

## **Veröffentlichungen 2010-2017**

### **(IRS, Lebenserhaltungs- und Energiesysteme)**

#### **Books**

Belz S.: Untersuchungen zur synergetischen Einbindung von Polymer-Elektrolyt-Membran-Brennstoffzellen (PEFC) in Lebenserhaltungssysteme, Dissertation, Universität Stuttgart, Institut für Raumfahrtsysteme, ISBN 9783843907750, Dr. Hut Verlag, **2012**.

Ganzer B.: Integration of an algal photobioreactor in a synergistic hybrid life support system, Dissertation, Universität Stuttgart, Institut für Raumfahrtsysteme, ISBN 978-3843911795, Dr. Hut Verlag, **2013**.

Detrell, G.: Analysis and Simulation of a Synergetic Environmental Control and Life Support System for Long Duration Spaceflight, Dissertation, Universität Stuttgart, Institut für Raumfahrtsysteme und Universitat Politècnica de Catalunya, ISBN 978-3-8439-2658-4, Dr. Hut Verlag, **2015**.

#### **Journal Publications**

Ganzer B., Messerschmid E.: Integration of an algal photobioreactor into an environmental control and life support system of a space station, DOI: 10.1016/j.actaastro.2009.01.071, Acta Astronautica, Vol. 65 (248-261), Issue 1-2, **2009**.

Belz S., Ganzer B., Messerschmid E., Friedrich K.A., Schmid-Staiger U.: Hybrid life support systems with integrated fuel cells and photobioreactors for a lunar base, DOI: 10.1016/j.ast.2011.11.004, Aerospace Science and Technology, Vol. 24 (169-176), Issue 1, Elsevier, **2013**.

Belz S., Buchert M., Bretschneider J., Nathanson E., Fasoulas S.: Physicochemical and biological technologies for future exploration missions, DOI: 10.1016/j.actaastro.2014.04.023, Acta Astronautica, Vol. 101 (170-179), **2014**.

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#### **Conference Papers**

Ganzer B., Messerschmid E.: Integration of an algal photobioreactor into an environmental control and life support system of a space station, IAC-06-D1.2.8, 57th International Astronautical Congress, Valencia, Spain, **2006**.

Belz S., Messerschmid E.: Hybrid Life Support with integrated PEM Fuel Cells, 40th International Conference on Environmental Systems, Barcelona, Spanien, AIAA-2010-6303, **2010**.

Belz S., Ganzer B., Detrell G., Messerschmid E.: Synergetic Hybrid Life Support System for a Mars transfer Vehicle, IAC-10-A1.6.7, 61st International Astronautical Congress, Prag, Tschechische Republik, **2010**.

Ganzer B., Belz S., Messerschmid E.: Hybrid Life Support as Integrated System Applying Fuel Cell and Algal Photobioreactor, IAC-10-B3.7.6, 61st International Astronautical Congress, Prag, Tschechische Republik, **2010**.

Detrell, G., Ganzer, B., Messerschmid, E.: Adaptation of the ELISSA Simulation Tool for Reliability Analysis, AIAA-11-5279, 41<sup>st</sup> International Conference on Environmental Systems. Portland, Oregon, USA, **2011**.

Nathanson E., A. Zimmer, E. Messerschmid: Environmental Control and Life Support Systems for Human Exploration Missions to Near Earth Objects and beyond, IAC-11.A1.6.6, 62nd International Astronautical Congress, Cape Town, South Africa, **2011**.

Ganzer B., Belz S., Messerschmid E.: Life Support Systems Utilizing Photobioreactors and Fuel Cells to Enhance Mass and Power Efficiency for Long Duration Exploration Missions, GLEX-2012.10.1.8x12552, Global Space Exploration Conference 2012, Washington D.C., USA, **2012**.

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Buchert M., Belz S., Messerschmid E., Fasoulas S.: Cultivating *Chlorella vulgaris* for Nutrition and Oxygen Production During Long Term Manned Space Missions, 63rd International Astronautical Congress, IAC-12-A1.6.4, Naples, Italy, **2012**.

Detrell G., Ta R., Baker S., Gray K.A., Dawson E., Vigneron A., Lüthen C., Ewald R. Eriksson K.: A Next Generation Space Station, IAC-12-B3.2.2, 63rd International Astronautical Congress, Naples, Italy, **2012**.

Belz S., Buchert M., Bretschneider J., Nathanson E., Fasoulas S.: Physicochemical and Biological Technologies for Future Exploration Missions, 64th International Astronautical Congress, IAC-13-A1.6.6, Peking, China, **2013**.

Belz S.: A Synergetic Use of Hydrogen and Fuel Cells in Human Spaceflight Power Systems, IAC-14.C3.3.2, 65th International Astronautical Congress, Toronto, Canada, **2014**.

Nathanson E., Bretschneider J., Fasoulas S.: Development and Testing of Liquid-Gas Separation for an algal Photobioreactor System for future Hybrid Life Support Systems, IAC-14-B3.7.9, 65th International Astronautical Congress, Toronto, Canada, **2014**.

