Case Study:

QUICKLIME SLAKING PLANT FOR WORLD’S LARGEST COPPER-COBALT MINE

Location:
Democratic Republic of the Congo (DRC), Africa

Operation Type:
Copper, Cobalt Mine

Equipment Solution:
Quicklime Slaking Plant

Year:
2006

Scope of Project:
Due to Transmin’s broad base bulk bag knowledge, we were approached to design, engineer, fabricate and install a lime slaking system for the world’s largest copper-cobalt resources located in southern Congo, Africa.

The client requested that Transmin would supply the whole lime slaking plant.

The Solution:
Fabricated at Transmin’s workshop in Malaga, it took 20 weeks for the Transmin team to build and factory test each piece of equipment before it was shipped to Durban and installed in Congo.

The quicklime is delivered in 1 or 2t Bulk Bags and is filled into any of the three bag breakers and then lowered onto their spiles via the hoists.

The quicklime is transferred via a common screw feeder beneath each bag breaker to another screw conveyor which transfers the quicklime to a bucket elevator outside of the building. The bucket elevator lifts the quicklime into the 100m³ silo for storage.

The quicklime is then slaked via a ball mill (closed circuit) at a design rate of 11t/h.

A mix of lime (MOL) slurry of 20% w/w is produced and then stored in an agitated tank by others where it is then dosed into the plant.

The Lime Slaking System operates as required to ensure that the MOL tank remains sufficiently full.
LIME PROCESSING PLANTS

Since inception in 1987, Transmin has been designing systems to handle, store and process lime products, predominantly to the gold, minerals processing and waste industries.

We are the largest supplier of lime plants in Australia. 100’s of installations have been completed in Australia and Overseas.

Transmin’s capabilities include the use of hydraulic silos or quicklime (Calcium oxide) within the circuit.

In addition to supplying systems for lime, Transmin has also successfully adapted the concept for cement, dolomite, soda ash, magnesium oxide and other mineral powders and reagents.

Benefits:
The benefits of using lime processing plants:

- **Processing**
  - Grinding and milling of the roller mounted style. High performance to suit client process requirements.
- **Receival**
  - Intake of lime via bulk bag, pressurised vehicle or hopper/mixer.
- **Storage**
  - Single or multiple silos dependent upon site storage requirements.
- **Wetting**
  - Pre-wetting prior to mill for control of dust.
- **Limestores**
  - Separate lime storage facilities available.
- **Milk of Lime Storage**
  - Tanks to either site built or supplied complete.

Hydrated Lime Mixing Facilities

Simple and cost effective, Transmin has a range of components available to custom design a hydrated Lime Mixing Plant to meet any requirement.

Depending on the system capacity and the preferred method of storage, the system can accept products from pressurised rain tanker or bulk bag, with total storage capacity to suit the plant’s individual needs. Transmin’s design/transfer systems and pre-wetting units will ensure reliable slake free operation.

High accuracy mixing can be achieved using box in weight or weight screw feeder systems to close the time in the hydrated mixing tanks.

Full Lime Slaking Plants

For those installations requiring a greater production of MOL of lime, MCL’s complete slaking plant is the ideal option. These systems will typically receive quicklime from a rejection caustic mud dryer to maintain an efficient Slaking reaction temperature. Depending on site requirements, either an open or closed loop grinding system can be offered.

As part of the package, a full compliment of agitation mixing, storage and loading tanks is available, complete with transfer pumps, piping, valves and level control instrumentation and monitoring. An option for automatic MOL piping, flushing and mixing systems is also available.

High efficiency pre-wetting units and lime extraction scrubbers are a standard feature of all Transmin Ball Mill slaking plants.

Roller Mounted Ball Mills

Transmin Roller Mounted Ball Mills are a low cost, easily installed and maintained solution for many small capacity wet grinding operations. Designed for either closed or open circuit grinding.

Also available is the new Thurnion ball mill model with a simplified drive mechanism incorporating a friction ring on the front face. We have developed a range of efficient cost-effective slaking systems complete with PLC control systems. Only the highest quality components are used where necessary to optimise mixed within the circuit.

A full turnkey service is available from concept development through design, manufacture, installation and commissioning including electrical controls and civil works.

Since inception in 1987, Transmin has supplied numerous installations from small to large scale world-wide. 100’s of successful installations have been completed in Australia and Overseas.

