Alkali Control in the Blast Furnace – Influence of Modified Coke Ash

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BFI

VASD

LTU

Research Project

LKAB

swerea MEFOS

SSAB

Sodium

Alkali

Potassium

AICirc

Catalyst

Alkali Control

Recirculation

Accumulation

Alkali

Sodium

Alkali

Potassium

Catalyst

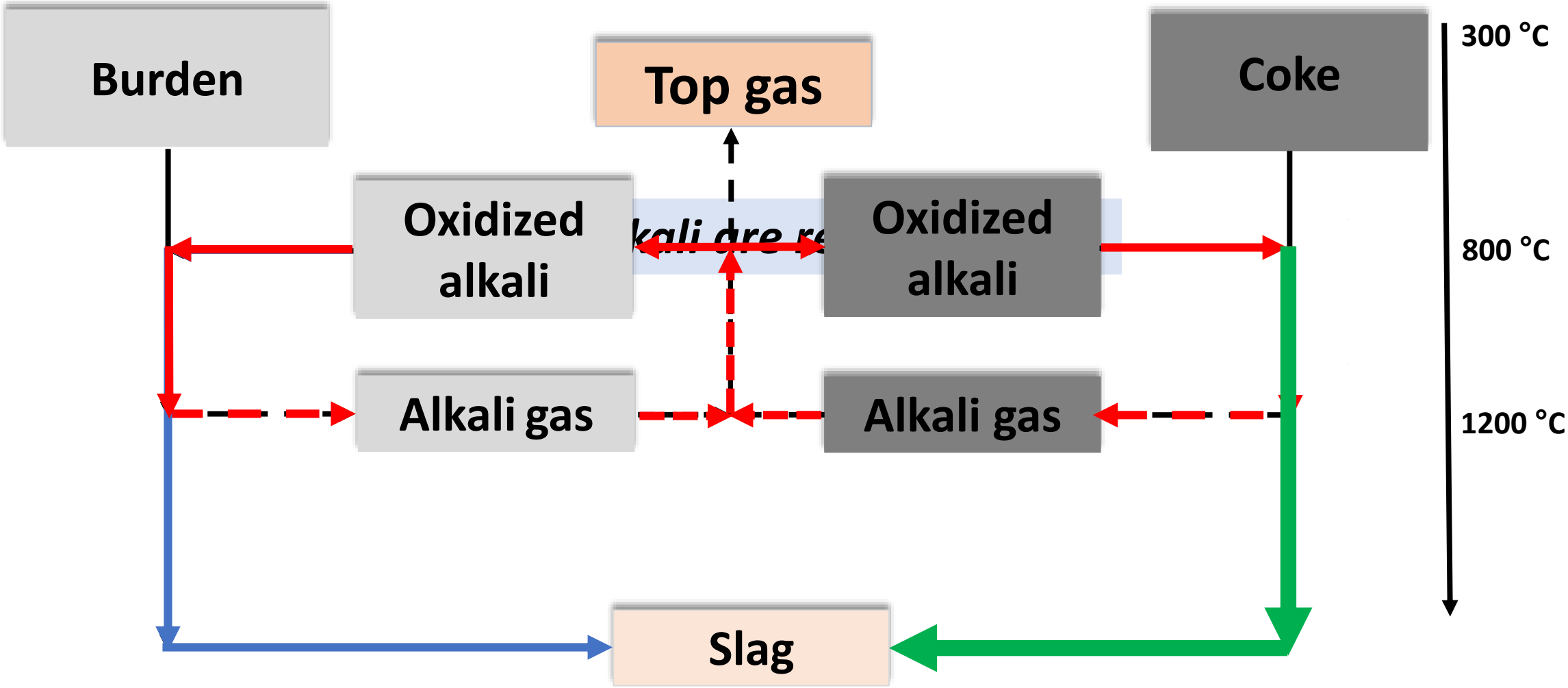
- Increased coke reactivity
- Decreased coke strength
- Increased coke rate
- Interruptions

