



# INNOVATION POWERED BY THE SUN

## Milling and Grain takes an exclusive look into the latest incredible turnkey project for flour and cereal production in Kazakhstan

by Genc Degirmen, Turkey

**K**azakhstan has a large agricultural sector where livestock and cereal production play a leading role. Most professions are created in the agricultural sector. The country, which has wide and fertile lands, has a great potential in agriculture. Currently, Kazakhstan is one of the largest grain producers and exporters in the world. The share of agriculture sector in GSYIH is five to six percent.

The main agricultural products of the country are wheat, maize, rice, oats, cotton, potatoes, vegetables, sugar beet and sunflower products. The country is self-sufficient in the production of bread and animal feed, which are the staple food. According to figures from the Food and Agriculture Organization of the United Nations (FAO), Kazakhstan, the world's sixth largest exporter of grain, exports grain to about 40 countries, mainly wheat.

81 percent of the total land (222 million hectares) is arable land. This leads investors in the country to start companies that are subject to agriculture and processing of the products. The country faces environmental barriers such as water availability and harsh climate as well as fertile land.

Despite these drawbacks, especially with the strength of wheat and the ease of production, production is still sustainable. There are also structural difficulties such as the shortage of skilled farm workers, the dominance of livelihood producers in basic product sectors, the weak local food supply chain, and difficult access to

foreign markets.

Due to the harsh climate, the cultivation time was reduced to a single season. March to October in the south of the country and April to September in the north can be considered as the harvest season.

### Building bridges from Turkey to Kazakhstan

Genc Degirmen, who put smiles on the investor's face, has completed nearly 50 turnkey projects in Kazakhstan and has built large silos, machinery and equipment for nearly 20 companies.

The company provides solutions for the needs of the investor in the sales and service phase in Kazakhstan with two branches and provides them with high quality services and products.

Investors who promote Genc Degirmen with the latest technology in the industry and are jealous of maintenance time and costs that minimise operating costs will be leaders in their region thanks to this state-of-the-art facility. With the full-capacity automation system, the investor saves work and costs.

From an industrial point of view, these achievements show that 4.0 is not a far-sighted dream. Genc Degirmen has in this factory; Construction and positioning with the dedication of all specialists in the steel floor construction "Single Line" have been implemented seamlessly.

### Creating a mill with 700tpd capacity

Our company has assured to make the preparations for the new mill with a grinding capacity of 700 tonnes/day in line with the negotiations in 2017 with the operation of Best Kostanay.

So far, Best Kostanay has set the installation area and the operating requirements. Work in this area was completed with the common position of the two companies.

The plant is designed with a total capacity of 700 tonnes per day. In this design:

Total capacity of dry wheat silos is 1,200 tonnes;

The total capacity of wheat storage silos is 18,000 tonnes.

The plant will be installed on a total area of 40,000m<sup>2</sup> including green space applications, employee social space, parking areas and general administrative area. As part of this plan, a production area of 3000 square meters, on which our main production area and our machines are located, will be produced in the desired types and specifications. The building design should be expandable and increase capacity to meet the needs of the country and the market in the future.

With this design, the goal is to increase the capacity of feeder and storage silos and the desired flour production capacity by expanding the



Quantumox Sifters with a stainless-steel surface suitable for food safety are used for screening. The entire system is monitored by the central automation system and an automatic lubrication system is integrated for the grinding department. High efficiency electric motors have been chosen to reduce system energy consumption and increase environmental sensitivity

existing machinery. The aforementioned scenarios for increasing production capacity were evaluated several times with the project.

### Best Kostanay flour factory machinery park

The cleaning capacity of the system is 800 tonnes/day. The cleaning process begins with the spike separation process and the cleaning process continues with the FourClean F2 model. The stone separator and the light grain separator of the FourClean F2 model prevent empty, rotten and unhealthy wheat from entering the annealing and grinding process.

The quality of the flour is increased to the optimum level with the help of the machine. FourClean F2 model separates lighter particles; it is transferred to the waste department and, after processing, converted into various products and used as bait. This separation improves the flour white value, which plays an important role in the quality values of flour.

After all these processes, the products are classified according to their dimensions and the Dampening process takes place partly with the help of Triexta and intensive Dampener machines. After this phase, the products are sent to rest in the Resting Silos. The crushing operation is performed after the dampening, and the

fracture separation is broken before the B1 bunker is removed. In the grinding area there are four double and 20 single Treximat Roller-Mills.

At the same time, Quantumox Sifter with a stainless-steel surface suitable for food safety are used for screening. The entire system is monitored by the central automation system and an automatic lubrication system is integrated for the grinding department. High efficiency electric motors have been chosen to reduce system energy consumption and increase environmental sensitivity.

### “A fine property, beyond the beautiful”

The macro and micro dosing and premixing system has been introduced and this facility has been presented to the investor by creating an infrastructure that allows for product diversification during full capacity operation. In this regard, the application of raw material dosing to by-products such as gluten-free bread, wholemeal bread, olive oil bread, etc. has been completed.

### Geopolitical position and benefits of flour factory

Cereal production, which is produced in the north of the country, accounts for the largest share of agricultural sector



production. The fact that the climatic conditions in the country are tough makes production difficult despite the good quality of agricultural land.

In addition, there are difficulties in providing equipment and agricultural inputs to farmers.

