ABSTRACT

A significant CO\textsubscript{2} reduction of emissions from fossil fuel utilization in large industrial emitters (mainly power generation, but also refineries, cement work and steel production plants) down to acceptable levels can be achieved through different options, such as:

- increasing the efficiency. As an example some new power plants in Germany managed to reduce the CO\textsubscript{2} emissions by 40%,
- moving to another fuel with less carbon content, or to biofuels which is a renewable source,
- through CCS Carbon Capture and Storage of CO\textsubscript{2}.

The Carbon Capture Transportation and Sequestration (CCTS) solution appears to be one of the most promising technologies under investigation in several Joint Industrial Projects sponsored by Energy Companies.

The optimal set up of all this technology has to be found very timely. Energy penalties associated to each part of it (Capture, Transport and Underground Storage) should be carefully evaluated to launch promptly pilot projects with the aim to get specific requirements to be used in design, material selection, corrosion and fracture avoidance, operation & maintenance of steel pipes for anthropogenic carbon dioxide transportation pipeline systems. This paper also underlines differences and analogies from natural gas transportation.

KEY WORDS: Anthropogenic CO\textsubscript{2}, CCS; Carbon Capture, CO\textsubscript{2} pipeline, EOR.

NOMENCLATURE

ABL : Atmospheric Boundary Layer,
AC : Accelerated Cooling,
API : American Petroleum Institute,
CCS : Carbon Capture & Storage,
CFD : Computational Fluid Dynamics,
CSM : Centro Sviluppo Materiali,
DQ : Direct Quenching,
EC : European Community,
EOR : Enhanced Oil Recovery,
EPRG : European Pipeline Research Group,
EU : European Union,
GHG : Green House Gases,
HSLA : High Strength Low Alloy (steels),
IGCC : Integrated Gasification Combined Cycle,
LNG : Liquefied Natural Gas,
LPG : Liquefied Petroleum Gas,
NGCC : Natural Gas Combined Cycle,
O&G : Oil & Gas,
O&M : Operation and Maintenance,
PC : Pulverised Coal,
RES : Renewable Energy Sources,
SARCO\textsubscript{2} : Requirements for Safe and Reliable CO\textsubscript{2} Transportation Pipeline,
SCPC : Super Critical Pulverized Coal,
TMCP : Thermo Mechanical Controlled Processing.