

Case story

The same **VLT® AutomationDrive** family in **baking lines** around the globe

Can you imagine life without bread?
For Slovenian company Gostol-Gopan d.o.o. Nova Gorica, bread means more than just food – it is the core of the business.

Gostol-Gopan is an original equipment manufacturer (OEM) for industrial bakery solutions, established in 1947. Throughout the world, baking lines produced in Gostol-Gopan are actively baking a wide variety of breads and other bakery products every day.

Gostol-Gopan delivers complete baking lines and individual bakery equipment to their customers, for a wide range of baking processes: dough preparation, dough dividing, dough moulding, fermentation, bread baking and bread cooling. Energy efficiency is the key focus in line development. Its new generation of tunnel baking ovens, comprising types TPN, TPN_S and TPN_GP, is the result of this process.

Tunnel cyclothermic oven

Tunnel cyclothermic ovens are universal ovens used for continuous baking of all types of bread and cakes. Transport through the baking area are executed by means of a knitted steel mesh (TPN), granite plates (TPN_GP) and hinge blade (TPN_S). The heating medium used is oil, gas or combination of these two.

Gostol's reference bakery in Ukraine



It operates as an independent unit or within automated lines. Main advantages are:

- Extremely low consumption of energy needed for baking. For freely-baked bread also below 200 kWh/t of bread.
- Significant heat energy savings achieved via
 - Insulation to reduce heat loss, including high-quality insulated return part and glazed windows state of the art burners
 - automatic regulation of conveyor traction in the baking zone
- Potential additional energy savings, including
 - automatic vapor flow
 - compatible recuperators for flue gases and vapor

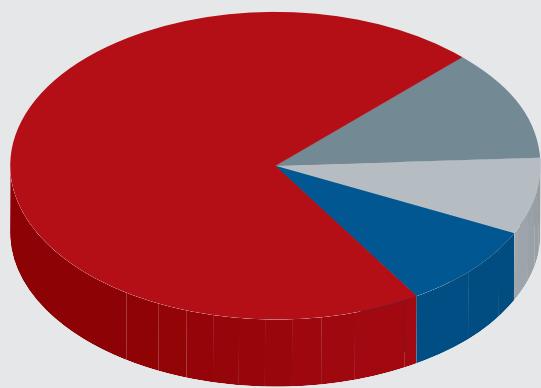


Gostol's reference bakery in Romania

Controlled motors in the tunnel cyclothermic oven

Application	Motor		Frequency converter		
	No.	Type	No.	VLT® AutomationDrive	Options
Fan	2	11 kW asynchronous motor	2	11 kW	VLT® PROFIBUS DP V1 MCA 101 VLT® 24 V DC Supply MCB 107
Fan	3	3 kW asynchronous motor	3	3 kW	VLT® PROFIBUS DP V1 MCA 101 VLT® 24 V DC Supply MCB 107
Conveyor	2	1.5 kW asynchronous motor	2	2.2 kW	VLT® PROFIBUS DP V1 MCA 101 VLT® 24 V DC Supply MCB 107

Reduced CO₂ footprint



- Reduction in CO₂ due to electrical energy.....37,944 kg/year
- Reduction in CO₂ due to recuperation.....25,308 kg/year
- Reduction in CO₂ due to steam26,973 kg/year
- Reduction in CO₂ due to gas.....226,884 kg/year

Total reduction in CO₂.....317,109 kg/year

Heat and electricity energy savings give the cyclothermic oven a significantly reduced CO₂ footprint, compared to a traditional oven.

The graph shows reduction of CO₂ footprint in total, when using a Gostol cyclothermic tunnel baking oven type TPN to bake bread or other products, by comparison with an older traditional oven.

The graph data is based on these baking conditions:

- Cyclothermic tunnel baking oven 3.75 m wide and 30 m long
- Long loaf, weight 500 g
- Production 24 hours/day, 300 days/year
- Gas price 0.04 EUR/kWh
- Electricity price 0.05 EUR/kWh



Gostol's reference bakery in Russia

Regulation with great energy efficiency performance

Gostol's equipment enables adjustable baking time and temperature, which is the key reason for well baked, soft bread with a nice crust color. Baking time ranges from 10 to 90 minutes, dependent on the oven length, which can be from 12 to 60 meters.

The VLT® AutomationDrive FC 302 regulates the speed of the steel mesh conveyor, which determines baking time. The baking temperature can be

up to 300°C. A centrifugal fan delivers heat from burners to radiators, located above and below the steel mesh. The system for forced air circulation in the baking hearth enables more intensive transmission of heat to the product. This system has roughly the same function as a fan in a domestic oven.

All these fans are regulated with VLT® AutomationDrive frequency converters, to reduce electricity consumption. The basic principle of saving is: hot air has lower density and needs less

transmission force. By using a frequency converter to decrease the speed of a fan by 20%, the energy consumption is halved.

The same products for different geographical areas

Traditionally, Gostol-Gopan supplies mainly European and Russian customers. However in 2013 it introduced the first new generation tunnel baking oven, type TPN, to the US market. The first delivery in the US was to the New Jersey area.

We started to look for suitable equipment with certification for the US market... The recommendation was VLT® AutomationDrive FC 302. This is the same VLT we have been working with for years... This saved us many working hours and a lot of effort – during design work, installation and start-up.

The same VLT® AutomationDrive family around the globe; here placed in Europe and USA





Gostol-Gopan's headquarters in Nova Gorica, Slovenia

Automation Department Manager Mr. Srečko Lukan explains: "We started to look for suitable equipment with certification for the US market. Among other companies, we also contacted the Danfoss sales office in Slovenia for the right configuration of frequency converters. And this is the real value of Danfoss. The recommendation was VLT® AutomationDrive FC 302. This is the same VLT we have been working with for years. The only difference was the supply voltage: 3 x 208 VAC, 60 Hz. This saved us many working hours and a lot of effort – during design work, installation and start-up."

24/7 after sales service

One of the key benefits Danfoss offers to the customer is global service support. Danfoss provides a global service network in more than 100 countries.

Purchasing Department Manager Mrs. Irena Šinigoj sees advantages in Danfoss' global service support: "Gostol-Gopan d.o.o. Nova Gorica is an

export-oriented company. Some of our baking lines operate more than a thousand miles away from us. During a service case we are faced with many challenges. We work professionally with our customers, to ensure the core objective - that the line starts up again without prolonged downtime. It's a good feeling, and adds value for our customers and ourselves too, knowing that Danfoss 24/7 service support can help us with service cases abroad. Downtime and costs for organizing service visits can be dramatically reduced. When required, we use the support offered by Danfoss. Hopefully we will not need it often."

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Gostol-Gopan

Gostol is one of the main global centres offering complete solutions for industrial bakeries.

Established in 1947, Gostol-Gopan d.o.o. has professional experts in its R&D and project department, offering clients high-quality industrial bakery equipment and complete solutions for producing a variety of bread.

Gostol-Gopan focuses on innovation and energy efficiency, enabling the production of modern and safe bakery products for its clients, who are large and medium-sized industrial bakeries.

The core business of the company is the ISO-9001 certified development, production and sales of the project equipment for industrial bakeries:

- Automatic, flexible, energy efficient and overall systems

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