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Nizenkov P., Nathanson E., Fasoulas S., Messerschmid E.: Conceptual Design of a Human Platform in cis-lunar Space in the Year 2020/2025, 66th International Astronautical Congress, Jerusalem, IAC-15-A5.1.4, **2015**. (SSDW)

Derz U., Hill J., Bischof B., Nathanson E., da Costa R., Pisseloup A., The German Free Flyer Study: A European Perspective on an International Infrastructure in the Earth Moon Libration Point 2, 66th International Astronautical Congress, Jerusalem, IAC-15-D3.1.11, **2015**.

Belz S., Bretschneider J., Helisch H., Detrell G., Keppler J., Burger W., Yesil A., Binnig M., Fasoulas S., Henn N., Kern P., Hartstein H., Matthias C.: Preparatory Activities for a Photobioreactor Spaceflight Experiment Enabling Microalgae Cultivation for Supporting Humans in Space, IAC-15-A1.7.7, 66th International Astronautical Congress, Jerusalem, Israel, **2015**.

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Keppler, J., Helisch, H., Belz, S., Bretschneider, J., Detrell, G., Henn, N., Fasoulas, S., Ewald, R., Angerer, O., Adrian, A.: From breadboard to protoflight model - the ongoing development of the algae based ISS experiment PBR@LSR, ICES-2017-180, 47th International Conference on Environmental Systems, Charleston, USA, **2017**.

Detrell, G., Belz, S.: ELISSA – a comprehensive software package for ECLSS technology selection, modelling and simulation for human spaceflight missions, ICES-2017-190, 47th International Conference on Environmental Systems, Charleston, South Carolina, USA, **2017**. (*Abstract accepted*)

Detrell, G., Schwinning, M., Ewald, R.: An international and interdisciplinary approach on learning how to design a space station, 68th International Astronautical Congress. Adelaide, Australia, **2017**. (*Abstract accepted*)

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## **Presentations and Posters**

Belz S., Ganzer B., Messerschmid E., Friedrich K. A.: Hybrid Life Support Systems with integrated Fuel Cells and Photobioreactors – Hybride Lebenserhaltungssysteme mit integrierten Brennstoffzellen und Photobioreaktoren, Vortrag, Lunar Base Symposium, 12.-13.05.2009, Kaiserslautern, Deutschland, **2009**.

Belz S., Ganzer B., Buchert M., Messerschmid E.: Lunar Mission 2025 – Preparatory Experiments for Synergetic Life Support Using :envihab , Poster, 1st International :envihab Symposium, 22.-24.05.2011, Cologne, Germany, **2011**.

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Belz S., Ganzer B., Buchert M., Messerschmid E., Fasoulas S.: Lunar Mission 2025 - Experiments for Synergetic Life Support using :envihab, Poster, Envihab-Symposium, Bonn, Deutschland, **2011**.

Ganzer B.: Effiziente Massenkultivierung von Mikroalgen mittels µg-adaptierter Photobioreaktorgeometrie, Vortrag, 11. Gravimeeting, 01.-02.12.2011, Erlangen, Deutschland, **2011**.

Belz S., Fasoulas S., Messerschmid E.: Coupling of Polymer Electrolyte Membrane Fuel Cells with Life Support Systems, Poster, IAC-12-B3.7.13, 63rd International Astronautical Congress, Neapel, Italien, **2012**.

Henn N., Belz S.: Technologies for Humans in Space and with terrestrial Application to test in the :envihab test facility at DLR Cologne, Presentation, 19th IAA Humans in Space Symposium, 07.-13.07.2013, Cologne, Germany, **2013**.

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Hill C, Bretschneider J., Nathanson E., Grossmann A.: Making Space Cool – Successful Outreach at Yuri's Night Stuttgart, Presentation, 40th COSPAR Scientific Assembly, Moscow, Russia, **2014**.

Belz S., Bretschneider J., Buchert M., Nathanson E.: Fuel Cells, Electrolyzers, and Microalgae Photobioreactors: Technologies for Long-Duration Missions in Human Spaceflight, Presentation, F4.7-0001-14, 40<sup>th</sup> COSPAR Scientific Assembly, Moscow, Russia, **2014**.

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Mardaneh S., Belz S., Fasoulas S.: Comparison of Alkaline and Polymer Electrolyte Membrane Electrolyzers for Hydrogen Production – Technologies Studies and System Analysis of Intermittent Operation, Presentation, 21st World Hydrogen Energy Conference, Zaragoza, Spain, **2016**.

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Belz S.: Betrieb eines Elektrolysesystems in Kombination mit anderen Netznutzern, Kapitel 6 des Abschlussberichts zur „Studie über die Planung einer Demonstrationsanlage zur Wasserstoff-Kraftstoffgewinnung durch Elektrolyse mit Zwischenspeicherung in Salzkavernen unter Druck“, FKZ 0325501, 05.02.2015, DLR, LBST, Fh-ISE, KBB, DLR Stuttgart, BmWi, **2015**.

## **Public Media**

IHK Magazin Wirtschaft 02/**2016**.

DLR Countdown 03/**2015**.

SWR Landesschau, September **2015**.

Uni Stuttgart Forschung Leben 04/**2015**.

Press Release, TIME SCALE, a project in the European Union's HORIZON 2020 research and innovation programme under grant agreement No. 640231, **2015**.