

Fristam FDS-TSG: upgrade your pump to downgrade your energy consumption

The new Fristam twin speed gearbox – an essential energy efficient upgrade for customers looking to minimise their energy consumption and reduce both their initial costs and running costs. Capable of pumping small quantities of highly viscous products and large quantities of thin product, it is the ideal pump for a production facility with a wide range of flow rates.

CONCEPT

FDS twin screw pumps are designed to pump thick and thin and everything in between. They can handle extremely viscous applications, products with a lot of entrained air and can even pump non-flowing substances.

In addition to pumping these tricky applications, an FDS is also well suited to pumping low-viscosities like water or CIP at high speed up to 3,600rpm.

The FDS pumps ability to handle so many different mediums so successfully has made them popular with customers who wished to reduce

both initial and overall running costs by installing an FDS to pump both product and CIP. However, this dual functionality required a larger electric motor and frequency converter combination to be installed.

Tweaks to the design of the standard FDS gearbox now means the FDS-TSG can pump both applications with a smaller carbon footprint.

TECHNOLOGY

The principle behind the design of the Fristam FDS-TSG is as simple as it is effective: an additional twin speed gearbox opens up the full range of flow rates of the FDS, allowing it to reach an even wider speed ratio in a practical

and profitable solution. A similar principle to changing gears on a bike.

ADVANTAGES

The Fristam FDS-TSG is ideal for production facilities with a wide range of flow rates as it can pump multiple applications with one pump without compromising on quality.

The pump is easy to integrate into your system and uses less energy than a larger motor and frequency converter combination.

Pump thick and thin – and everything in-between

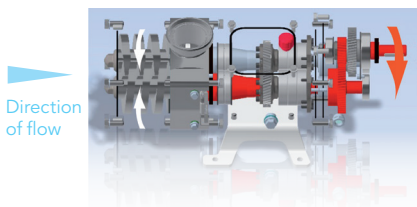
The FDS-TSG a simple principle, refined to perfection allowing for maximum flexibility and optimal energy efficiency.

DESIGN

The Fristam FDS-TSG has a standard FDS gearbox with two extended shafts added to it. This unique twin speed gearbox is directly flange-mounted and contains the drive shaft as well as two gear pairs with different gear ratios and two free-wheels.

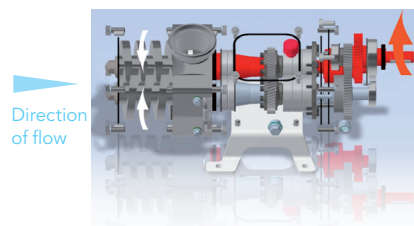
PRODUCTION MODE

The FDS-TSG pumps at low speed in this mode. The motor and left pump shaft operate at a gear ratio of 1:0.5.



CLEANING MODE

The TSG pumps at high speed in this mode. The motor and right pump shaft operate at a gear ratio of up to 1:2.0 in the direction of flow.



The motor speed is changed in the control room or on the system controls.

The pump's direction of flow remains the same in both cases!

THE FDS-TSG AT A GLANCE

- Faster speed means a greater range of flow rates: using a standard frequency converter, the FDS-TSG can achieve speeds ranging from 95 to 3,000 rpm (10–100 Hz).
- Extremely low flow rates make precise metering possible.
- At the same time, high CIP rates can be achieved.
- The FDS-TSG eliminates the need for costly, work-intensive servo-motors.
- You can use smaller motors operated with greater efficiency.
- The FDS-TSG only ever pumps in one direction – no turbine effect or unscrewing.

How a single FDS TSG pump helped one customer save €2,533 annually

INDUSTRY: CONFECTIONERY

PRODUCT: CARAMEL MASS

A leading confectionery producer makes caramel mass with a viscosity between 7,500 and 19,000 mPas. It is pumped at a flow rate of 3 to 5 m³/h and has a pressure of 16 bar.

CIP cleaning requires extremely high flow rates of 40 to 57 m³/h with a pressure of 3 bar.

To perfectly pump both applications, the pump must operate within a speed range of 175 rpm and 2,650 rpm. Without the FDS-TSG, a standard drive train with a 30 kW electric motor, a frequency converter and an external

fan would be required, which would need to achieve outputs between 5 and 7 Hz during production and 90 Hz during cleaning.

THE TSG SOLUTION

In this scenario the Fristam FDS-TSG gearbox only needs an eight-pole 11 kW standard motor with a suitable converter to achieve the speed range of 175 rpm and 2,560 rpm.

The FDS-TSG pumps in a frequency range between 25 and 40 Hz in production mode and 90 Hz in CIP mode.

ADVANTAGES

Using conservative estimates and assuming a two-shift operation with 14 hours of production and 2 h of CIP cleaning per day, 256 working days per year, a cost of 28 cents/kWh for electricity and the use of a mix of energy (0.527 kg CO₂/kWh), the FDS-TSG can help your business achieve the following savings:

- Production saving: - 45,6 %
- CIP saving: - 3,0 %
- Annual accumulated savings:
 - 10,134 kW or
 - 2,533,00 € or
 - 5,341 kg CO₂

Fristam Pumpen KG (GmbH & Co.)
Kurt-A.-Körber-Chaussee 55
21033 Hamburg, Germany

Tel. +49 (0)40 725 56-0
Fax +49 (0)40 725 56-166
E-Mail info@fristam.de

For international contact
information, please visit:
www.fristam.de

Fristam
PUMPS