

Supercritical CO₂ Power Cycle Symposium

Rensselaer Polytechnic Institute, Troy, NY, USA

Day -1, Wednesday, April 29, 2009

Session	Chair	Location	Time	Presentation Title	Presenter
Registration/Breakfast		Biotech	7:00-8:00		
Welcome and Preliminaries	M. Podowski	Auditorium	8:00-8:10	Welcome to RPI and Opening Remarks	W. von Maltzahn, RPI
			8:10-8:20	Symposium Organization and Logistics	M. Podowski, RPI
Introduction		Auditorium	8:20-8:50	Overview of Symposium Goals and Objectives	M. Podowski, RPI
Keynote	M. Podowski	Auditorium	8:55-9:25	Overview of S-CO ₂ Vision for DOE Program	P. Pickard, SNL
Coffee Break			9:30-9:50		
System Concepts	P. Hejzlar and T. Gallaway	Auditorium	9:50-10:10	Investigation of Alternative Layouts for the Supercritical Carbon Dioxide Brayton Cycle for a Sodium-Cooled Fast Reactor	A. Moisseytsev, ANL
			10:15-10:35	CEA Views as Regards SCO ₂ Cycle Development Priorities and Related R&D Approach	N. Alpy, CEA, France
			10:40-11:00	Supercritical CO ₂ application in Concentrating Solar Power Systems	C. Turchi, NREL
			11:05-11:25	An Assessment of the Supercritical Carbon Dioxide Cycle for Use in a Solar Parabolic Trough Power Plant	D. Chapman, Abengoa Solar
			11:30-11:50	Issues Associated with Coupling Supercritical CO ₂ Power Cycles to Nuclear, Solar and Fossil Fuel Heat Sources	M. McDowell, Hamilton Sundstrand
Lunch		Auditorium Hall	11:55-1:00		
Keynote	K. Kimball	Auditorium	1:00-1:30	Overview of Naval Reactors Program Development of the Supercritical Carbon Dioxide Brayton System	J. Ashcroft, KAPL
			1:35-2:05	Closed Brayton Cycle Development for Space Applications	L. Mason, NASA

Turbo-machinery	B. Flaspohler	Auditorium	2:10-2:30	Practical Considerations in Scaling Supercritical Carbon Dioxide Closed Brayton Cycle Power Systems	B. Fuller, BNI
			2:30-2:50	Industrial S-CO ₂ compressor technologies	H. Miller, Dresser Rand
			2:50-3:10	Shaft Seal Technologies for S-CO ₂	J. Marquardt, Crane
			3:10-3:30	Supercritical CO ₂ Power Systems: Considerations for Selection, Design and Development of Turbomachinery	R. J. Pelton, Concepts NREC
			3:30-3:50	Fluent CFD Steady State Predictions of a Single Stage Centrifugal Compressor with Supercritical CO ₂ Working Fluid	T. Munroe, KAPL
Materials	B. Morris	Bruggeman Room	2:10-2:30	Corrosion Behaviour of Different Metallic Materials in CO ₂ at 550C	F. Rouillard, CEA, France
			2:35-2:55	Corrosion of Candidate Alloys in Supercritical Carbon-Dioxide	K. Sridharan, U-Wisc
			3:00-3:20	S-CO ₂ Corrosion Studies	R. Ballinger, MIT
			3:25-3:45	Materials Evaluation in S-CO ₂	H. Tunison, KAPL
Coffee Break			3:45-4:10	Break	
Turbo-machinery	L. Rice	Auditorium	4:10-4:30	Efficiency Uncertainty of a Turbine driven compressor in a supercritical CO ₂ Brayton cycle	G. Wahl, KAPL
			4:35-4:55	Dynamic and Bearing Studies	T. Dimond, UVA-ROMAC
			5:00-5:20	Supercritical CO ₂ Compression and Thrust Modeling	M. Vernon, SNL
			5:25-5:45	S-CO ₂ Electrical Generator Efficiency Trade Study	G. Poole, CWEMD
System Modeling	D. McEligot	Bruggeman Room	4:10-4:30	ANL Plant Dynamics Code and Control Strategy Development for the Supercritical Carbon Dioxide Brayton Cycle	A. Moisseytsev, ANL
			4:35-4:55	Controlling Instability in Vicinity of CO ₂ Critical Point	P. Kao, MIT/Areva
			5:00-5:20	Thermal-Hydraulics and Dynamics of Supercritical S-CO ₂ Reactor	T. Gallaway, RPI
			5:25-5:45	Experimental Heat Transfer to Supercritical CO ₂ Flowing upward in a Bare Vertical Tube	I. Pioro, UIniv. of Ontario, Canada