Alkali Control

Recirculation

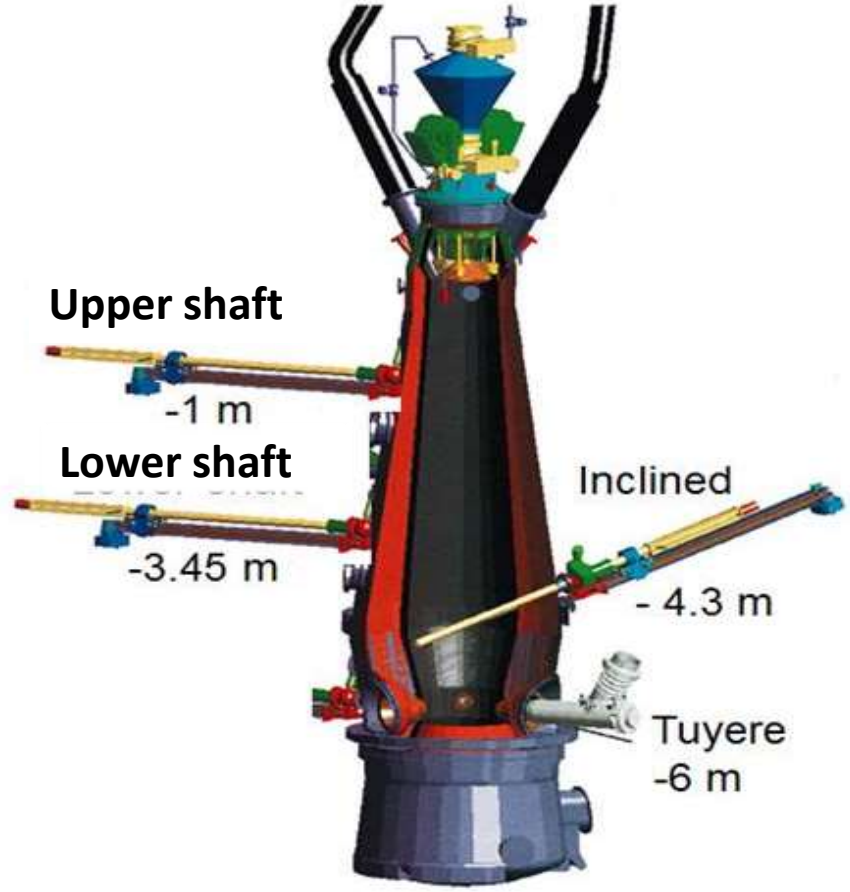
Accumulation

Alkali recirculation



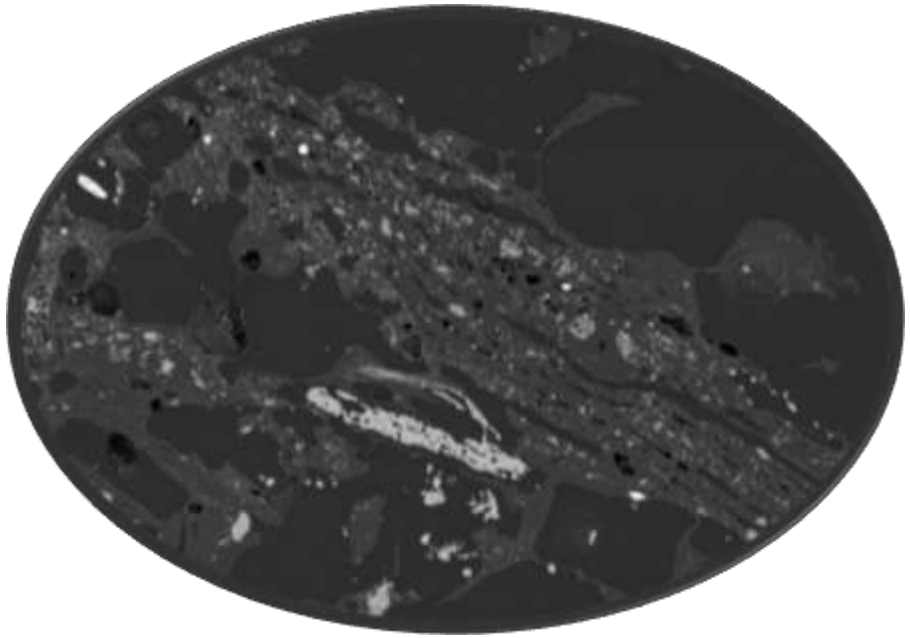
Modified coke ash

- Three test cokes
  - **1: Al-silicate**
  - **2: SiO_2**
  - **3: Al_2O_3**
- EBF **(Experimental Blast Furnace)**
  - Reference coke
- Quenched and excavated



Results – SEM-EDS

- Al-silicates contained alkali
- Unreacted grains of Al_2O_3
- Unreacted grains of SiO_2



Conclusions

- Al-silicate participated in the alkali uptake
- Al-silicates – most common phases with alkali
- Al_2O_3 and SiO_2 – not fully participating in the alkali uptake
- The reactivity increased with alkali content

Future work

- Increased mineral addition of Al-silicate
  - Master Thesis, spring 2018
- Laboratory trials
  - Controlled conditions

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