Center for Advanced Combustion Engineering Research

Distinguished Center

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Established as a center in 1986 as a joint project between BYU and the U of U. This center is working towards the clean and efficient use of low-grade fossil fuels. The development of advanced combustion technology that will take advantage of alternative low-cost fuel resources such as coal, heavy oil, oil shale and tar sands. All of these fuel sources are abundant in Utah. Received "Distinguished Center" status in 1991.

Overview

1994-95 State Contract	$100,000
Matching Funds	$9,975,821
Cumulative	$60,200,867
Center Related Jobs	163
Industry Jobs Created	12
Benefiting Utah Companies:	
1994 Spin-off Companies	0
Cum. Spin-off Companies	3
Patents Applied	0
Patents Issued	2
License Agreements	55

Technologies

- **Understand mechanisms** of fossil-fuel combustion and pollutant and soot formation.
- **Understand the relationship** between fuel properties and conversion.
- **Develop** robust, reliable computer models to control and record the performance of particular combustion chambers.
- **Apply non-intrusive** diagnostics for complex combustion systems.
- **Fuel structure** and reaction mechanisms.
- **Pollutant formation/control** and waste incineration.
- **Fuel minerals**, fouling, and slagging.
- **Turbulent reacting** fluid mechanisms and heat transfer.
- **Comprehensive combustion** model development.
- **Model evaluation** data and process strategies.

Status

- **The Center** research program consists of 43 active research projects among 163 participants focused in six thrust areas. Nineteen projects have been completed thus far, while 32 were initiated in years three through eight.
- **New projects** have been initiated in each year. Working groups for all six thrust areas, involving 44 respected combustion professionals from companies (26), universities (11) and government labs (7) are functioning effectively. Most of the projects are fundamental and most are focused toward ACERC deliverables.

Economic Impact

- **An eight-year** cumulative budget and supported research effort of over $50,364,403.
- **New software licenses.**
- **New technology** for center members within the state, including REI, Inc., and Geneva Steel Co.
- **Consulting and technical** services to state companies.
- **A source** of highly skilled graduates with expertise in fossil energy for employment in key professional jobs within the State.
- **New technology** and new software products on which four new businesses have developed in Utah.
- **The indirect benefit** of having one of only 21 such highly sought after national engineering centers in the state, and the only one in fossil energy, which relates so directly to the state's natural fossil resources.