



**Equipment Design
strategies & trade-offs**

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About Karataş

1978

Foundation by Mr. Vedat Karataş

1980s

Start of Manufacturing bakery machines and equipment for bakeries in Türkiye.

2000s

First Tortilla Line Project in Türkiye, Developed first tortilla production line after years of research

2012 to 2016

Testing & Development Installed lines in the Turkish market, improving design & performance.

2017

Global Expansion for international markets worldwide.

• Production Focus

Fully Automatic Tortilla , Flat Bread Production Lines, Dough Processing Systems, Flowpack Machines.

• Export Share

80%

• Facility Size

Total capacity **35,000 m²** - 28.000 m² is in use
7,000 m² is in construction process to be added.

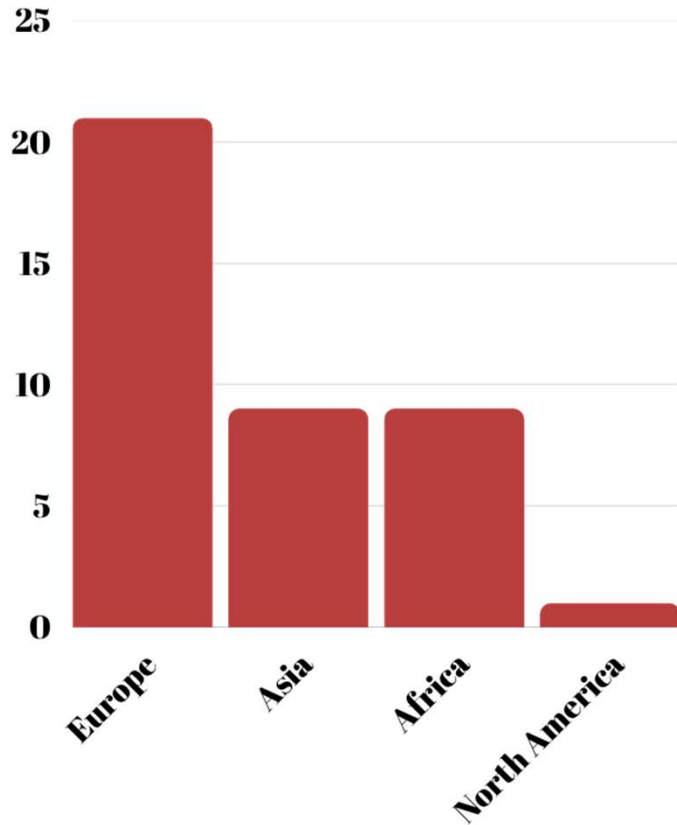
• Workforce

158 personnel





Global Reference Installations



Region	Countries	Total Terti
Europe	Poland, United Kingdom, Spain, Germany, Serbia, Kosovo, Albania, Belgium, Bosnia, Moldova, Hungary, Slovakia	
Asia	Iraq, India, Kuwait, UAE	
Africa	Libiya, Algeria, Mauritius, Tunisia	

Market Demands & Design Challenges

Rising Trends

- Rapid growth of tortilla consumption worldwide
- Increasing demand for high capacity & automation

Design Challenges

- Hygiene & sanitation compliance
- Consistent product thickness & color
- Flexible production for different recipes and sizes





TORTILLA GROWTH

Understanding the industry's rising challenges and opportunities

DEMAND

The global demand for tortillas has surged, driven by increasing popularity in diverse cuisines.



SUPPLY

Supply chain disruptions pose significant challenges, impacting ingredient availability and production timelines.



COMPETITION

The tortilla market faces growing competition from alternative products, requiring innovation and marketing strategies.