Despite all these facts, Kazakhstan ranks 12th in global wheat production and sixth in exports. Kazakhstan, one of the most important wheat producers in the world, is the most important cereal producer (especially wheat) in the Central Asian region. The majority of the world's cereal crops (more than 95%) grow spring crops in April or May.

According to an official report by the UN Food and Agriculture Organization of FAO in their country summary of January 13, 2013, total wheat acreage (representing more than 85% of total grain) decreased by 300,000 hectares in 2013 compared to the previous year. These figures show an increase of 30 percent for the year 2017.

In addition, areas have been added that have not been used in recent years to sow land and increase production capacity.



In the grinding area there are four double and 20 single Treximat Roller-Mills.

The region in which Best Kostanay operates is in the north of Kazakhstan, one of the world's leading wheat producers, as mentioned earlier, and the leading cereal producer in Central Asia.

The wheat, which is the raw material for the manufacture of the factory, is usually supplied by its own domestic market. This situation has a positive effect on the costs of delivering and transporting wheat. As the mill is already experienced in flour production, it also benefits from the region's advantages in sourcing high-quality wheat.

### **Green alteration – Powered by the sun**

*“Environment is not legacy! It is a consignment for next generations! Let's create tomorrows nature from today!”*

Genc Degirmen opens up to the World from Turkey and had a huge step to leave a green environment to the next generations, built the biggest solar power plant and made it the main source of energy.

The recent tendency to the natural energy plants which is order of the day around the world, brought protection-based branding besides production-based branding. Genc Degirmen which opens up to the World by its vision, and keeps being innovative, became one of the short numbers of firms which made this huge step.

Genc Degirmen, which has built complete more than 300 milling systems in 54 countries around the World since 1990, now supplies the energy need of its systems by the solar power plant built on the rooftops of the production units that belongs to the firm. As one of the main purposes of Genc Degirmen is to create a viable environment to the future generations, it now has the greatest rooftop Project of the area.

The people and other industries around the area can make use of the extra energy that is supplied by the firm, while the firm supplies the 100 percent natural energy. By that to contribute the widest area of nature that can be reached is aimed.

“Our duty is not only to produce but also to create the most efficient, thrifty and environment friendly production systems to pay the World what we owe it,” told by Kerim Selek - the Chairman of Executive Board of Genc Degirmen who also highlighted if there is demand from consumers and an available field, the solar power plants are in the exhibition too. Also

“We have a collaboration protocol with Solimpeks which produces Turkey cantered renewable energy materials and grows rapidly” he added.

### **The contribution to nature is on a global scale**

Genc Degirmen built photovoltaic solar power panels all over the rooftops of production-based buildings to supply the energy needed by the firm and channelise the extra energy to the needy environment. By that, the firm contributes to the industry and life around it. The firm not only creates milling systems good enough for itself but also attributes value to the nature.

Able to produce 1MW per hour, the 3,456 systems which have HIT technology over 325 W power, created of monocrystal photovoltaic panels has been built and expected to produce 1,600,000 KWH energy per year.

By that, electricity need of 600 houses will be supplied, approximately 1200 tonnes of carbon (CO<sub>2</sub>) and cycle will be blocked, and 85,000 trees will be saved.

## **An interview with Genc Degirmen**

### **How has demand for your equipment and services been during the past year and in what countries and regions has demand for your products been the greatest?**

Our foremost products were Quantiminox Stainless Plansifter with it's easy maintainability suitable of food security rules, and fast assembly – disassembly operations specialities;

Treximat Roller-Mill with smart design for minimum vibration and noise and easy cleaning, low energy consumption and enable fast service (as Roller-Mill Roll disassemble by unscrew four screws) and remote to control by PLC systems; Four Clean we designed this machine for make an operation Four Clean does the operations that can be done with four machines. The specifications of the machine are Separator, Dry Stoner, Air Canal and Gravity Separator.

FourClean takes less space. Triexta is our Trieur, with high efficiency sorting and works with minimum wheat wastage by the control part. These four machines were must request machines from our marketing department except our turnkey facilities.

Last year Africa and Central Asia regions were really active markets and thanks to our branches and representatives in these areas, our market share has become higher than last years.

### **Have you seen more activity in regard to upgrading existing facilities or in building new facilities?**

A lot of millers planning to increase their capacities or change their equipment with brand new ones. New generation machineries and process lines big effects on producing costs. Last innovation attempts are the results of focusing on decreasing these producing costs.

### **What important issues in the milling industry are impacting how equipment is designed and manufactured?**

Energy consumption and lack of qualified personnel issues are important criteria while designing new equipment. That's why automation and energy saving is first priority issues; second thing, minimum spaces and high performance is another function while design milling equipment.

Machinery faults are an occasional thing also in milling plants. These plants are working with big tonnages and if plant stops to working, this is a loss for investor. That's why we are working for long life and strong machinery producing and also for any possible unwanted faults we are designing our machines enable to fixing and servicing operations with take smallest time

Low energy consumption, Minimum time loss for service and lubrication operations and as faultless working machinery designs are our priorities.

### **What are the most common things your clients are asking for help with to complete their new mills or expansions?**

Our clients are mostly asking about energy consumption for per tonne. Also, technical service, representative office, spare part guarantee, machinery designs (as to enable easy maintenance), delivery and commissioning periods are the most important criteria for our clients choosing us.