

IFBF Papers 2010:

Recent Advances with Vanadium-Based Redox Flow Batteries

Professor Maria Skyllas-Kazacos^{1,2},
George Kazacos²

¹*School of Chemical Sciences and Engineering, University of New South Wales, Australia,*

²*V-Fuel Pty Ltd, Sydney, Australia*

Progress & Challenges in the Development of Flow Battery Technology

Professor Frank C. Walsh

Electrochemical Engineering Laboratory, Energy Technology Research Group & Research Institute for Industry, School of Engineering Sciences, University of Southampton, UK

The Redox Flow Battery for Energy Storage and its Future Development

Professor Huamin Zhang

Dalian Institute of Chemical Physics, China Materials, components, design and manufacturing

Polymer-Filled Expanded Graphite: An Advanced Bipolar Plate Material for Redox Flow Batteries

Rainer Schmitt¹, Alfred Hirschvogel¹,

Oswin Öttinger¹, Mike Römmler²

¹*SGL Carbon GmbH, Germany*

²*SGL TECHNIC Inc., USA*

The Vanadium Supply Chain

Terrance T Perles

TTP Squared, Inc., USA

Carbon Materials for the Negative Electrode of the Zn-Ce Redox Flow Cell

G Nikiforidis¹, L E A Berlouis¹, D Hall²,

D Hodgson²

¹*WestCHEM, Department of Pure and Applied Chemistry, University of Strathclyde, UK*

²*Plurion Limited, UK*

Redox Flow Batteries: Electric Storage Systems for Renewable Energy

Tom Smolinka¹, Sascha Berthold², Martin Dennenmoser¹, Christian Dötsch², Jens Noack³, Jens Tübke⁴,
Matthias Vetter¹

¹*Fraunhofer Institute for Solar Energy Systems ISE, Germany*

²*Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, Germany*

³*Fraunhofer Institute for Chemical Technology ICT, Germany*

The Metamorphosis of Flow Batteries

Rick Winter

Primus Power, USA

Scale-Up, Operation and Manufacture of Redox Flow Batteries

Dr Ian Whyte

Potential Reactions Ltd, UK

Zinc-Bromine Batteries: Reducing the Cost of Electrical Infrastructure

Christopher Winter

Redflow Technologies Ltd, Australia

Practical and Commercial Issues in the Design and Manufacture of Vanadium Flow Batteries

Dr Martha Schreiber¹, Martin Harrer¹,

Herbert Bucsich¹, Matthias Dragschitz¹,

Ernst Steifert¹, Peter Tymciw¹, Adam Whitehead²

Cellstrom GmbH, Austria

CEST Kompetenzzentrum fuer elektrochemische Oberflaechentechnologie GmbH

Flow Battery Developments:

Research Effort on Flow Batteries at Pacific Northwest National Laboratory

Jianlu Zhang¹, Liyu Li¹, Soowhan Kim¹,

Wei Wang¹, Birgit Schwenzer¹, Baowei Chen¹, Zimin Nie¹, Vijayakumar Murugesan¹, Jun Liu¹,

Z. Gary Yang¹, Michael Hickner²,

Maria Skyllas-Kazacos³

¹*Pacific Northwest National Laboratory, USA*

²*Pennsylvania State University, USA*

³*University of New South Wales, Australia*

Novel Design and Non-Conventional Applications for Vanadium Redox Technology

Dr Placido M. Spaziante

Cellennium (Thailand) Co. Ltd., Thailand

The Development of Redox Couples for Non-Aqueous Redox Flow Batteries

Dr Doo-Yeon Lee, Hee-Young Sun, Seung-Sik Hwang, Joung-Won Park, Seok-Gwang Doo

Battery Group, Emerging Technology Center, Samsung Advanced Institute of Technology, Samsung

Electronics Co., Ltd., Korea

Vanadium/Air Redox Flow Batteries

S.S. Hosseiny¹, M. Saakes² and M. Wessling¹

¹*University of Twente, Membrane Science & Technology, The Netherlands*

²*MAGNETO B.V., The Netherlands*

Zinc Bromine Flow Batteries

Bjorn Jonshagen and Touma B. Issa

ZBB, Australia

Flow Batteries and other Mobile Applications

Electric Vehicle Applications of Flow Batteries: Rapid Recharging of EV's by Electrolyte Exchange

Sir John Samuel

RE-Fuel Technology Ltd., UK

Non-Aqueous Vanadium Redox Flow Batteries

Dr Christian Doetsch², Charles Monroe¹,

Levi Thompson¹, Aaron Shinkle¹, Alice Sleightholme¹, Jens Tubke³

¹*University of Michigan, USA*

²Fraunhofer Energy Technology (UMSICHT) Germany

³Fraunhofer Chemical Technology (ICT)

Commercialisation:

Standards for Flow Battery Operation

Guido De Jongh

CEN-CENELEC, Belgium

Techno-Economic Modelling of a Utility Scale Redox Flow Battery System

E. P. L. Roberts, D. P. Scamman

School of Chemical Engineering and Analytical Science, University of Manchester, UK

Economic Aspects of Grid Connected VRB-PV Systems in Domestic Applications

G. Rimpler¹, D. Greger², C. Kimla², M. Stifter³

¹ *Energenium Renewable Energy Business Development Consulting*

² *SIBLIK Elektrik Ges.m.b.H&Co.KG*

³ *AIT - Austrian Institute of Technology, Energy Department*

The Design and Application of a Flow Cell System

Eric A. Lewis

Converteam UK Ltd, UK

Modelling, Simulation and Validation of PV-VRB Systems

M. Stifter¹, J. Kathan¹, F Andren¹, M. Clarke²,

D. Greger³, G. Rimpler⁴

¹*AIT - Austrian Institute of Technology, Austria,*

²*TU Vienna, Institute for Energy Systems and Thermodynamics, Austria*

³*SIBLIK Elektrik Ges.m.b.H&Co.KG*

⁴*Energenium Renewable Energy Business Development Consulting*

Redox Flow Batteries for Next Generation Grid Design and Operation Paradigms

Raquel Ferret¹, Anita Gurbani², Ana Aranzabe², Arrate Marcaide²

¹*ZIGOR Research & Development, Spain*

²*Tekniker, Spain*

Legislation and the Commercialisation of Flow Battery Systems in Europe

Anthony Price

Swanbarton Limited, UK