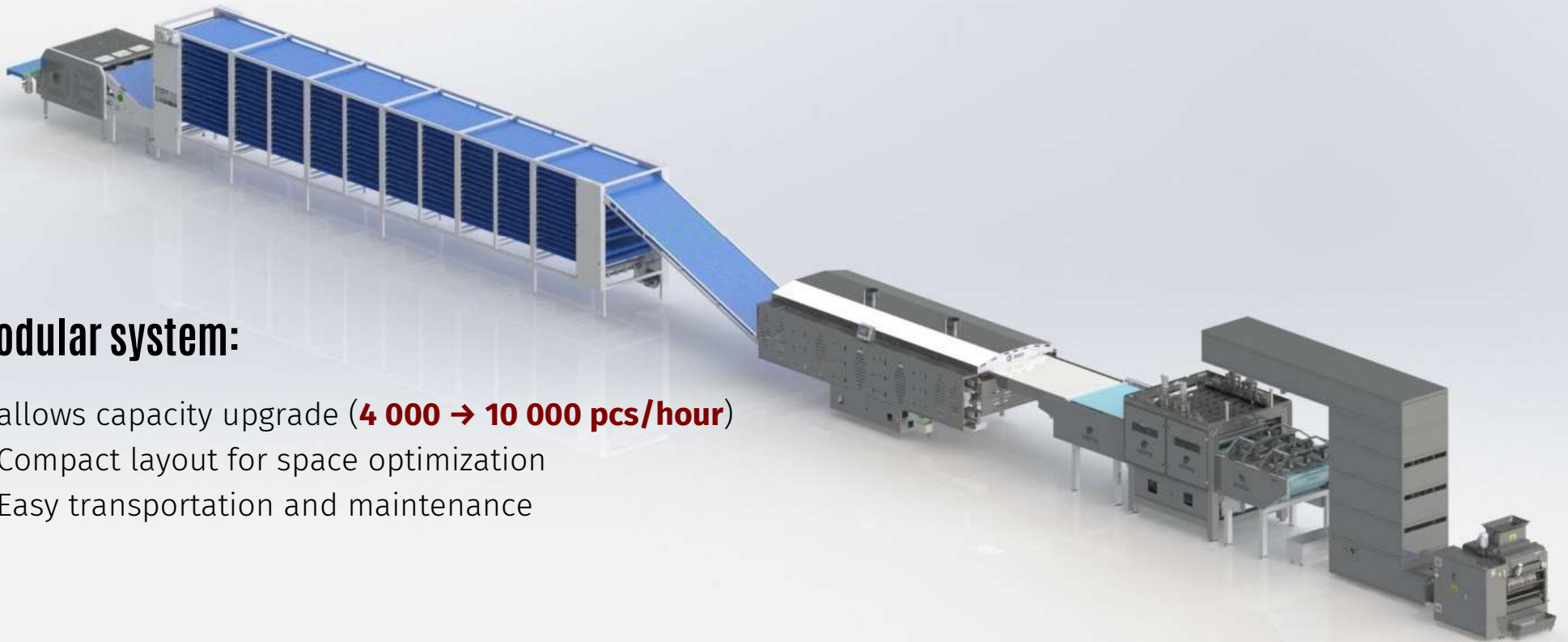


Modular & Scalable Design



Modular system:

- allows capacity upgrade (**4 000 → 10 000 pcs/hour**)
- Compact layout for space optimization
- Easy transportation and maintenance



Smart Automation & Control

- Fully synchronized production line equipped with smart electrical servo systems for high accuracy from dough preparation to final packaging.
- PLC + HMI control for real-time monitoring
- Data logging & parameter memory for product consistency



Hygienic and Efficient Design

- Stainless-steel 304 contact surfaces
- Smooth edges and easy access for cleaning
- Food-grade materials throughout
- Reduced water usage during wash-down
- Reduced Human touch in production



Engineering Trade-Offs



you can't maximize everything at once, so engineers decide which factor is more important for a given goal.

Factor	Design Target
Speed & Dough Handling	High speed text
Automation & Maintenance	Complex system

Key Performance Metrics in Tortilla Production



THROUGHPUT MAXIMIZATION

Throughput refers to the maximum output achievable in a given time frame.

Critical design production lines with optimizing the flow of materials.

Ensuring efficiency in each stage of operation and overall productivity.

QUALITY CONSISTENCY

Ensuring uniform product quality

Customer satisfaction and brand integrity.

Implementing robust quality control to measure the production process, consistency and minimizing defects

Ultimately enhancing business reputation.