Benefits:
The benefits of using lime processing plants:

- **Processing**
  - Grinding and milling of the roller mounted style. High performance to suit client process requirements.
- **Receival**
  - Intake of lime via bulk bag, pressurised vehicle or hopper/mixer.
- **Storage**
  - Single or multiple silos dependent upon site storage requirements.
- **Wetting**
  - Pre-wetting prior to mill for control of dust.
- **Limestores**
  - Separate lime storage facilities available.
- **Milk of Lime Storage**
  - Tanks to either site built or supplied complete.

Other Lime Applications

- Full Gas Desulphurisation (FGD) lime dosing systems.
- Dry lime dosing onto MFL Feed Belts for pH control.
- Heap Leach MOL dosing for pH control.
- Cycled lime grinding, conveying and storage systems for lime manufacturers.
- Large capacity silage ageing tanks.
- Sea container unloading facilities - remote/retrieval systems available.
- Limestore feeding, grinding & mixing systems.
- Water treatment pH Control.
- Waste water treatment neutralisation.

<table>
<thead>
<tr>
<th>MILL MODEL</th>
<th>STANDARD DRIVE (kW)</th>
<th>QUALIFIED DRIVE (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 x 1.5</td>
<td>111</td>
<td>49</td>
</tr>
<tr>
<td>1.2 x 3.0</td>
<td>132 + 75</td>
<td>12.0</td>
</tr>
<tr>
<td>1.6 x 3.6</td>
<td>132 8.0</td>
<td></td>
</tr>
<tr>
<td>2.0 x 4.0</td>
<td>132 + 75</td>
<td>12.0</td>
</tr>
<tr>
<td>2.2 x 4.4</td>
<td>165 + 75</td>
<td>14.0</td>
</tr>
</tbody>
</table>

*Primary and secondary drive sizes.
Since inception in 1987, Transmin has been designing systems to handle, store and process lime products, predominantly to the gold, minerals processing and waste industries. We are the largest specialist supplier of lime plants in Australia. 100’s of successful installations have been completed in Australia and Overseas.

We have developed a range of efficient cost effective slaking systems complete with dosing systems that are available from our standard facilities or on a custom basis.

Hydrated Lime Mixing Facilities

Processing
Slaking and grinding mills of the roller mounted style. Grind performance to suit client process requirements.

Recall
Retention of lime via bulk bag, pressurized vehicle or hopper/ hoist.

Storage
Single or multiple silos dependent upon site storage requirements.

Wetting
Pre-wetting prior to mill for control of dust.

Limestone
Separate limestone grinding facilities available.

Milk of Lime Storage
Tankage to either site built or supplied complete.

Benefits:
The benefits of using lime processing plants:

- Processing
- Slaking and grinding mills of the roller mounted style. Grind performance to suit client process requirements.
- Recall
- Retention of lime via bulk bag, pressurized vehicle or hopper/hoist.
- Storage
- Single or multiple silos dependent upon site storage requirements.
- Wetting
- Pre-wetting prior to mill for control of dust.
- Limestone
- Separate limestone grinding facilities available.
- Milk of Lime Storage
- Tankage to either site built or supplied complete.

Full Lime Slaking Plants

For those installations requiring a greater production rate of Milk of Lime (MOL) a complete lime slaking system is the preferred option. These systems will typically receive quicklime from a pneumatic road or rail tanker and total site storage can range from 50 to several thousand tonnes of dry quicklime.

The dry product is automatically metered into a pneumatic feed system to suit the mill’s individual needs. Transmin’s slaking plants have been designed to ensure reliable trouble free operation. As part of the package, full compliment of piping, valving and level control instrumentation is available, complete with transfer pumps, agitation, mixing, storage and ageing tanks.

High efficiency wetting units and lime extraction scrubbers are a standard feature of all Transmin Ball Mill slaking plants.

Waste water treatment & mixing systems.

Dosing systems.

Flue Gas Desulphurisation (FGD) lime dosing systems.

Dry lime dosing onto Mill Feed Belts for pH control.

Heap Leach MOL dosing for pH control.

Roller Mounted Ball Mills

Easy to install, easy to maintain, low cost, reliable and has a very low life cycle cost.

Transmin Roller Mounted Ball Mills are a low cost, easily installed and maintained solution for many small capacity wet grinding operations. Designed for either closed or open circuit grinding.

Also available is the new Transmin Ball mill with a simplified drive mechanism incorporating a flange ring on the front face.

