

CASE:

Vayeron: The smart part of conveyor rollers

The Innovation

The start-up based in Mackay has developed Smart-Idler – a solution to monitor conveyor rollers and predict their failure. The sensor replaces laborious routine inspections of rollers with a wireless and automated system that monitors roller properties such as temperature and vibration. Data collected helps to identify and predict roller failure and thereby to avoid expensive downtimes. The sensor can be integrated into any conveyor roller on the market and is not limited to models or makes of particular manufacturers. This makes it a highly adaptive and flexible solution.

The diffusion and adoption process

What are the factors driving the adoption?

Several factors and dynamics have shown to be conducive for the diffusion and adoption of Vayeron's Smart-Idler technology across the mining sector:



Increasing awareness that conveyor roller failure is a key problem:

While only a comparatively small and commoditised constituent of a conveyor belt system, rollers have a significant impact on its reliability. Roller failure can result in downtime and hence cause considerable costs to operations.



Market formation and penetration as a sub-component of rollers:

Technology adds value to existing product; distribution channels of roller manufacturers can be utilised to bring the technology to the market.



Previous maintenance approach time-consuming and expensive:

Manual, regular inspection of rollers is laborious – hence, expensive – and is being undertaken in sometimes risky environments. Minimising resources, costs, and risks is of benefit to operations.



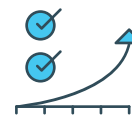
Easy implementation with minor change management processes:

Adoption of technology only requires minor re-training of maintenance staff, making the implementation feasible and not disruptive to operational processes.



Challenges to meet statutory requirements for underground mining operations:

Automatic monitoring can help to meet requirements and reduce risks.



Successful field tests and independent validations:

The technology is proven to be effective, recommended by independent parties.

“Conveyor rollers are treated as consumables – they are just a throwaway item. Being the second most expensive budget line item on a conveyor belt sheet, to treat it as a consumable and a throwaway item just seems absurd.”

Ryan Norris, Vayeron CEO

“We decided to develop a device which could be sold to any conveyor roller manufacturer to be embedded within their roller. For us, this had a couple of advantages. We can leverage their distribution channels and access to the market allowing us to scale a lot more quickly. And also, we did not have to convince anybody of the performance of a roller product; we just had to convince them of the performance of our smart sensing device.”

Ryan Norris, Vayeron CEO

What are the barriers to diffusion and adoption? And how is Vayeron managing these bottlenecks?


The nature of the technological solution and the strategy to bring it to the market as a sub-component of an existing product have been advantageous for the diffusion and adoption. However, Vayeron has had to address several challenges and bottlenecks throughout Smart-Idler's diffusion and adoption process.

Challenge

Rollers treated as consumable commodities:

A mindset of treating rollers as commodities has contributed to neglecting issues and prevented miners from searching for a better approach.

Strategy:


 Educating both mine site managers and decision makers in head offices about the financial burden of roller failure and the effective solution to overcome these risks


Challenge


Demand for flexibility in the supply chain:

Mining companies prefer having a choice between several suppliers for conveyor rollers to drive competition.

Strategy:

 Awareness that a completely new, smart conveyor roller may not satisfy the market and its preference to have competition

 Therefore, approach to offer a sub-component for rollers which is compatible with rollers from any manufacturer


 Making data and analytics generated from sensors compatible with different software solutions


Challenge


Inertia to implement new technology:

Mining companies tend to be slow and cautious when considering changing operational processes and implementing new solutions.

Strategy:

 Demonstrating and highlighting that roller failure is a key problem and that the new technology can solve this problem and hence reduce risks and costs

 Extensive networking to convince key stakeholders of the usefulness of the technology

 Actively diffusing knowledge across the industry so that it becomes shared knowledge


“It is a very tedious, time-consuming, and laborious work to track conveyor rollers – and to be honest a distraction. Nobody wants to worry about conveyor rollers when you are managing your operation and your conveyor system.”


Ryan Norris, Vayeron CEO

Challenge

Lack of transparency and information sharing within large mining companies contributing to long time frames to make decisions and competing interests between business units.

Strategy:

 Building up relationships across multiple levels and individuals on site and in head offices to better diffuse knowledge and needs across the corporation

 Making a range of internal stakeholders aware of the problem to become the common ground for the solution


 Finding a champion to promote the technology within a mining company


Challenge

Resistance among maintenance staff:

While changes to routines are not significant for implementing the technology, minor resistance and scepticism may occur.

Strategy:

 Actively listening to reasons for resistance and offering solutions also by modifying the product

 Methodical implementation process based on experience and best practice

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