

RAPID's Process Intensification Faculty Workshop: An Example Activity of Aligning Academia with Industry Needs

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Ashley Smith-Schoettker

Director of Education & Workforce Development

- **What is RAPID?**

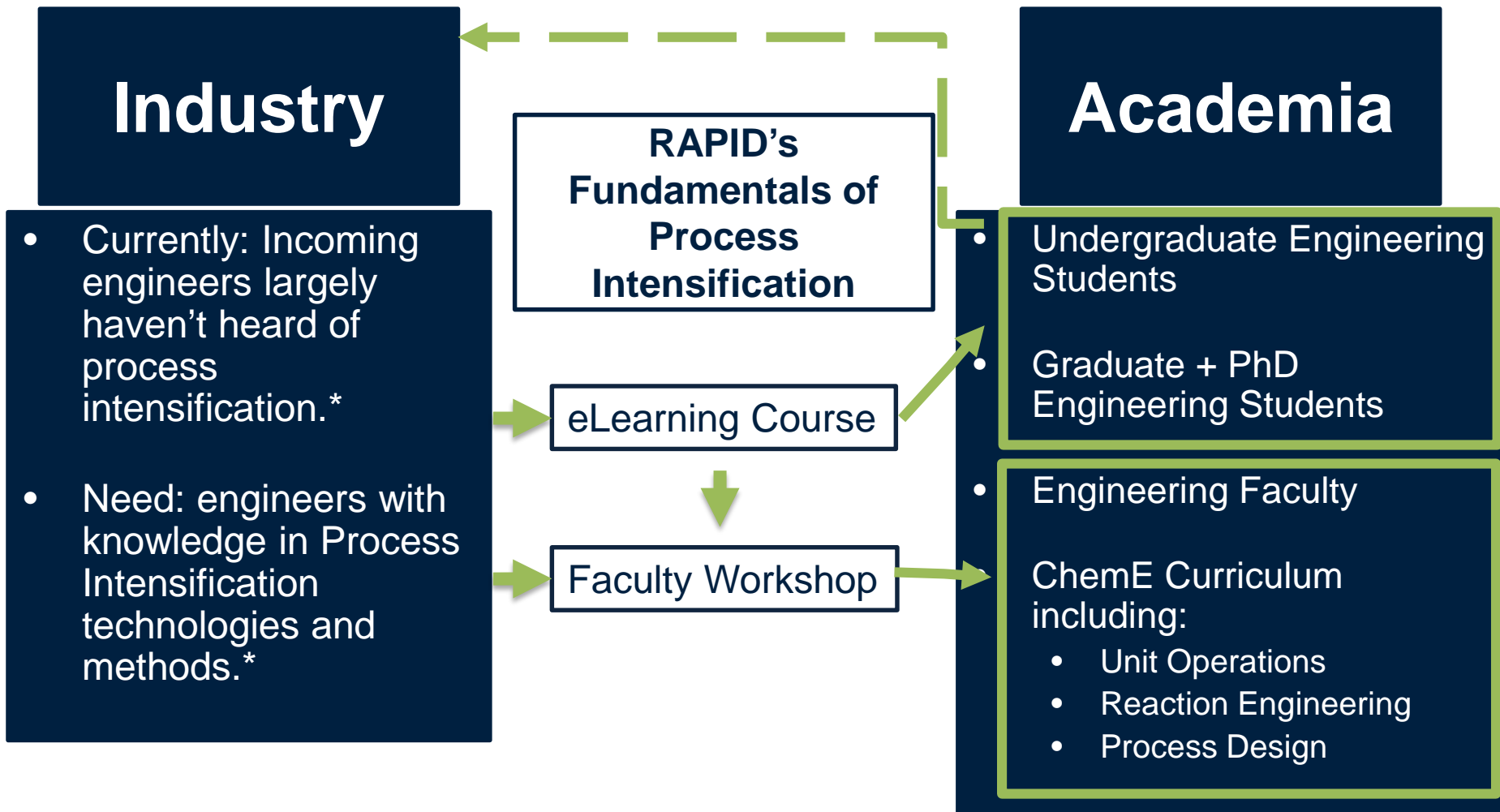
- Private-Public Partnership between AIChE and the U.S. DOE (\$70m)
- 10th Manufacturing USA Institute
- Mission: advancing the deployment of Modular Chemical Process Intensification within U.S. industry.