Since inception in 1987, Transmin has been designing systems to handle, store and process lime products, predominantly to the gold, minerals processing and waste industries. We are the largest specialist supplier of lime plants in Australia. 100’s of successful installations have been completed in Australia and Overseas.

We have developed a range of efficient cost effective slaking systems complete with dosing systems that are available from our standard facilities or on a custom basis.

Hydrated Lime Mixing Facilities

Processing
Slaking and grinding mills of the roller mounted style. Grind performance to suit client process requirements.

Recall
Retention of lime via bulk bag, pressurized vehicle or hopper/hoist.

Storage
Single or multiple silos dependent upon site storage requirements.

Wetting
Pre-wetting prior to mill for control of dust.

Limestone
Separate limestone grinding facilities available.

Milk of Lime Storage
Tankage to either site built or supplied complete.

Benefits:
The benefits of using lime processing plants:

- Processing
- Slaking and grinding mills of the roller mounted style. Grind performance to suit client process requirements.
- Recall
- Retention of lime via bulk bag, pressurized vehicle or hopper/hoist.
- Storage
- Single or multiple silos dependent upon site storage requirements.
- Wetting
- Pre-wetting prior to mill for control of dust.
- Limestone
- Separate limestone grinding facilities available.
- Milk of Lime Storage
- Tankage to either site built or supplied complete.

Full Lime Slaking Plants

For those installations requiring a greater production rate of Milk of Lime (MOL) a complete lime slaking system is the preferred option. These systems will typically receive quicklime from a pneumatic road or rail tanker and total site storage can range from 50 to several thousand tonnes of dry quicklime.

The dry product is automatically metered into a pneumatic feed system to suit the mill’s individual needs. Transmin’s slaking plants have been designed to ensure reliable trouble free operation. As part of the package, full compliment of piping, valving and level control instrumentation is available, complete with transfer pumps, agitation, mixing, storage and ageing tanks.

High efficiency wetting units and lime extraction scrubbers are a standard feature of all Transmin Ball Mill slaking plants.

Waste water treatment & mixing systems.

Dosing systems.

Flue Gas Desulphurisation (FGD) lime dosing systems.

Dry lime dosing onto Mill Feed Belts for pH control.

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Also available is the new Transmin Ball mill with a simplified drive mechanism incorporating a flange ring on the front face.
LIME PROCESSING PLANTS

Since inception in 1987, Transmin has been designing systems to handle, store and process lime products, predominantly to the gold, minerals processing and water industries. We are the largest specialist supplier of lime plants in Australia. 100’s of installations have been completed in Australia and Overseas.

Generally, customers will be using hydrated lime, although the concept works similarly for the other products. We have supplied numerous installations from sea containers for companies nearby the sea.

We have developed a range of efficient cost-effective slaking systems complete with control systems. System design is carried out where necessary by specialists located within the local area. A full turnkey service is available from concept development through design, manufacture, installation and commissioning including electrical controls and site work.

In addition to supplying systems for lime, Transmin has also successfully adapted the concept for cement, dolomite, soda ash, magnesium oxide and other mineral powders and reagents.

Benefits:
The benefits of using lime processing plants:

- Processing
  - Slaking and grinding mills of the roller mounted style. Ideal performance to suit client process requirements.

- Recut
  - Recovery of lime via bulk bag, pressured vehicle or hopper/feeder.

- Storage
  - Single or multiple silos dependent upon site storage requirements.

- Wetting
  - Pre-wetting prior to mill for control of dust.

- Limestone
  - Separate limestone grinding facilities available.

- Mills of Lime Storage
  - Tankage to either site-built or supplied complete.

Hydrated Lime Mixing Facilities

Simple and cost effective, Transmin has a range of components available to custom design a hydrated Lime Mixing Plant to meet any requirement.

Depending on the system capacity and the preferred method of storage, the system can accept products from pressurised road tanker or bulk-truck, with total storage capacity to suit the plant’s individual needs. Transmin’s pre-wetting units and feeder systems will ensure reliable trouble free operation.

High accuracy mixing can be achieved using box-in-weight or weigh screw feeder systems to dose the lime into the slurry mixing tank.

Full Lime Slaking Plants

For those installations requiring a greater production of MOL of lime TCL’s complete turnkey limestone slaking plant is the preferred option. These systems will typically receive quicklime from a hopper for drying and total site storage can range from 1,000 to several thousand tonnes of dry quicklime.

