



The (re)winding department with Emmanuel Buyck of The Rotating Company in the foreground.  
(©The Rotating Company)

# 'Energy-efficient engine 'no guarantee of savings'

The EASA-BEMAS Motor Club recently organised a congress on energy savings and operational performance of engine systems towards a circular economy. Numerous Belgian experts shed their light on the subject. Such as Emmanuel Buyck of The Rotating Company and Bram Vervisch of Orbits. Both agreed: putting an energy-saving motor on a pump does not always deliver the greatest energy savings. Other factors also come into play.



The Rotating Company, previously operating under the names Motors Fran- coys and Pump Fleet Services, has been operating for more than 30 years as a technical partner of professional industrial users for the complete life cycle of rotating equipment. From electro- motors, gearboxes, pumps, reducers, drives, fans, blo- wers to generators. "We measure defects and quality deterioration of equipment and proceed to repair it after consultation with the owner," explains Emmanuel Buyck, CEO of The Rotating Company. "Ove- rigens, reconditioned motors work just as well or even better than the original product. We also do not change anything about the design of the motor."

### Overall picture

Buyck warned users of pump drives during the congress that an energy-efficient motor does not always produce the most energy-efficient results. "The power consumption of a quadratic load like a pump is proportional to the third power. In other words, if the speed increases by one per cent, then the power consumption increases to the third power. Replacing an IE3 motor on a pump with an IE4 motor without speed control would even result in energy loss instead of energy gain, according to my own calculations." So, according to Buyck, it is a bad idea to have a more energy-efficient motor place on a non-revving pump. "Then you lose out. After all, an energy-efficient motor has a higher speed. As a result, the impeller of a centrifugal pump will spin slightly faster. Enough to negate the gain in energy savings because that greater amount of flow and pressure might have made the process no need."



*A pump motor combination overhauled by Pump Fleet Services, part of The Rotating Company. (©The Rotating Company)*



*A flanged pump motor reconditioned by The Rotating Company. (©The Rotating Company)*

### Certificate

The Electro-Mechanical Authority (EASA) recently granted a three-year EASA certificate to The Rotating Company. The independent, non-profit organisation is responsible for the certification and qualification of electric motors, generators and other rotating electrical equipment. It represents the interests of manufacturers, distributors, repairers and users of electric motors, generators and related rotating electrical equipment. "We are proud to be the first company in Belgium to receive the accreditation and to be committed to providing top quality rotating equipment services," said Emmanuel Buyck. "This recognition is a testament to our commitment to meet the highest standards in the industry. It allows us to demonstrate that we maintain the energy efficiency of the motor. When we overhaul a motor, the energy efficiency does not decrease."

## DESCRIPTION



Bram Vervisch of Orbits while measuring strike-throughs due to bearing currents. (©Orbits)

Saving energy requires an investment and for that, one has to look at the total picture. "Know how the pump is controlled and study the PID controller. Adjust the speed to the right flow rate and pressure and very important: get

make. Overhaul companies can then work with that. Despite good craftsmanship, we find that there is still often ignorance." According to Vervisch, many companies focus on the energy efficiency of the engine and not enough on the system level.

tier regulator. "The problem is much more common than we initially thought," says Vervisch. "With a variable speed drive, you cap in the ge-voltage and you start creating AC voltage. As a result, you create higher frequencies with the risk of currents through the bearings damaging the bearings. Some advantages that the frequen-tion controller, this will

nullified." Targeted steps like connecting the cables properly can prevent bearing currents, Ver- visch explains. "Through improper knowledge and in- sights that exist, we come across a lot of more cases against it than we ever anticipated." Among other things, Orbits uses EMC glands and litzes to counteract bearing currents.

Buyck of The Rotating Company emphasises that the motor must also be suitable for frequency control operation. "Frequency controls produce higher voltage peaks that the motor must be able to withstand. That requires adjustments to the installation. But adapting the motor so that the frequency currents do not go past the bearings also helps." □

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## 'Many pumps run at full power when there is no need at all'

the throttling out. Because braking with an energy-efficient motor also consumes a lot of energy. Many pumps run at full power when it is not needed at all."

### Cause

Also speaking at the conference was Bram Vervisch, founder of Orbits. This relatively young Belgian company analyses causes of engine failure. "We create new insights with visual inspections, vibration measurements, voltage and current analyses. And in a clear report, we try to convey the results in such a way that the recipient can make informed choices

"It may also be that it is not the motor but the system that causes the failure. When pumps are oversized, they are too heavy for the application and start running in a worse operating point of the pump. We see that there is often too little action on that front. Many manufacturers are always promoting their latest drivers and engines when that is not always necessary."

### Bearing currents

Orbits is seeing an increasing problem of bearing currents. This electric current flowing through bearings is often caused by a frequen-