- **What is Process Intensification (PI)?**

- An modern process that leads to substantially smaller, cleaner, safer and more energy-efficient process technology. (Reay, Ramshaw and Harvey, 2013)
- Typically accomplished by controlling, combining, and enhancing chemical reactions and transport phenomena.
- Has potential to radically reduce capital and operating costs for industry.

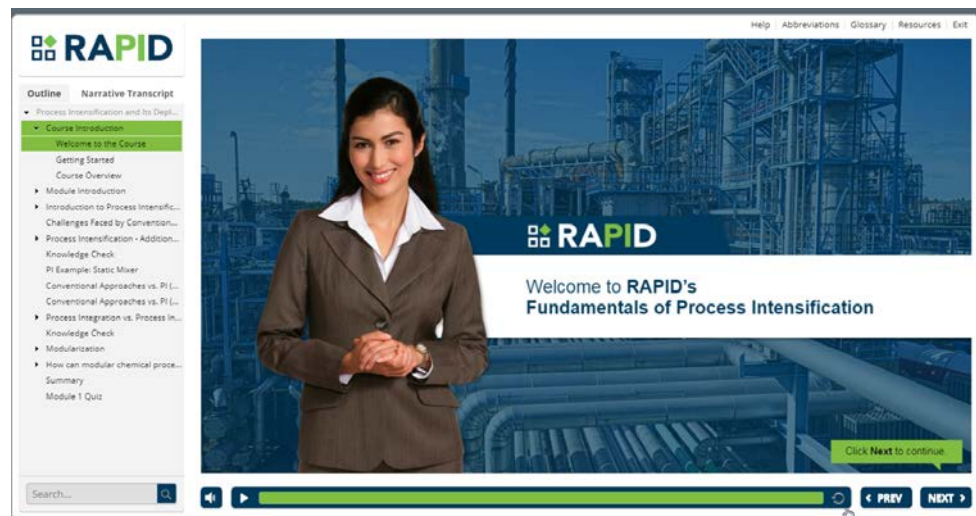




**Lack of PI education and resources identified as a key gap in institute roadmapping process (significant industrial presence)*

Ways Faculty Workshop Aligns Industry and Academia

- **Fills industry need for educational resources in PI**
- **eLearning course was:**
 - Developed by industry expert (RAPID CTO, Jim Bielenberg, with 15 years experience in industry; 12 yrs @ ExxonMobil)
 - Peer reviewed by RAPID industry and academic members
- **Faculty Workshop** was developed by both industrial and academic experts:
 - Cliff Kowall, Lubrizol
 - Dr. Götz Vesper, University of Pittsburgh
 - Dr. Kimberly Ogden, University of Arizona



Faculty Workshop

- Prior to arriving: 4-hour Fundamentals of PI eLearning course
- Sunday, October 28, 2018 in Pittsburgh @ AIChE Annual Meeting for 2 hours
- Part One: Importance of PI from Academic (Dr. Veser) and from Industry (Mr. Kowall) Perspectives
- Part Two: Workshop discussion facilitated by Dr. Ogden on how process intensification concepts could be incorporated into their curriculum.



Workshop Outcomes

- 25 attendees
 - 78% Non-RAPID Members
 - 22% RAPID Members
- 67% of attendees completed all or part of the eLearning course ahead of time
- When asked how useful the eLearning course, in its current form, was to supplement their teaching, the faculty rated it a 3.7 out of 5.
- Attendees engaged in workshop discussions and additional needs from academia were identified (ie: standardized problems/lessons/case studies to incorporate into courses)
- Attendees were given instructions on how to assign the course to their students.

- More eLearning courses for students
 - Intensified Reactions
 - Intensified Separations
 - Intensified Heat and Mass Transfer
- More Faculty Workshops
 - Process Intensification Fundamentals (recurring)
 - Module Manufacturing