

CO₂ Capture Membrane Process for Power Plant Flue Gas [DOE Cooperative Agreement No. DE-NT0005313]

Project Objective

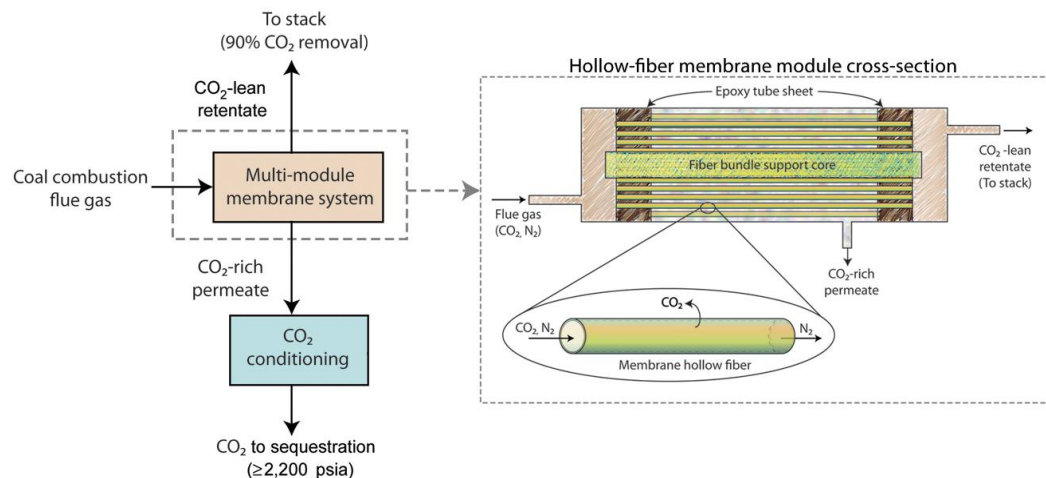
Develop an advanced polymeric membrane-based process that can be cost-effectively and reliably retrofitted into existing pulverized coal-fired plants to capture $\geq 90\%$ CO₂ from plant's flue gas at 50-60 °C with <35% increase in Cost of Electricity

Period of Performance

October 1, 2008 – December 31, 2010

Project phase	Period of performance	Total
Budget Period 1	Oct. 1, 2008 – Dec. 31, 2009	\$1,217,873
Budget Period 2	Jan. 1, 2010 – Dec. 31, 2010	\$1,213,154
Totals	Oct. 1, 2008 – Dec. 31, 2010	\$2,431,027

CO₂ Capture Membrane Process



Project Team

- RTI (Prime)
- Arkema Inc.
- Generon IGS, Inc.

Project Manager

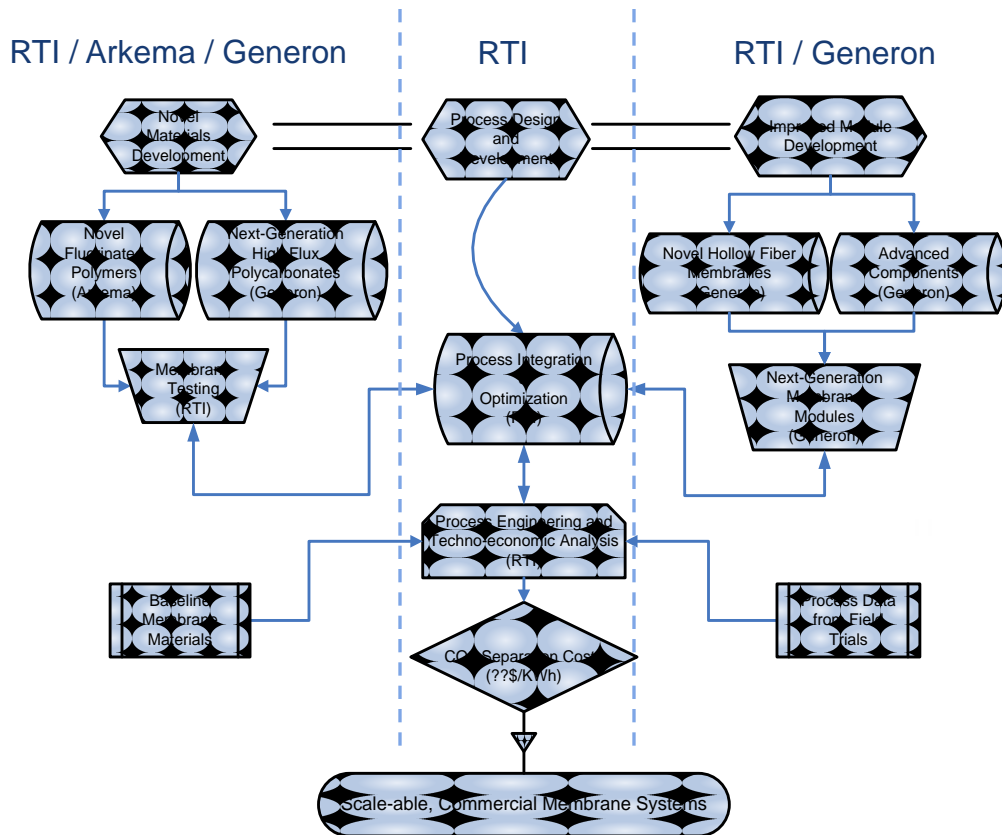
Lora Toy (RTI International)

DOE/NETL Project Manager

José Figueroa

Project Approach and Status

Roadmap of Three Parallel Efforts



- Demonstrated substantial improvement (10-fold increase) in gas permeability of fluoropolymer membrane platform by reducing crystallinity of base polymer without adversely affecting selectivity
- Development of high-flux polycarbonate (PC) membrane hollow fibers with 4 times higher CO₂ flux than commercial (standard) PC fibers
- Identification of promising 3-stage CO₂ capture membrane process design for integration with pulverized coal plant
- Techno-economic evaluation being performed of “best” integrated/retrofitted CO₂ capture membrane process for pulverized coal power plants
- Plan for 300-h field test of CO₂ capture membrane test skid with real coal-fired process flue gas