Karataş Fully Automatic Tortilla Production Line



KEY FEATURES:

SERVO-CONTROLLED PRESSING UNIT
ENSURES UNIFORM SIZE AND THICKNESS

MULTI- ZONE GAS B
DELIVERS IDEAL TEXTURE AND COLOR CONSISTENCY

COOLING CONVEYOR W
PREVENTS TORTILLA CRACKING AND DRYNESS

SMART AUTOMATION S
INTEGRATED SENSORS FOR SYNCHRONIZED SPEED AND TEMPERATURE CONTROL



4 000 PCS/HOUR

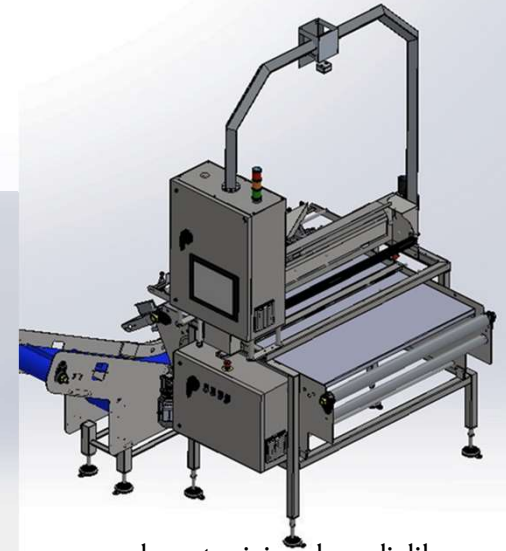
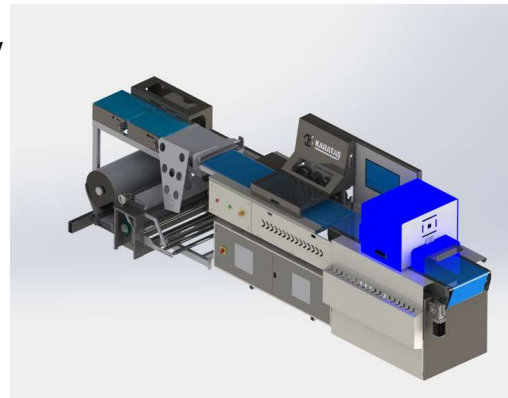
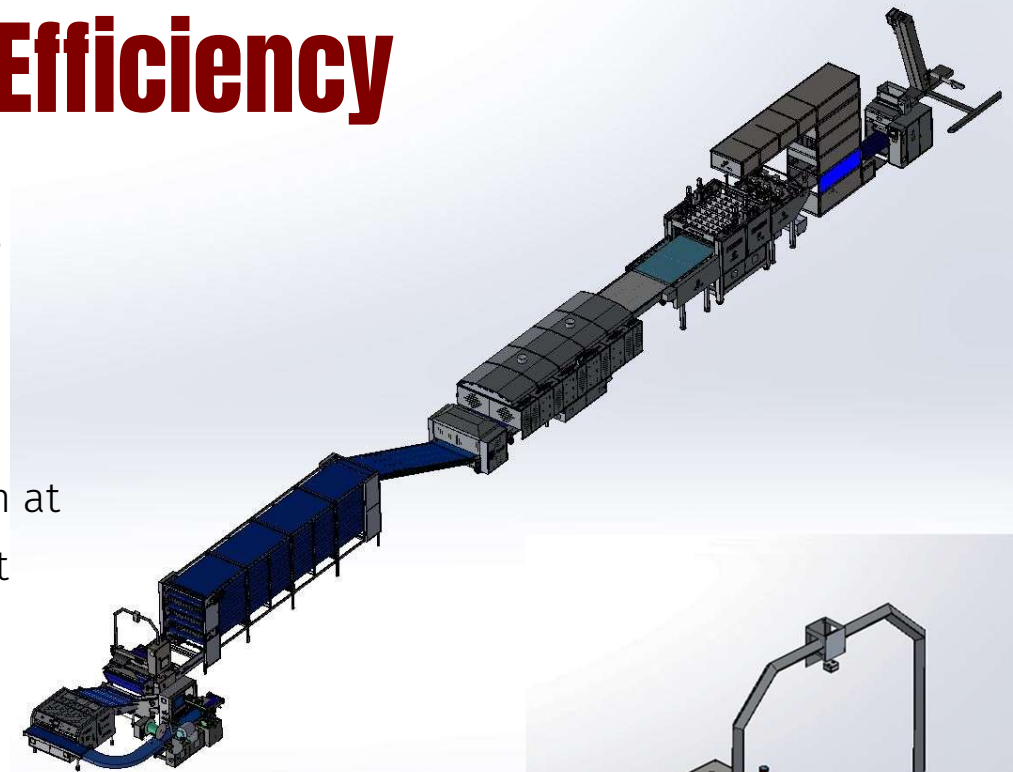
6 000 PCS/HOUR

