



## No more new tailings dams?

An Alfa Laval decanter centrifuge installed at the Rix's Creek Coal Mine is revolutionising the treatment and disposal of coal tailings.



Faced with a tailings disposal problem, Rix's Creek believed that Alfa Laval's decanter centrifuges could help – and they couldn't be happier with the result.

A member of the Bloomfield Group of Companies, Rix's Creek is an open cut mining operation that produces both thermal coal and high quality, semi-soft coking coal for overseas customers. Located 5 km northwest of Singleton in New South Wales, it is based in the heart of the Hunter Valley, one of Australia's largest coal mining regions.

### An industry wide challenge

*'We have had a vision to address tailings drying for many years and we set about adopting a philosophy to try and dry all of the tailings in our mine. However, it was about 5 years ago that the company felt it was heading towards a tailings disposal problem.'*

Robert Booth, Design and Process Engineer at Rix's Creek, has recognised for some time that an alternative to tailings dams had to be found.

### The best way to dewater tailings

Robert along with his colleague, Greg Bain, Coal Handling and Preparation Plant Manager, set out to find the best solution for dewatering thickener tailings at Rix's Creek.

*'There was a device that has become an industry standard. We wanted to see if there was something better than the industry standard.'*

Over nearly two years, numerous methods for drying tailings were trialled on-site. The four main technologies tested were:

- Geobag technology (this was researched and considered but not tested)
- Recessed Plate and Frame Filter
- Belt Press Filter
- Solid Bowl Decanter Centrifuge

*'We initially used the decanter to thicken the feed to a recessed plate and frame filter. We discovered that, given the right conditions, the decanter could produce a spadeable product. So we decided to pursue the decanter option.'*

### Spadeable cake and clear centrate

The many seams at Rix's Creek are highly varied, particularly the quality of run of mine (ROM) material produced. There are different levels of bentonite and metamin clays, both of which can be very hard to dewater. With these challenges in mind any tailings disposal solution was to be sensitive to the environment and uphold the company's social values.

Greg Bain and Robert Booth had two specific requirements for a decanter dewatering solution:

- 55 – 60% dry solids (by mass) so that it is spadeable
- Centrate clean enough to re-use in the coal washing process

### Alfa Laval – experts in decanters

*'We're certainly not experts in decanters, but we believe Alfa Laval to be, so we decided that Alfa Laval should tell us what we needed to do. We gave them the operating parameters and material and we were satisfied that Alfa Laval could supply us with the right machine.'*

To achieve this, an Alfa Laval decanter centrifuge with a 2Touch system was recommended. This new generation of decanter has been in operation in Australia for over 10 years, in other demanding environments including wastewater treatment and drilling solids dewatering.

### Outstanding results, for a quarter of the cost

To date, the cake quality and handleability have exceeded expectations, with cake concentration at 62 – 67% solids (by mass). No free water can be squeezed from the cake.

And all for significantly less capital expenditure than some of the other technology which was trialled.

The cake is spadeable and quite easily handled. It will then be mixed with the plant coarse rejects and put back into the open cut with overburden for mine rehabilitation.

### Global knowledge, industry expertise

Alfa Laval's knowledge and experience in coal processing was further supported by the ability to analyse their application, test the many and varied samples and offer a solution that has worked.

*'When we spoke to Alfa Laval, we felt comfortable that Alfa Laval knew what we were trying to achieve and that they had experience in the field.'*

### Alfa Laval's ability to service, locally

*'Even though the machines are made in Denmark, there are spare parts kept locally and the decanters are serviced locally, only two hours away from home. Alfa Laval invited us to have a look at the workshop and that convinced us that the machines are quite serviceable these days. They're not that complicated.'*

This capacity to service locally was a key factor in Rix's Creek's decision to accept Alfa Laval's solution.

### Looking to the future

*As Greg surmised, 'I think that the success of this project has huge ramifications for the industry. Often, a lot of our solutions have come from outside the box. I think a lot of people are rethinking their tailings disposal for the future.'*

### Key benefits:

- No new additional tailings dam
- Capital costs significantly less than certain other technology
- Dry solids produced are in excess of 60% (by mass)
- Water savings and re-use in the plant
- Continuous, enclosed and clean operation
- Minimal operator monitoring
- Installation footprint much less than other technologies
- Contributes to open cut rehabilitation



### How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com.au](http://www.alfalaval.com.au)

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