Wrap up Session: Moderators Panel
Wednesday, April 9, 2014
3 – 4 p.m.

David W. Johnson Jr.  
Lora Cooper Rothen  
Christine E. Heckle  
Richard Weber
Wrap up Session: Moderators Panel

Major Ceramic Leadership Summit Themes

- Business Climate Overview and Sustainability – David Johnson
- Innovation – Christine Heckle
- Manufacturing – Lora Cooper Rothen
- Workforce Development – Richard Weber
Wrap up Session: General Sessions

David Johnson

• Business Climate Overview
  – Perspectives on Manufacturing, James Meil, Eaton Corporation
  – Technology Trends, Katharine Frase, IBM Corporation
• Sustainability – Frank O’Brien-Bernini, Owens Corning
• Additive Manufacturing – Steve Rengers, GE Aviation
• 3D Printing – John Balistreri, Bowling Green State University
Business Climate Overview
Perspectives on Manufacturing
James Meil, Eaton Corporation

• The US is emerging with a renaissance in manufacturing where the US has an advantage
  – Superior management practices
  – Deep capital and high labor productivity
  – R&D intensity and technology leadership

• Do what you can, exit where you cannot

• US university system is an advantage

• The outlook for the economy in 2014 to 2015 is OK, perhaps a B- or C+
Business Climate Overview

Technology Trends

Katharine Frase, IBM Corporation

• We are in an era of Big Data
  – It is being generated at an exponentially increasing rate
  – Mobile devices are largely responsible
• Data uncertainty is rising
• Yet decisions are being made with poor or unreliable data
• We are just beyond the threshold of cognitive systems in computing
Sustainability
Frank O’Brien-Bernini, Owens Corning

• Sustainability – Meeting the needs of the present without compromising the world we leave to the future
• Must be done in the context of trends such as:
  – Population growth
  – Climate change
  – Water and energy shortages
• Involves:
  – Operations
  – Supply Chain
  – Product Declarations for customers
  – Employee health and safety
Additive Manufacturing
Steve Rengers, GE Aviation

• Many processes using metals, ceramics and plastics
• Advantages
  – Design freedom (often unique designs)
  – Time savings, particularly in the prototype market
  – Cost savings (avoid tooling costs)
  – Quality improvement (avoid brazing and better microstructure)
• Market trends
  – Fast growth ($2.2B in 2012, up 28.6% over 2011)
  – Flurry of mergers and acquisitions
  – IP boom
• Future bringing bigger machines, greater speed, multiple materials, lower costs
• GE using AM for improved fuel efficiency in aircraft engines while also enjoying improved durability, weight reduction and fewer parts
• Many other emerging applications in many fields
3D Printing
John Balistreri, Bowling Green State University

• A clever and entertaining dinner speaker
• Large ceramic art is a lifelong passion
• 3D printing offers him:
  – Fewer constraints with no molds
  – Shapes not otherwise possible to make
  – Recurrent images
  – Ability to reproduce architectural ceramics where the art has been lost
• 3D printing should be accepted as a tool for ceramic art
• High tech applications discussed
• Formed company named Tethon3D
Wrap up Session: Innovation Theme
Christine Heckle

- Strategic Open Innovation – Andy Zynga, NineSigma
- Innovation Strategies – Marty Curran, Corning
- Patents – Steven M. Ritchey, Thompson Coburn
- Disruptive Innovation – Anthony Nickens, Ceramatec
- Material Sourcing – Michael Silvers, American Elements
Intellectual Property - Ritchey

- First inventor to disclose OR file
- Some exemptions for universities
- Still dynamic environment — Roberts court very active in patent cases
- Use network / business lawyer to find patent attorneys

Material Sourcing - Silver

- Distribution of materials on the planet is unchanging
- Countries only need to have 40% of the material in order to control the pricing in perpetuity
- Some companies trying to invent without access to RE

Proposal: Innovation Materials Treaty — include all sovereign monopolies so that they have assurance of business vs. the “Innovation Distortion”

Apparent Conflicts

- Curran:
  - Find out quickly with least amount of time — should we spend $ on this
  - Demo, listen, demo, listen, demo

- Nickens:
  - Stage Gate is 5 shots to pre-emptively kill disruptions
  - Customers don’t anticipate disruptions

Problem Definition

- Zynga: Define the problem correctly
- Curran: Find the mistake in your assumptions

6 P’s
People, Pesos, Passion, Persistance, Patience, Partnership, (Culture)
Wrap up Session: Manufacturing Theme
Lora Cooper Rothen

- Manufacturing in U.S. – Al Lubrano, Materion & NAM
- Resurgence of Manufacturing – Petra Mitchell
Wrap up Session: Workforce Theme
Richard Weber

- Engineering Talent Panel Discussion – Eric Urruti, Wayne Butscher, Allen Kimmel, Lora Cooper Rothen
  - Replacing “middle skills” in an aging workforce is an existential problem in CG industry
  - Apprenticeships are being successfully used to develop special skills in house
  - Tailored community college courses and OJT can be combined to broaden skillsets
  - These programs require EXCELLENT COMMUNICATION between all parties at all levels
Wrap up Session: Workforce Theme

- **Public – Private Partnerships To Build a Competitive Workforce – Richard Norment**
  - A PPP is a contract - both sides provide resources and gain from the partnership
  - Examples Chattanooga/VW apprenticeship program, and North Carolina community college training collaboration
  - Build an ongoing/sustained working relationship between partners
Wrap up Session: Workforce Theme

- **A New Role for The American Ceramic Society: Educating Engineers Before and After that First Job – Richard Brow**
  - Tailoring and evolving university courses to meet changing needs in the CG industry
  - MSE is grad-centric; how does this affect training of BS engineers for manufacturing?
  - Providing follow on training and continued development of staff skills
  - Developing closer links between trainers and employers
  - The CGIF will help to recruit and develop keen new talent in the CG industry