

Knovel®

EQUIPMENT MANUFACTURING

## Solution Story: Engineer finds a better material for a heavy industrial machinery component

Knovel facilitates the adoption of a stronger steel alloy, delivering significant cost savings while extending product life



### Summary

To extend the life and reduce service costs of a heavy milling machine, an equipment manufacturer sought a new steel alloy that would strengthen the machine's protective chamber. The engineer tasked with finding this alloy turned to Knovel, which contained interactive tables to compare a wide range of potential materials. With Knovel's help, the company switched to an alloy that enhanced the machine's durability while delivering measurable cost savings, significantly strengthening the company's competitive advantage in its marketplace.



## Using Knovel's interactive side-by-side comparisons, the engineer demonstrated that the use of the steel alloy developed in-house would deliver an 18 percent cost savings.

### Challenge

A leading mining equipment manufacturer needed to find a way to extend the life of a protective chamber for one of its milling machines. Its complex, large-scale milling machines are used in highly demanding environments around the world, often in remote locations where it is challenging to access service and support. Thus, increasing the reliability of its heavy machinery would be a key competitive differentiator.

Designed for road-building projects, the milling machine under review used a rotor to remove asphalt from roads. The rotor is mounted inside a protective steel chamber, which undergoes significant wear due to the abrasive qualities of asphalt and other materials. This sustained heavy wear limited the chamber's useful life to two seasons within a single year. Replacing the chamber required two trained mechanics working for three days, plus they must also be transported to and from the work site each day. In addition to the service costs, chamber replacement delayed customer projects up to two months.

In light of these logistical difficulties, the company assigned a mechanical engineer with the task of finding a new, cost-effective material to extend the life of the chamber. The goal was to generate significant cost savings for the company and its customers.



### Solution

Engineer Omar Vidarsson\* began by conducting a thorough investigation of various metals' resilience to abrasion, as well as other forms of wear and tear. To conduct this search, the engineer turned to Knovel's extensive library of metal analyses, which features reliable, vetted evaluations of the hardness, resilience and other mechanical properties of a wide range of proprietary steel alloys.

Meanwhile, Knovel's comprehensive curated technical reference library on suitable stainless steel alloys enabled the engineer to clearly see how each alloy compared against the one currently used in the milling machine. Once Vidarsson had zeroed in on two alloys that might prove useful for strengthening the milling machine's chamber, Knovel delivered a set of interactive, side-by-side comparisons of relevant data about each alloy, helping the engineer evaluate each metal's relative strengths and weaknesses.

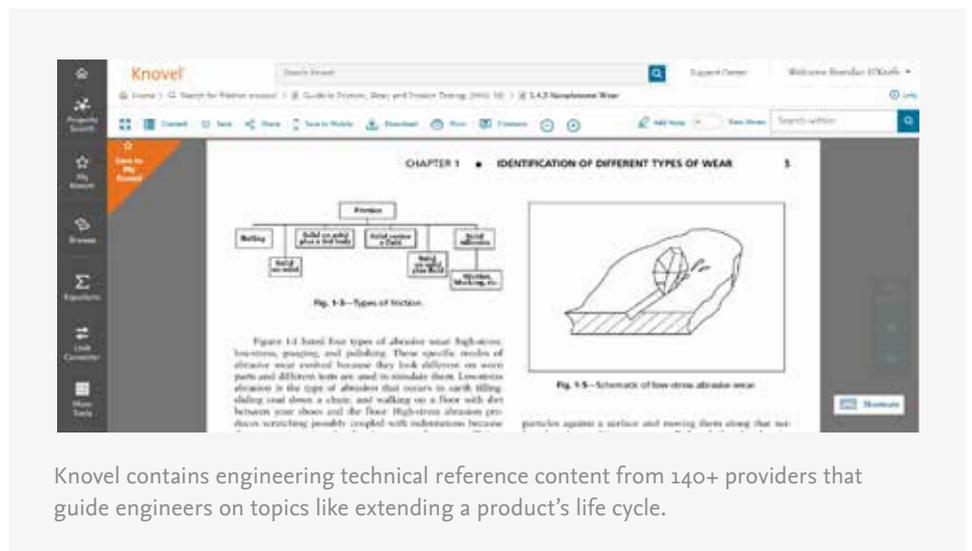
After extensive research with Knovel, the engineer recommended a switch to a company-developed steel alloy for the protective chamber, instead of switching

to an expensive, less-durable proprietary alloy. Knovel powered Vidarsson's deep-dive comparative analyses, which played a key role in convincing company leadership to adopt the more durable alloy.

