

## SUCCESS STORY

New FRP-casing for a  
decanter centrifuge at  
Lubrizol Advanced Materials  
Resin B.V., The Netherlands



SEPARATION

# BULLETPROOF INNOVATION

CREATING A SAFE, CORROSION-PROOF CENTRIFUGE  
CASE IN FIBERGLASS REINFORCED PLASTIC (FRP)

**ANDRITZ**

ENGINEERED SUCCESS

# The challenge

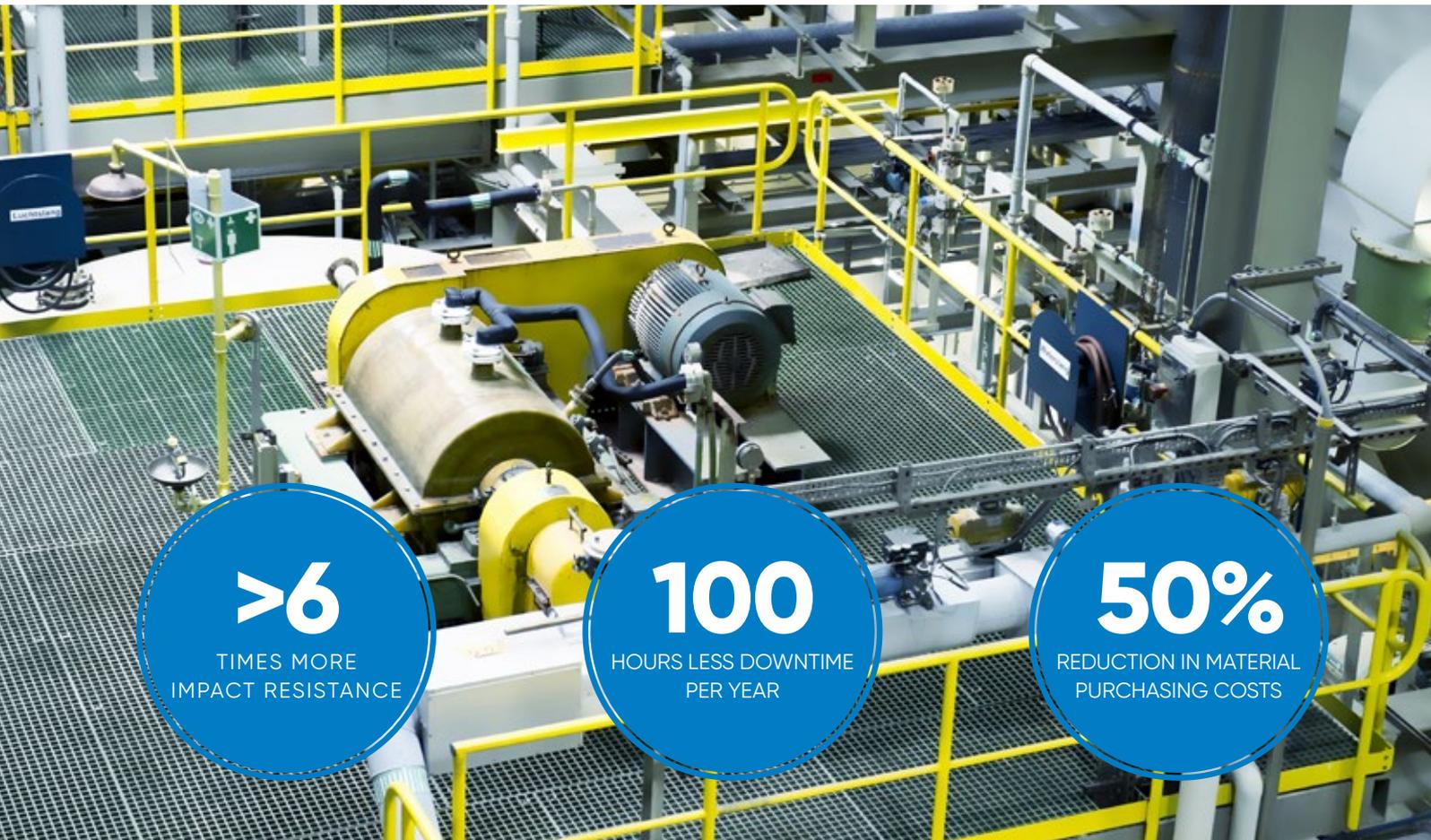
## Develop a safe, cost-efficient alternative to titanium grade 2 case

