

### **Brief introduction of the ACCS system**

Generally, coke is used in blast furnace in steel making industries and also used in various industries and household as a heat source.

When coal is carbonized in coke oven, coke oven gas (raw COG) is generated , and raw COG is sent to COG purification unit and purified into purified COG.

Almost half of purified COG is sent to coke oven as heat source for coal carbonization.

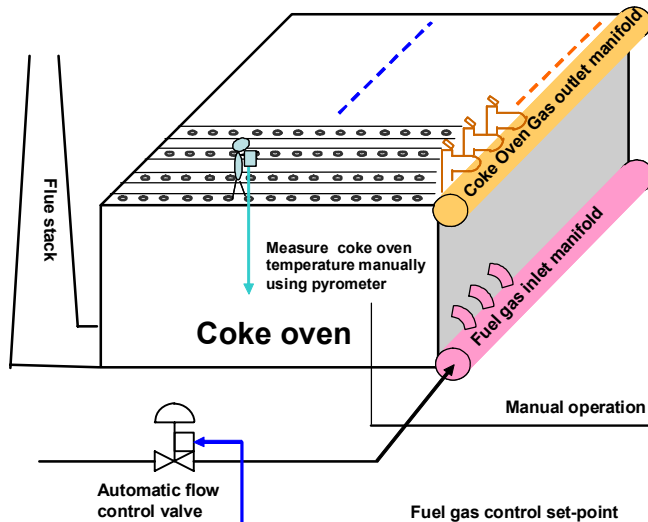
Another half of purified COG is sent to various COG users, inside and/or outside of the firm.

In China coke oven operation is performed in accordance with operation manuals and guidance prepared by coke oven design firm. Such manuals instruct enough coking time in which every batch of coke could get heat transfer for product quality. Actually every coke chamber has its characteristic and coking time differ each other. Chinese operation method, which target the longest coking time, leads over input of heat by more 5% than required.

The ACCS system will detect temperature profile of individual coke oven using thermocouples specially designed and prepared which are installed in COG exit line and coke oven ceiling. The system could indicate proper pushing out time or heating temperature chamber by chamber, and eventually conclude saving COG. Thus COG conservation, and CO<sub>2</sub> reduction could be developed.

The main scheme of the ACCS system shows below;

## Before Automatic Combustion Control System introduced (Conceptual outline)



<Control room>

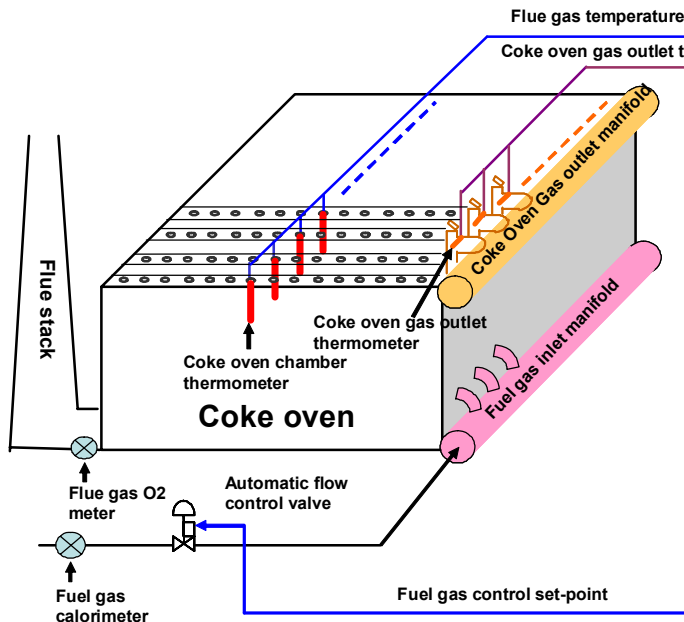
### Net coking time

there is no concept of "net coking time" and "soaking time" but only "gross coking time" which has certain allowance or margin.

### Coke oven battery temperature control

Field operators manually measure coke oven temperature twice a shift, and board operators manually set flue gas flow rate on controllers to keep coke oven battery temperature as scheduled.

## After Automatic Combustion Control System introduced (Conceptual outline)



<ACC SYSTEM>

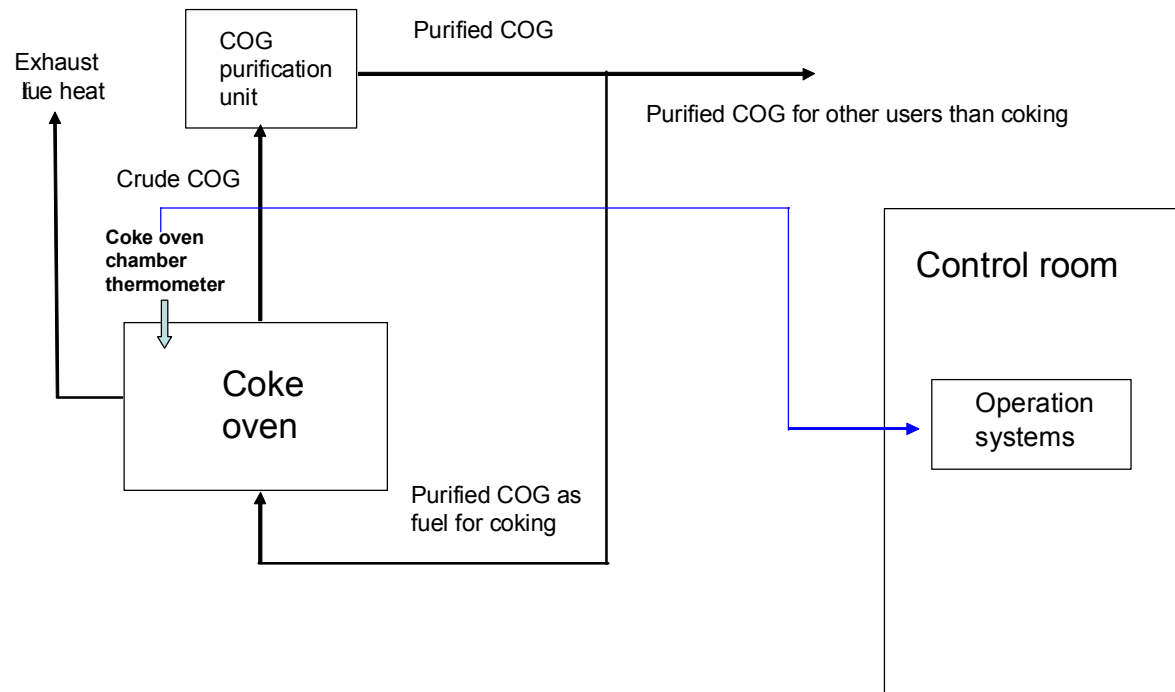
### Net coking time

by detecting and analyzing of Coke oven chamber temperature through instrumentation, "net coking time" and minimum "soaking time" are determined. So fuel gas consumption is to be optimized.

### Coke oven battery temperature control

by detecting coke oven battery temperature, fuel gas flow rate is to be controlled automatically.

## Before Project Introduced (Conceptual outline)



## Project Boundary (Conceptual outline)

