Roxon Roller Screens Presentation

**Types of Roller Screens**

- To solve various problems in coal screening, Roxon has developed a series of Roller Screens especially for difficult coal screening applications

- **Roxon MRV Roller Grizzly**
- **Roxon MRR Roller Screen**
- **Roxon MRH Elliptical Roller Screen**

**Roxon MRV Roller Grizzly**

- Capacities up to 4,000 TPH
- Screen Apertures 80mm - 200mm
- ROM Scalping up to 1.5 cubic metre
- Handles Sticky Materials
- Roller Speed: 30 RPM
- Roller lobes 500BHN weld-able Steel
- Low Maintenance
- Low Power consumption
- Multi-Dimensional Screening

**Roxon MRR Roller Screen**

- Capacities up to 3,000 TPH
- Screen Apertures: 20mm - 80mm
- High throughput capacity
- Handles Sticky Materials
- Non Pegging / Non Blinding
- Roller Speed: 80 - 180 RPM
- Hi-Chrome cast roller deck materials
- Low Maintenance
- Low Power consumption

**Roxon MRH Elliptical Roller Screen**

- Patented Elliptical Roller Design
- Capacities up to 800 TPH
- Screen Apertures: 3mm - 20mm
- Dry Fines Screening
- Handles Sticky Materials
- Non Pegging / Non Blinding
- Roller Speed: 330 RPM
- Hi-Chrome cast roller deck materials
- Multi-Dimensional Screening

**Summary of features in Roller Screens**

- **reliable efficiency**
  - because the roller screen will not blind this enables the machine to offer up to 95% reliable efficiency
  - it should be noted that fluctuating and low screen efficiency causes problems to heavy media circuits
    - high magnetite losses
    - extra load of fines in filters
• variations in specific gravity

λ efficient screening action
  – good polishing action between particles which assists in the separation and removal of adhering fines
  – some stratification of the burden occurs
  – inertia causes the larger particle to be lifted higher than the smaller particle.
  – this action allows the smaller particles to remain closer to the screening aperture

λ does not generate much fines
  – there is little breakage or crushing occurs (tests indicate less than 1%)
  – there is no "nip point" - all rollers rotate in the same direction
  – naturally, with any mechanical handling of friable product some breakage will occur
  – New Vaal indicated some mechanical beneficiation by recovering coal fines adhering to shales

λ screens wet and sticky materials without blinding
  – the self cleaning nature of the roller screen lends itself to screening difficult materials without adding water
  – the non-pegging nature of the machine will be important where a larger particle size is required

λ high specific throughput / compact
  – roller screens offer between 2 - 6 times the screening throughput per unit area when compared to vibrating screens
  – the efficiency of the vibrating screen (with respect to fines screening) approaches that of the roller screen if water is added
  – the compact nature of the screen lends itself to retro-fitting applications

λ lighter supporting structure requirements
  – because the machine does not vibrate the supporting structure can be much lighter
  – vibrating screens have large oscillating / reciprocating masses which cause structural loads
  – additionally, the structure must be checked by FEA for harmonics / stress.

λ low headroom and horizontal installation
  – the feed conveyors and support structure can be lower because of the machines low profile
  – feed chutes are simpler because of better product distribution on screening area
  – the screen house can be considerably lower

λ easy to make dust-proof
  – because the machine does not vibrate (and thanks to the straight and fixed screen body) it is simple to install dust suppression covers
  – it should also be noted that there is no air displacement (as is the case with vibrating screens)
— diaphragm air displacement will cause any dust present to be blown about

- **various separation sizes on one machine**
  — on a roller screen various separation sizes can be achieved on one deck

- **screening accuracy**
  — horizontal installation avoids “probability cut” apertures (as is the case with vibrating screen)
  — by maintaining a clean aperture the cut point remains accurate

- **reduced noise levels**
  — operation around 85 – 90 dBA
  — reduction in sound pressure levels and low frequency noise levels compared to vibrating screen
  — some noise generated by coal in chutes and rolling over the screen table

- **reduced power requirements**
  — generally less than 30% of the power required for the equivalent vibrating screen
  — this figure does not include pumping costs for wet screening
  — where high percentages of “near size particle” are present, higher acceleration (3-4G) may be required to prevent pegging on vibrating decks

- **dry screening**
  — screen wet and sticky materials also with small apertures without adding water
  — reduced water consumption
  — better quality of the final product

**Why Dry Screen?**
1. Fines attract and retain higher moisture contents
2. low ash coal tends to be more friable than shales and higher ash coals
3. there is a tendency for low ash coal to report to the fine fraction
4. if this fraction is of suitable quality, it is now possible to screen this dry product from the raw coal feed
5. this dry product can then be returned to the processed coal, thus reducing the overall moisture content

**Summary**
1. reliable efficiency / efficient screening action
2. does not generate much fines
3. screens wet and sticky materials without blinding
4. high specific throughput / compact
5. lighter supporting structure requirements
6. low headroom and horizontal installation
7. easy to make dust - proof various
8. separation sizes on one machine
9. accurate screening
10. **reduced noise**
11. **reduced power requirements**