

# Interactions with Industry

- Ed Law spoke to me about his goal of creating a strong connection between CEFRC and industry
- Asked me to suggest some ways that might be done
- Long history of DOE/Lab/University/Industry teams
- Princeton was where it all began in middle 1970s
- DISC, Lean Burn, Engine Knock, HCCI, Diesel, etc.

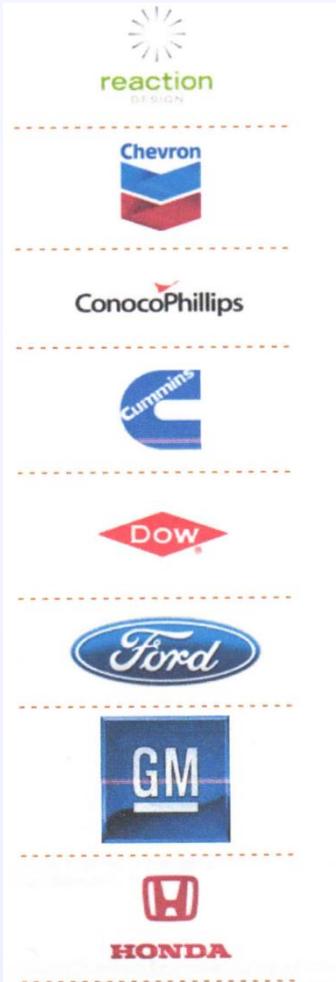


# General benefits

- Get students and post-docs working with companies, perhaps leading to jobs
- Involve companies by getting their research priorities identified
- Where possible, work on such priority tasks
- Higher level goal, get industry researchers to visit CEFRC for seminars, engage in research activities side-by-side with university researchers, short- and long-term
- High value results will appeal to DOE



# Two examples of how some partnerships work



Reaction Design  
Model Fuels Consortium

# Eindhoven Technical University, Philip de Goey

- Companies which contribute (financially) to the research, time period and interest

▪ Rolls-Royce	2000-now	FGM in combustion modeling
▪ Gasunie Research	1988-now	natural gas/syngas flames
▪ Gastec NV	1988-2000	combustion in central heaters
▪ EnergieNed	1998-2000	combustion in central heaters
▪ TNO	1996-now	engines, acoustics
▪ Philips NV	2000-now	heat transfer of flames to glass
▪ ATAG	1997-2006	noise in boilers
▪ AWB	1997-now	noise in boilers
▪ Remeha BV	1997-now	noise in boilers
▪ Bekaert Techn	2001-now	noise in boilers
▪ Noritz	2008-now	noise in boilers
▪ Honeywell	2001-now	control of noise in boilers
▪ Polidoro NV	2006-now	combustion/noise in burners
▪ EcoCeramics BV	1996-now	surface burners
▪ ECN	1992-now	surface burners/biomass
▪ DAF trucks	1996-now	diesel combustion
▪ Shell	1996-now	fuels in engines
▪ Avantium	2008-now	future fuels



# Eindhoven Technical University

▪ Warsila	1996-now	diesel combustion
▪ Chevron-Oronite	1996-now	fuels in engines
▪ PD&E	1996-now	engine combustion
▪ Kema NV	2008-now	biomass combustion
▪ Essent	2007-2008	biomass combustion
▪ Electrabel	2001-now	biogas addition in gas turbines
▪ Laborolec	2003-now	biogas addition in gas turbines
▪ Siemens	2008-now	biogas addition in gas turbines
▪ Thomassen/Ansaldo	2008-now	biogas addition in gas turbines
▪ NVV	2008-now	Clean Combustion Concepts
▪ Renuda	2008-now	Clean Combustion Concepts
▪ Numeca	2008-now	Clean Combustion Concepts
▪ MTT	2007-now	combustion in micro-turbines
▪ Bosch-Nefit	2009-now	laminar flames in boilers
▪ Fistuca	2008-now	spin off, innovations
▪ Progression Industry	2009-now	spin off, innovations

# Related goals of the Combustion Institute

- Build on the new CI web pages
- Build a combustion industry family of pages, with the companies identifying their needs and interests, as well as contact people at their companies



# Concrete actions for CEFRC

- Invite industry contacts to visit, tour facilities, meet students
- Organize an “open house” for multiple visitors, with a technical highlight program
- Don’t ask for money, just encourage mutual visits and then company participation in ongoing research activities
- Build a network of involved partners, find common technical ground