10 000 PCS/HOUR

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Automation & Operation Efficiency

- The Karataş Fully Automatic Tortilla Line operates with only 4 operators thanks to its advanced automation system.
- Approximately 80% of our production lines run in at least two shifts, ensuring continuous and efficient production.
- The line is equipped with a specially designed pressing system, which allows full control directly through the touch-screen interface no manual adjustments are required.



Equipment Design Considerations in Tortilla Production



MATERIAL SELECTION

Selecting appropriate materials is crucial for **ensuring hygiene** and product safety, while also addressing durability and optimal performance in high-volume production environments to meet industry standards.

ENERGY EFFICIENCY

Implementing energy-efficient technologies helps reduce operational costs and supports sustainability initiatives, leading to a **greener production process** that minimizes environmental impact and conserves resources over time.

ADVANCED SENSORS

Utilizing advanced sensors control systems enhances production precision and monitoring, allowing for **real-time adjustments** that significantly improve product quality and operational efficiency throughout the manufacturing line.



Trade-Offs in Equipment Design Strategies

BALANCING COMPETING PRIORITIES FOR OPTIMAL PERFORMANCE

Effective equipment design in tortilla production involves navigating critical trade-offs, such as **cost vs. performance**, ensuring a balance to achieve optimal efficiency and product quality across various operational scenarios.

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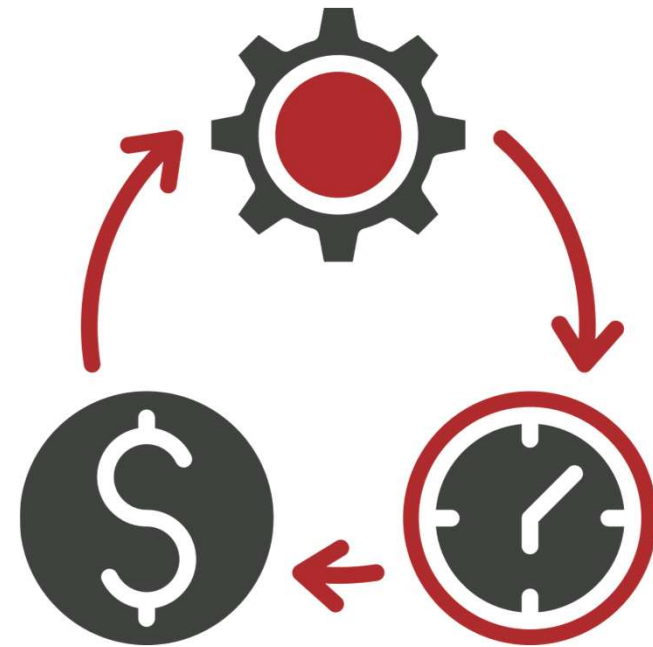
Cost . Performance . Speed . Quality

COST . PERFORMANCE

The initial investment in equipment must align with expected long-term , ensuring that financial outlays **translate into sustainable profitability** over time.

SPEED . QUALITY

High throughput can lead to **risks affecting product consistency**, where maintaining quality becomes challenging, demanding careful monitoring and adjustments throughout the production process.



Optimizing Trade-Offs

Tailor strategies to business goals and priorities

- Effective design with a balance of **cost, performance, and flexibility**.
- **Prioritize critical factors** to align equipment choices with overall
- business objectives and production needs.
- Integrating Design, Support, and Collaboration
- FOSTER relationship and better communication and support throughout the equipment lifecycle,



Looking Forward (Next Generation Designs)

- IoT Integration: Predictive maintenance & remote monitoring

Enhanced efficiency in production

- Energy Efficiency: Heat recovery and optimized oven insulation
- Sustainability: use eco-friendly materials
- Global Adaptation: Customized lines for regional recipes



Thank You

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