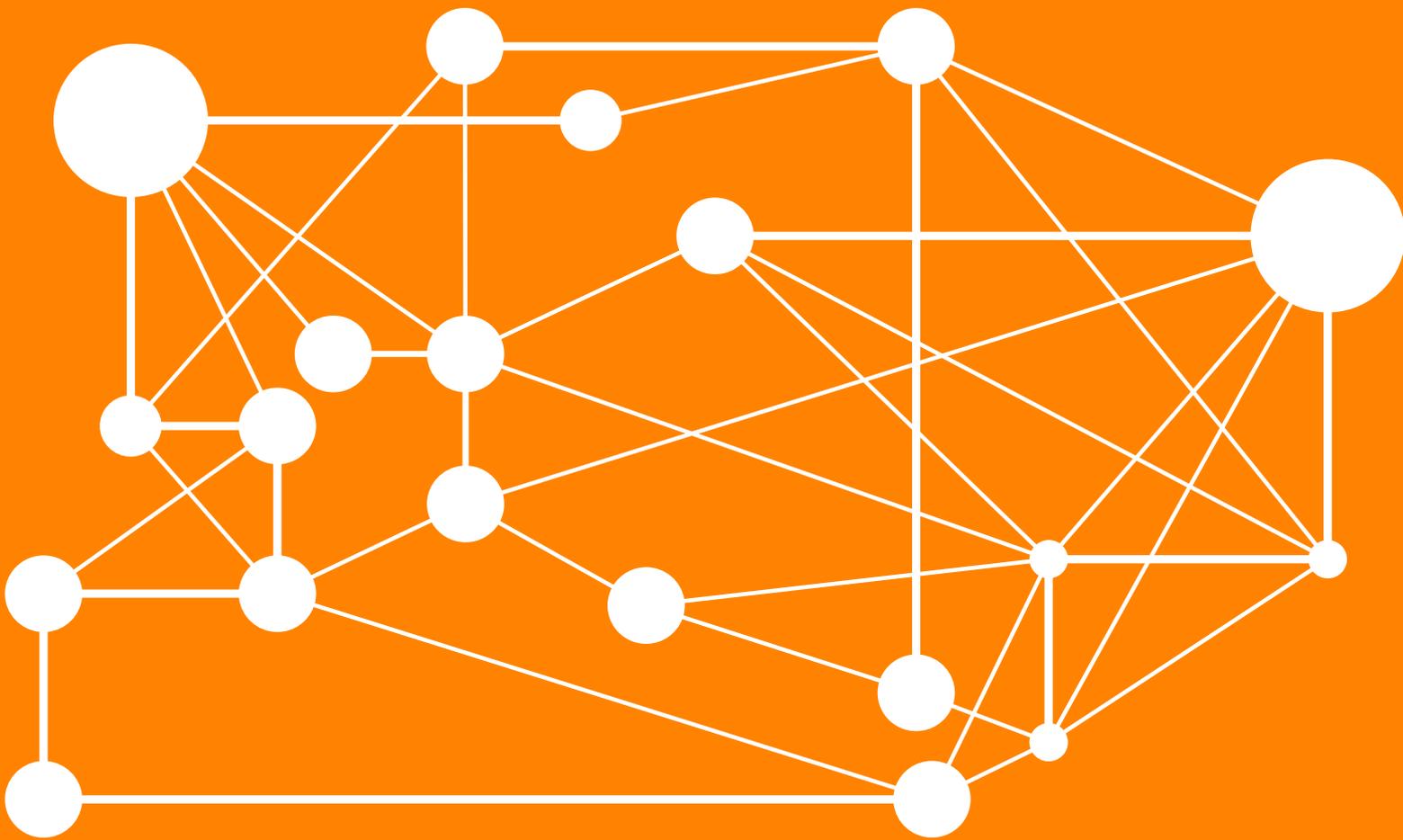
### Business Impact

Using Knovel's interactive side-by-side comparisons, the engineer demonstrated that the use of the steel alloy developed in-house would deliver an 18 percent cost savings over the adoption of the proprietary alloy. This insight enabled the company to design and manufacture a more durable version of the protective chamber, while simultaneously lowering costs.

The use of the new alloy recommended by Knovel also increased the life of the milling machine's protective chamber by 15 percent, which meant that substantial chamber-replacement interruptions to paving projects in remote areas would be less frequent—optimizing client resources and jobs calendars. Adoption of the new alloy provided significant savings for the company and its customers, while enhancing the machine's competitive advantage in the marketplace.



\* For confidentiality purposes, names have been changed



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