Break	Auditorium Hall	5:45-6:20	Posters	
Dinner	Dinning Hall	6:30-7:45	Dinner	
After dinner talk	Dinning Hall	7:45-8:15	Program Overview and Turbo-Machinery Development for Coal Based Power Systems with Carbon Capture	R. Dennis, NETL

Day -2, Thursday, April 30, 2009

Registration/Breakfast		Biotech	7:00-7:30		
Keynote	S. Antal	Auditorium	7:30-8:00	Research on the Supercritical CO ₂ Cycles in the Czech Republic	V. Dostal, Czech Technical University, Czech Republic
			8:05-8:25	Recent Research and Development on the Supercritical Carbon Dioxide Brayton Cycle at Argonne National Laboratory	J. Sienicki, ANL
Testing	R. Siergiej	Auditorium	8:30-8:50	Supercritical CO ₂ Compression Loop Operation and Test Results	S. Wright, SNL
			8:55-9:15	Supercritical CO ₂ Simple Brayton Loop Operation and Test Results	S. Wright, SNL
			9:20-9:45	The Integrated System Test Design and Status	D. Howard, Bettis
Coffee Break			9:45-10:05		
Heat Transfer and Thermal Design	R. McNab	Bruggeman Room	10:05-10:25	Diffusion Bonding in Compact Heat Exchangers	D. Southall, Heatric
			10:30-10:50	Supercritical Carbon Dioxide Heat Transfer Research	A. Kruiuzenga, U-Wisc
			10:55-11:15	Computational Model and Experimental Data on the Natural Circulation of Supercritical Carbon Dioxide	D. Milone, KAPL

Modeling	A. Moisseytsev	Auditorium	10:05-10:25	Trace Modifications in Support of SCO ₂ Transient Modeling	B. Siebert, KAPL
			10:30-10:50	Integrated Systems Test (IST) S-CO ₂ Brayton Loop Transient Model Description and Initial Results (Part 1)	M. Hexemer, KAPL
			10:55-11:15	Integrated Systems Test (IST) S-CO ₂ Brayton Loop Transient Model Description and Initial Results (Part 2)	M. Hexemer, KAPL
			11:20-11:40	Thermodynamic Study of a Supercritical CO ₂ Brayton Cycle	H. Hoang, KAPL
Lunch		Auditorium Hall	11:45-12:45		
Keynote	S. Antal	Auditorium	12:45-1:15	Supercritical Fluids Research Activities in Korea for Nuclear Applications (Invited)	Y. Y. Bae, KAERI, Korea
			1:20-1:50	Advanced Computational Thermal Studies and their Assessment for Supercritical-Pressure Reactor	D. McEligot, INL
Testing	S. Wright	Auditorium	1:55-2:15	Data Acquisition and Control Systems for Experimental Brayton Loops	K. Barrett, Prime Core
			2:20-2:40	Experimental Investigation of Critical Flow of Supercritical Carbon Dioxide	M. Anderson, U-Wisc
			2:45-3:05	Windage Power Loss in Gas Foil Bearings and the Rotor-Stator Clearances of High Speed Generators Operating in High Pressure Carbon Dioxide Environments	R. Bruckner, NASA
Modeling	D. Howard	Bruggeman Room	1:55-2:15	Thermodynamic Aspects of Cycles with Fluids	P. Hajek, NRI, Rez, Czech Republic
			2:20-2:40	Development of Tools for S-CO ₂ Cycle Analysis at MIT	A. Ludington, MIT
			2:45-3:05	Preliminary Results of Heat Transfer Experiments with Supercritical Carbon Dioxide in the Small System Test Loop	T. Cox, Bettis

Coffee Break			3:05-3:20		
Panel Discussion	M. Podowski		3:20-4:50	Panel Discussion: R&D Priorities and Future Directions	TBA
Adjourn	M. Podowski		4:50-5:00	Closeout	