Lubrizol, a highly advanced chemicals manufacturer, was experiencing severe corrosion in the case of one of its decanter centrifuges. In theory, the centrifuge's titanium grade 2 case and rotating assembly should have been able to withstand the hydrochloric acid that passed through the centrifuge. However, changing process conditions (elevated temperatures and concentrations) were causing substantial corrosion problems and increasing maintenance costs. In addition to meeting its functional criteria, Lubrizol needed a solution that was:

- Safe under all operating conditions despite high operating speeds, which generate a force that could release large particles at a lethal velocity if they were to penetrate the case.

- A cost-effective alternative.
- More resistant to the highly corrosive chemicals used in the separation process.

The customer turned to its local ANDRITZ partner for an answer to these challenges. Working with Plastics Europe B.V., Netherlands and Lubrizol Advanced Materials Resin B.V., Netherlands, ANDRITZ has developed an innovative solution using FRP.



ANDRITZ decanter centrifuge with FRP casing

# Our solution

## An impenetrable new type of casing material

Robust and chemically resistant, FRP proved in initial calculations to be cost-effective compared to titanium. But was it strong enough? Having reached the limits of analytical calculations, it was clear that a new type of safety test was needed. One that would simulate large solids and/or wear elements coming out of the centrifuge at extreme velocities, but without putting anyone at risk. The answer was found in the most unlikely of places – a shooting range. An FRP construction, resembling the eventual shielding material, was used as a target and specially designed

ammunition was fired at the target to replicate the trajectory of the potentially dangerous materials. After shooting, measuring, and investigating the results, it was proven that projectiles moving at six times the speed of any part coming from the centrifuge could not penetrate the 10 mm thick FRP construction. Even projectiles fired multiple times at the same impact area did not penetrate the target. This proves that, without a doubt, the safety of the surrounding personnel and this equipment could be guaranteed with an FRP centrifuge case.

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## Results

### A safe, corrosion-resistant solution with 100 hours less downtime annually

The excellent teamwork between Lubrizol, Plasticon, and ANDRITZ resulted in an entirely new and innovative application for FRP. Used for a decanter centrifuge case, the material enabled safe and reliable operations while allowing substantial savings for the customer in terms of purchasing and maintenance

costs. Two years after installation, the case is still in excellent condition, reducing downtime by one hundred hours annually. As an added bonus, the plastic case makes far less noise than the titanium metal case it replaced.

**“It was an incredibly productive collaboration: Three local partners, a new material application, and a remarkable solution to all of the challenges we set out to solve.”**

**HENK RUITER**

Senior Project Engineer, Lubrizol Advanced Materials Resin B.V., The Netherlands



## WHAT'S YOUR SEPARATION CHALLENGE?

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### AFRICA

ANDRITZ Delkor (Pty) Ltd.  
p: +27 11 012 7300  
service.separation.za@andritz.com

### EUROPE

ANDRITZ AG  
p: +43 316 6902 2297  
service.separation@andritz.com

### ASIA

ANDRITZ Singapore Pte. Ltd.  
p: +65 6512 1800  
separation.sg@andritz.com

### NORTH AMERICA

ANDRITZ Separation Inc.  
p: +1 817 465 5611  
service.separation.us@andritz.com

### AUSTRALIA

ANDRITZ Pty. Ltd.  
p: +61 3 8773 4888  
separation.au@andritz.com

### SOUTH AMERICA

ANDRITZ Separation Ltda.  
p: +55 47 3387 9115  
separation.bra@andritz.com

### CHINA

ANDRITZ (China) Ltd.  
p: +86 400 1034 188  
separation.cn@andritz.com

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