Sprockets have much in common with our own teeth. Severe stressing, incorrect care and poor alignment can result in annoying and often very costly wear over the years. However, a cost-saving remedy is available in both cases: If you take precautions in good time and move with the times in terms of materials and care, you can save yourself a lot of annoyance in the long run.

This was the line of thinking of BASF in Wyandotte, Michigan, and Diversified Plastics in Missoula, Montana, when they entered into a technological partnership for the replacement of sprockets in the technical installations of wastewater treatment facilities. And – to put it mildly – seriously challenged the accepted wisdom about materials and wear.

The outcome of this successful cooperation is a totally new generation of sprockets that seem immune to the ravages of time even after years of extreme punishment. For the production of their sprockets, Diversified Plastics made use of Elastollan® TPU resin from BASF for the first time - and for all 78 drive sprockets and 715 idlers.

Until now, sprockets have always been associated with metal or perhaps with milled plastic. These times are now well and truly over.

"On this application, we opted for PU technology because of its combination of strength, rust resistance and wear characteristics," says Brad Reid, President and General Manager of Diversified Plastics. "BASF’s Elastollan TPU technology satisfies all the criteria and also passed the toughest wear tests that we carried out."

For the state wastewater treatment facility, Diversified Plastics used the injection molding process to produce the sprockets. In doing so, the company worked closely with the engineers of the facility operator and BASF. This way they came up with a new three-stage injection molding process to yield a high-grade and cost-effective sprocket.

The finished sprockets usually weigh only 33lbs (roughly 15kg) and are as rugged and durable as cast or milled sprockets or blocks. And their wear is considerably less than that of their metal counterparts.

15 years of continuous stressing - taken by Elastollan in its stride.

"The TPU sprockets were of course meticulously examined by the other bidders," says Reid. "But we came through even the most stringent inspections and exhaustive tests with flying colors."

On top of this, an independent laboratory performed in-depth resistance and wear tests and even submerged the sprockets in a simulated, abrasive chemical tank. The sprockets showed miniscule teeth-wear after the accelerated five-year test and were still running strong after the accelerated 15-year mark. Which once again proves that nothing is more destructive for the teeth than neglect and the wrong material.

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Elastollan: Better doesn’t always mean more expensive.