The dry product is automatically metered into a Dry Lime Slaking Ball Mill for the integrated PLC control system. This system maintains the water set point and adjusts the feed rate of quicklime to maintain an efficient slaking reaction temperature. Depending on site requirements, either an open or closed loop grinding system can be offered.

As part of the package, a full compliment of agitated mixing, storage and agitating tanks is available, complete with transfer pumps, piping, valves and level control instrumentation and monitoring. An option for automatic MOL pipeline flushing is also available.

High efficiency pre-wetting units and lime extraction/stratifiers are a standard feature of all Transmin Ball Mill slaking plants.

Other Lime Applications

- Flue Gas Desulphurisation (FGD) lime dosing systems.
- Dry lime dosing onto Mill Feed Belts for pH control.
- Heap Leach MOL dosing for pH control.
- Calcined lime grinding, conveying and storage systems for lime manufactures.
- Large capacity lime aging tanks.
- Sea container unloading facilities - separate brochure available.
- Lime storage for water treatment sites.
- Lime feeders, grinding & mixing systems.
- Water treatment pH Control.
- Waste water treatment neutralisation.

Roller Mounted Ball Mills

Transmin Roller Mounted Ball Mills are a low cost, readily installed and maintained solution for many small wet grinding operations. Designed for either closed or open circuit grinding.

Also available is the new Tigerline drive model with a simplified drive mechanism incorporating a friction ring on the front face.

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<tbody>
<tr>
<td>1.2 x 2.0</td>
<td>155 + 75</td>
<td>150</td>
</tr>
<tr>
<td>1.6 x 3.6</td>
<td>260 + 115</td>
<td>250</td>
</tr>
<tr>
<td>2.0 x 4.0</td>
<td>390 + 150</td>
<td>375</td>
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Specification and performance data is available upon request.
Case Study: QUICKLIME SLAKING PLANT FOR WORLD’S LARGEST COPPER-COBALT MINE

Scope of Project:
Due to Transmin’s broad base bulk bag knowledge, we were approached to design, engineer, fabricate and install a lime slaking system for the world’s largest copper-cobalt resources located in southern Congo, Africa.

The client requested that Transmin supply the whole lime slaking plant.

The Solution:
Fabricated at Transmin’s workshop in Malaga, it took 20 weeks for the Transmin team to build and factory test each piece of equipment before it was shipped to Durban and installed in the Congo.

The quicklime is delivered in 1 or 2t Bulk Bags and is lifted into any of the three bag breakers and then lowered onto their spiles via the hoists.

The quicklime is transferred via a common screw feeder beneath each bag breaker to another screw conveyor which transfers the quicklime to a bucket elevator outside of the building. The bucket elevator lifts the quicklime into the 100m³ silo for storage.

The quicklime is then transferred out of the silo into the ball mill using bin activator, screw feeder, and vibrating conveyor. Lime is then slaked via a ball mill (closed circuit) at a design rate of 11t/h. A mix of lime (MOL) slurry of 20% w/w is produced and then stored in an agitated tank by others where it is then dosed into the plant.

The Lime Slaking System operates as required to ensure that the MOL tank remains sufficiently full.
Case Study:
QUICKLIME SLAKING PLANT FOR WORLD’S LARGEST COPPER-COBALT MINE

Scope of Project:
Due to Transmin’s broad base bulk bag knowledge, we were approached to design, engineer, fabricate and install a lime slaking system for the world’s largest copper-cobalt resources located in southern Congo, Africa. The client requested that Transmin would supply the whole lime slaking plant.

The Solution:
Fabricated at Transmin’s workshop in Malaga, it took 22 weeks for the Transmin team to build and factory test each piece of equipment before it was shipped to Durban and installed in the Congo.

The quicklime is delivered in 1 or 2t Bulk Bags and is lifted into any of the three bag breakers and then lowered onto their spiles via the hoists. The quicklime is transferred via a common screw feeder beneath each bag breaker to another screw conveyor which transfers the quicklime to a bucket elevator outside of the building. The bucket elevator lifts the quicklime into the 100m³ silo for storage. The quicklime is transferred out of the silo into the ball mill using bin activator, screw feeder, and silo conveying. Lime is then skated via a ball mill (closed circuit) at a design rate of 11t/h. A mix of lime (MOL) slurry of 20% w/w is produced and then stored in an agitated tank (by others) where it is then dosed into the plant.

Lime Slaking System operates as required to ensure that the MOL tank remains sufficiently full.