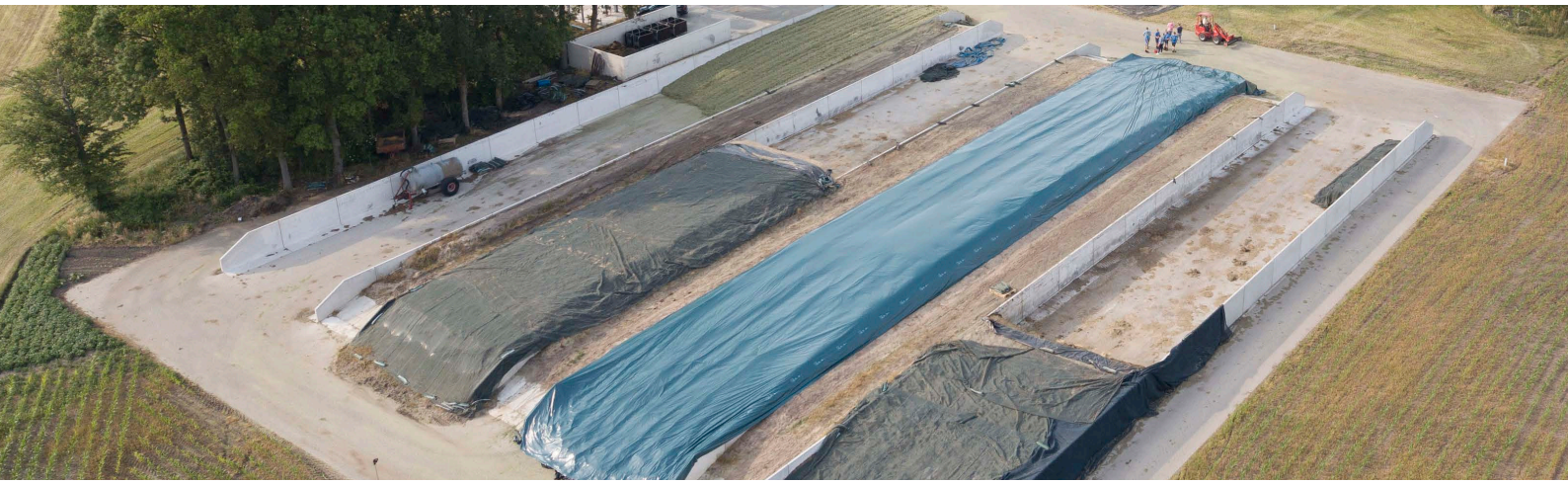
ExxonMobil
Signature Polymers

Case study



Exceed™ Flow

Rani Plast and ExxonMobil Signature Polymers collaborate on innovative silage covers for superior forage preservation

Consistent performance

High oxygen barrier

Reduced plastic usage

Allows recycled content incorporation

Data and results presented herein apply specifically to the noted application under this case study.
Your results may differ depending on factors such as operating conditions, equipment and materials used.

Challenge

Develop high-performance silage cover films that offer excellent oxygen barrier properties while being able to incorporate recycled content.

Silage cover film is a protective plastic sheet used to seal, ferment and preserve chopped fresh forage in an airtight environment. This silage (preserved forage) keeps its nutritional value and remains digestible for animals, which is especially important during seasons when fresh forage isn't available.

It is essential for the silage cover to create a tight oxygen barrier, helping prevent forage losses and support healthy fermentation of silage, used to feed cows and horses. This means the silage retains more nutrients, stays mold-free, and can become a higher-quality feed.

Farmers pay attention to the quality and technical properties of their silage cover because better silage has higher nutritional value, which means better feed conversion, healthier livestock and potentially higher milk and meat yields.

A silage cover is an effective agricultural tool with a big impact on farm productivity.

When it comes to silage protection, Rani Plast stands out as a European leader. Founded in 1955 in Finland, the company has decades of expertise in producing wide, high-performing agricultural films. With two advanced film-blowing factories, they commercialize silage films with excellent mechanical properties, using the latest 7-layer technology, available in widths of up to 22 meters.

Their commitment to innovation doesn't stop at performance. As Nico Ahlbäck, Head of Procurement, explains: "We always look at better serving our customers, by developing advanced protective features, leveraging our 7-layer technology and wide films innovation expertise. We also look at the possibility of incorporating recycled content in our films. This poses a challenge since increasing the incorporation of recycled content can have an adverse effect on the mechanical properties of the film. We collaborated with the ExxonMobil Signature Polymers team to develop a solution."

Rani

Solution

Rani Plast created RaniSilO$_2$, a 7-layer oxygen barrier structure consisting of ExxonMobil Signature Polymers and EVOH. ExxonMobil Signature Polymers grades such as Exceed™ Flow are used in the skin and sub-skin layers to enhance the mechanical performance of the film and ensure excellent large bubble stability. The structure also provides the opportunity to incorporate a range of recycled content. EVOH is used in the core layer to provide outstanding protection against gases like oxygen and carbon dioxide, which helps preserve the freshness of the silage.

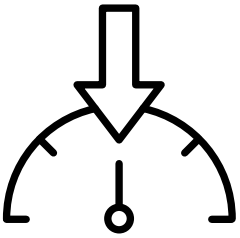
Results

"We've found that the RaniSilO$_2$ film's EVOH-barrier blocks oxygen up to 100 times more efficiently when compared to conventional silage sheets. This certainly helps to improve the fermentation process!" said Ahlbäck. "Another benefit of RaniSilO$_2$ is it leads to a reduction in the amount of plastic required, as our silage cover film can be deployed using a single rather than double sheet used in the conventional way of covering a clamp."

Pat Morrissey, a farmer located in Ireland, confirms: "It was easy to use. A dual system of using two sheets of plastic in a pit is laborsome. And with the timescale of cutting silage at the moment, it's very hard to get people. So the one sheet was actually very good."

"There are many nationwide collecting schemes available in Europe for used agricultural plastics. We do our part to increase the circularity; our agriculture films can incorporate up to 35% recycled content, but this doesn't impact performance," noted Ahlbäck.

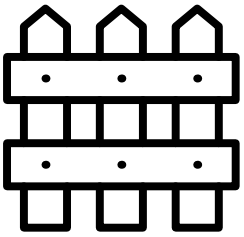
RaniSilO$_2$ film is another example of how expertise and partnership results in innovation from the barn to the fields.



Plastic consumption reduced by

37%*

*(thickness of one-sheet solution = 120 µm and thickness of reference two-sheet system = 190 µm)



RaniSilO$_2$ film blocks oxygen up to

100 times more efficiently

when compared to conventional silage sheets

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ExxonMobil Signature Polymers

Bring your impossible

ExxonMobil Signature Polymers was born from the belief that people fuel progress. From automotive and construction to packaging, agriculture, industrial, and beyond, we leverage the scale and reach of ExxonMobil to deliver the insights and innovations that empower our diverse, global partners to take their businesses to new heights. We continuously work to provide the listen-first, service-driven, game-changing collaboration that unlocks opportunities for our partners and advances their business goals.