ILLINOIS INSTITUTE OF TECHNOLOGY
Transforming Lives.Inventing the Future.

IPRO 302

Impacts of Sulfur Capture in Coal Power Plants

Speakers: Oluwaseun Shonubi, Ryan Murphy

Members: ***Ryan Murphy, Abe Contreras, Justin Dickman, Gregory Enadeghe, Hector Rodriguez, Michael Haddad, Ryan Kyle, Michael Mongillo, Seun Shonubi, Bryce Swillum, Brian Wolber, Terrika Worthon***

Professors: ***Myron Gottlieb and Don Chmielewski***

Statement of Problem

- Our sponsor, Sargent & Lundy LLC, is investigating the effects of replacing conventional coal burning techniques in power plants with gasification.
- The production of energy from coal creates many byproducts including sulfur. Conventional and gasification power plants produce different sulfur byproducts.
- Sulfur must be removed because it is extremely harmful to the environment and corrosive to the power plants

Purpose

…to determine the economic and environmental differences in sulfur removal between a pulverized coal and a coal gasification facility of equal capacity.

BACKGROUND

Conventional Coal

- Coal is pulverized into a fine powder
- Powder injected into burners
- Coal burns fully, produces energy and byproducts
- Sulfur removed by combining with pulverized lime

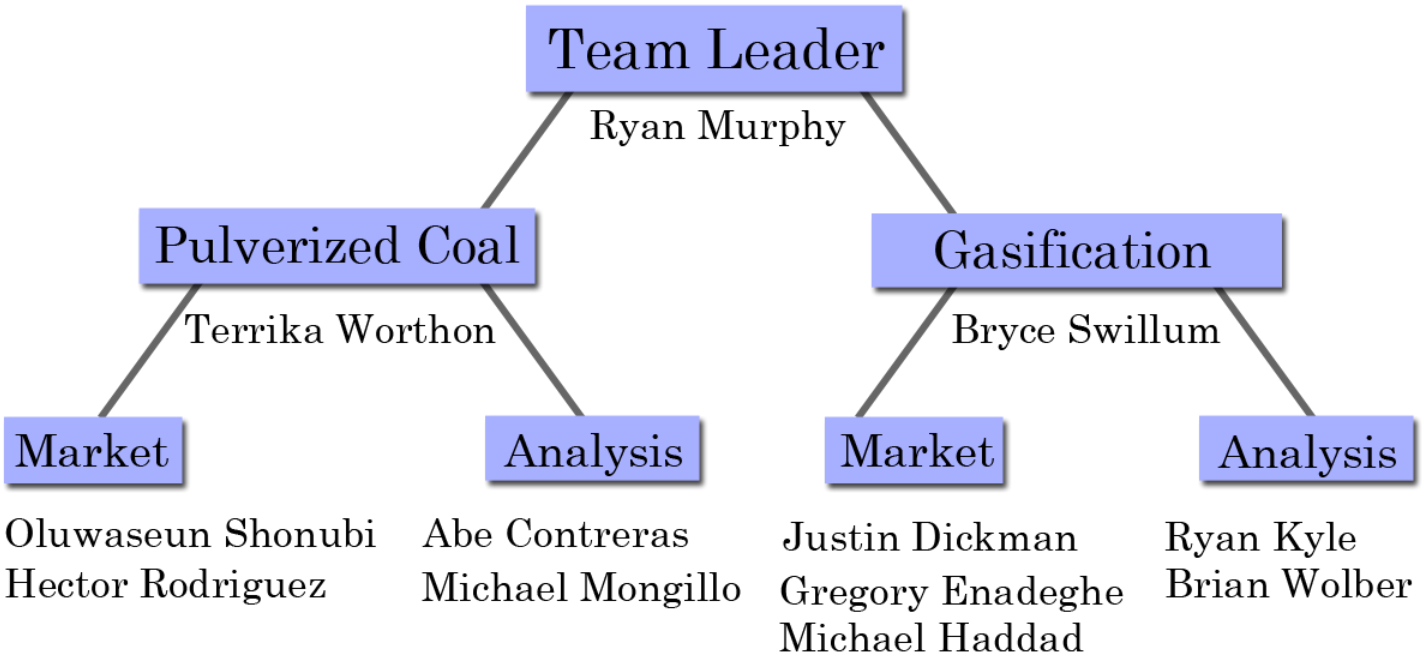
Gasification

- Coal is pulverized
- Coal is partially burned under low oxygen, forming carbon monoxide gas and hydrogen
- Sulfur is removed by amine process and gas is burned to power the turbines
- More efficient and adaptable

Final results

- An analysis of sulfur removal in two different types of coal power plants.
- A report of the economic and environmental costs of all parts of the sulfur removal process for both types of plants.
- Data found can be used by Sargent and Lundy to help determine the net value of different coal technologies.

ORGANIZATION



- Professors: *Myron Gottlieb and Don Chmielewski*

Goals of the Project

- Determine our initial conditions for analysis.
- Research the cost of operating power plants as well as the activities that go into sulfur removal.
- Investigate the value of sulfur going into the market and the cost of disposal.
- Study trends dealing with coal power generation and sulfur markets.
- Extrapolate our results to a broader scale.

Progress Toward Goals

- Clarified our goals with sponsor.
- Spoken with experts in coal gasification and sulfur removal.
- Initial research into sulfur removal technologies and the domestic sulfur markets.

CHALLENGES

Challenges	Solutions
Finding proprietary information	Using the school's resources to find pertinent information.
Understanding sponsor's goal.	Communicating with sponsor.
Limiting the scope of the IPRO	Group organization.
Properly utilizing individual strengths and knowledge.	Establish solid deadlines and meetings times during class
Group communication: meeting outside of class to accomplish tasks	

THANK YOU FOR YOUR TIME
QUESTIONS?