Human Spaceflight: Mission Analysis and Design

Edited by
Wiley J. Larson
United States Air Force Academy

Linda K. Pranke
LK Editorial Services

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Human Spaceflight is essential if you manage, design, or operate systems for human spaceflight. This book provides a much-needed big-picture perspective that can be used by managers, engineers and students to integrate the myriad of elements associated with human spaceflight. With end-to-end coverage of designing human space systems for Earth, Moon, and Mars, Human Spaceflight spotlights key issues and possible problems to consider as part of the design process. Written by a group of 67 professional engineers, managers, and educators from industry, government, and academia, this book shares in An Introduction to Human Spaceflight Designing Human Space Missions The Space Environment -- Hazards and Effects Surface Environments. Physiology of Spaceflight Human Factors of Crewed Spaceflight Psychology of Spaceflight Safety Orbit Selection and Astrodynamics Entry, Descent, Landing, and Ascent. Designing and Sizing Space Elements Vehicles Designing, Sizing, and Integrating a Surface Base Planetary Vehicles In-situ Resources. Thermal Control Environmental Controls and Life Support Systems Crew Accommodations Attitude Determination and Control.Â International Crewed Missions Mars Design Example. Appendix: Inertias of Geometric Primitives Appendix: Explanation of Earth Satellite Parameters. Index. Human spaceflight missions at ESA. Since February 2008, the Columbus lab has been controlled from the German Space Operations Centre in Oberpfaffenhofen by a joint ESA/German Aerospace Center (DLR) team. During 2008-2015, the Automated Transfer Vehicle (ATV)-series were controlled from the Centre spatial de Toulouse (CST) by a joint ESA/French space agency (CNES) team. Specialists from ESA work at the Columbus Control Centre as mission directors, working tightly with engineering and support teams provided by DLR. In addition, numerous specialists working at other ESA establishments and at indu