from ground and parabolic flight testing, and performance analysis.