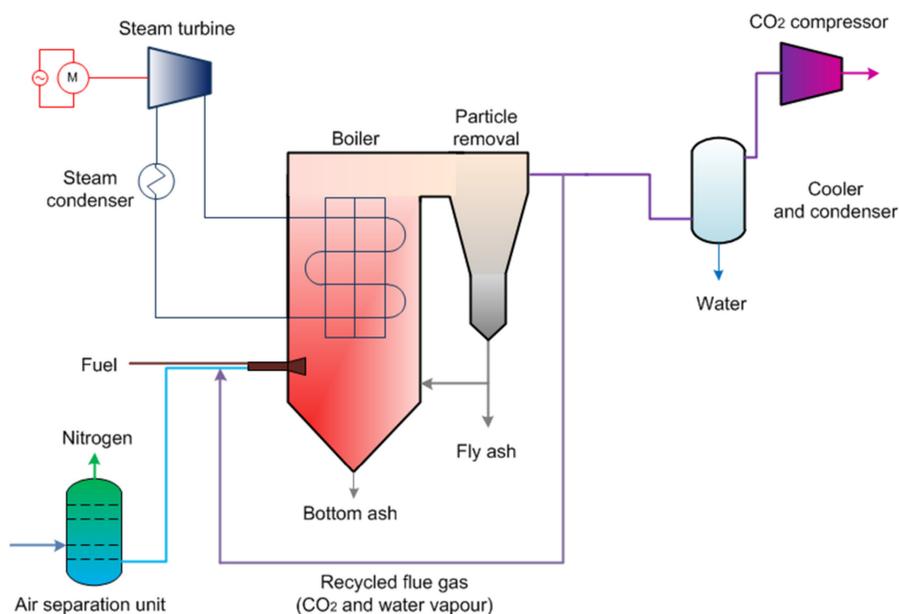


## Oxy-fuel combustion

Carbon dioxide is considered to be the main challenge for the coal-based power generation as well as for any other industrial application of coal. Coal oxy-combustion is one of the technologies that seem to be promising for power generation with the application of Carbon Capture and Storage.



## Scope of the work

- Specific features of fluid bed combustor;
- Identification of specific features of coal combustion in a  $O_2/CO_2$  atmosphere;
- Research on kinetics of coal grain pyrolysis
- Research on kinetics of char grain gasification and combustion
- Mathematical modelling of coal oxy-combustion in a fluid bed
- Coal oxy-combustion testing
- Coal combustion model validation

## Innovative aspects of the reaserch

Kinetic model of coal grains oxycombustion is crucial for process development

Thermodynamic and kinetic model of coal oxy-fuel combustion

Development of the new technology of coal combustion

combined with Carbon Capture and Storage system;

Simple technology of power generation with CCS;

Possibility of  $CO_2$  emission reduction in Polish and global economy;

„Zero-emission” technology of  $CO_2$ ,  $NO_x$ ,  $SO_x$  and mercury.

## Laboratory stand



HP-TGA  
TA Rubotherm



Laboratory stand for measuring of reactivity of chars



STA-QMS-FTIR Netzsch 409PG



Experimental facility for studing pressurised fluidised oxy-fuel combustion and gasification of coal (1,6 MPa, 900°C, 2kg/h)

## Participants in project

AGH University of Technology  
Silesian University of Technology  
Institute for Chemical Processing of Coal  
Central Minig Institute  
Katowicki Holding Węglowy  
Tauron Polska Energia  
KGHM Polska Miedź  
ZAK S.A.  
Południowy Koncern Energetyczny  
Południowy Koncern Węglowy

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