Closed Coke Slurry System (CCS System) Int. Patents pending

In Co-Operation with
Ruhrpumpen: Sales & EPC-Partner
TRIPLAN: Technology & Engineering Provider

Presenter
Bernd Lankers
bernd.lankers@triplan.com

Co-Presenter
Josef Wadle
josef.wadle@triplan.com

TRIPLAN AG
Auf der Krautweide 32
65812 Baden Soden/Ts.
www.triplan.com

Coking.com Safety Seminar – Düsseldorf, October 2011
Convert Your Coke Handling Problem Area

Into a

Smooth
Clean
Safe
Reliable
Effective
Automated
Consistant

Operation

By using the innovative

Closed Coke Slurry System (CCS System) Int. Patents pending
Today’s typical Scenario for Coke Handling....

- Cutting into Pit/ Pad
- In-situ Dewatering
- Coke Removal via Bridge Crane and/ or Front loader
- Coke Downsizing with offsite Crusher
- Transport of sellable coke to Railcars/ Silos
- Manual sludge disposal/ insufficient water management
- Economical locked-in situation, coke removal restricts cycle time
Typical Problems with Coke Handling

- Poor Reliability of Mechanical Equipment
- Absorbs Manpower
- Steam Plum widely dispersed and highly visible
- Steam Plum contains Coke fines/ Aerosols/ HC’s
- Workers exposure to Steam Plum/ Safety issue
- Generally dirty Operation/ Dust emissions
- Insufficient coke fines removal & sludge handling/ poor cutting water quality
- Increasing concerns by Local Authorities/ Environmental Agencies
Today’s typical Scenario for Coke Handling....
Objectives to overcome these disadvantages...

- Eliminate untypical equipment e.g. Bridge Cranes/Front loader for refiners
- Raise operators acceptance level
- Develop fully automated/ remote controllable operation for all steps
- Improve efficiency/ Gain robust Cycle Time reduction
- Improve reliability/ Reduce maintenance cost
- Minimize manpower cost
- Contain/ suppress steam from grade
- Create safe & healthy workplace
- Allow retrofitting
- Disperse authorities concerns
Task accomplished...

Solution: Convert all coke handling steps into another process unit operation refining personnel is familiar with

→ **Closed Coke Slurry (CCS) System** Int. Patents pending

- All streams are treated as a ‘liquid’ → Pumping or gravity flow
- Crushing In-line → creates a pumpable Slurry stream
- Fully controllable & automatic operation → state-of-the-art technique; DCS architecture
- Sludge disposal → intelligent disguised within coke slurry operation
- Workers exposure minimized → closed piping system
- Reliability improved → Latest state-of-the-art materials and metallurgy
- System consistency → match with state-of-the-art cutting equipment capacity
### Time Schedule

#### Pit / Pat System vs CCS

**Case: PIT / PAT SYSTEM**

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<th>Activity</th>
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**Case: CLOSED COKE HANDLING SYSTEM**

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**Time Gain: 4 hrs**
Special features & unique Equipment developments for 100% reliability & safety

- Scope and type of instrumentation enables fully automated DCS-operation
- Rigid crusher design & construction
- Crusher sizing and material selection to cope with maximum cutting capacity/ peak loads even for large drum outages
- Special system design & material selection for outlet valves and slurry pipe
- Slurry pump design, construction and material for ultra-low NPSH\textsubscript{req}
- Special drainage design and materials for dewatering bins
- Coke fines management without active tank internals
Cycle Time Gains Over Earnings
Deliverables, Supply & Services in Co-Operation with Ruhrpumpen

Engineering deliverables:
- FEED Package preparation, fully spec’d

Supply of Single Source-/ Proprietary equipment at site
- Crusher (2)
- Slurry Pump (2)
- Dewatering Bins Discharge Valve (2)
- Crusher Outlet Valve (2)
- Telescopic Shute (2)
- Clean water Pump (2)

Additional services
- Gate reviews
- Commissioning
- S/ U assistance
Summary

The Closed Coke Slurry System is...

Safe → avoids manual handling via DCS control/ clean workplace

Reliable → allows sound cycle length planning long term basis

Ecological → virtually free of emissions & steam plum

Economical → enables up to 4 hrs cycle reduction -> fast payout
Incidental cost savings for manpower & maintenance

Executable → through close partnering with Ruhrpumpen, leading provider of coke cutting equipment

Attractive → marginally higher initial investment than Pit design, but...
Grassroots → Superstructure substantially lower, less plot
Revamp → Tie-in within a planned T/A – Erection inside PIT
Thanks for your attention

Ruhrpumpen GmbH  
Stockumer Strasse 28  
D-58 453 Witten  
www. ruhrpumpen.de  
Dr. Wolfgang Paul  
paul_dr@ruhrpumpen.de

TRIPLAN AG  
Auf der Krautweide 32  
D-65812 Baden Soden/Ts.  
www.triplan.com  
Bernd Lankers  
bernd.lankers@triplan.com  
Josef Wadle  
josef.wadle@triplan.com