



By 2040 we will be using 70% of the potable water

Innovating in flour tortilla production through technology and sustainability isn't just smart—it's essential for long-term growth and global impact





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INNOVATIONS FOR A BETTER WORLD



Nixtamalization Reimagined Prime Masa

Carlos Olivares, Daniel Garcia

Innovations for a **better world.**

 **BUHLER**



6:30 a.m.

7:15 a.m.

10:00 a.m.

3:00 p.m.

7:00 p.m.

Bühler is part of the **everyday life** of billions of people

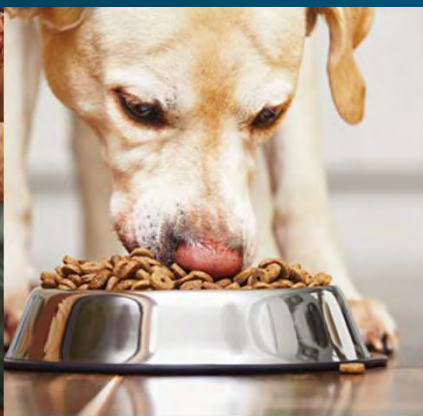
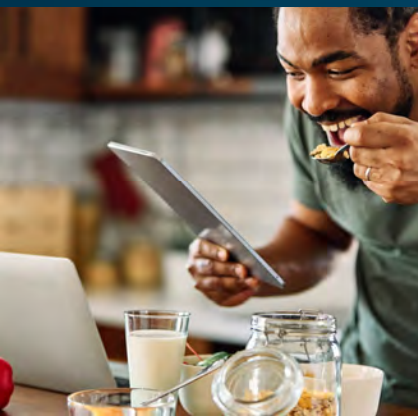
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12:00 p.m.

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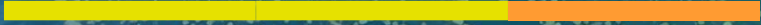




Our relevance in a world of
8 billion people

2 billion

people each day enjoy food
produced on Bühler equipment

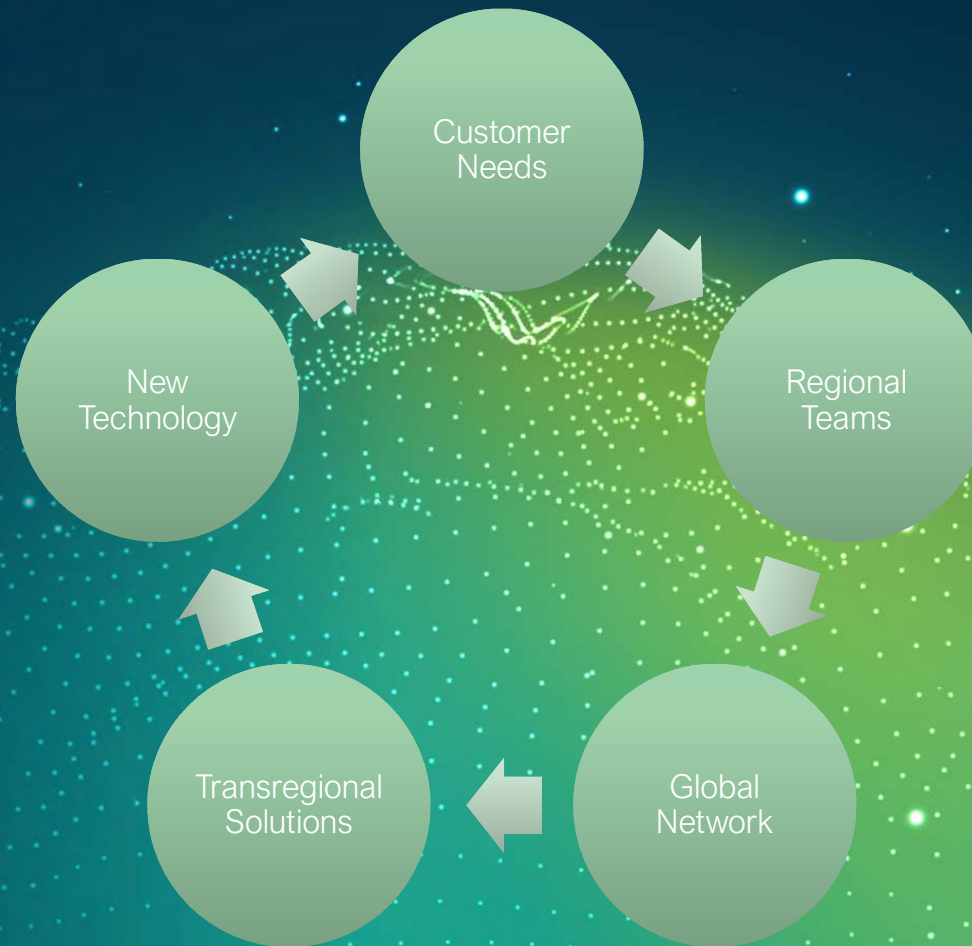


1 billion

people travel in vehicles partly
produced with Bühler machinery

Leveraging our global network with regional focus

New technologies





PRIME MASA NIXTAMAL

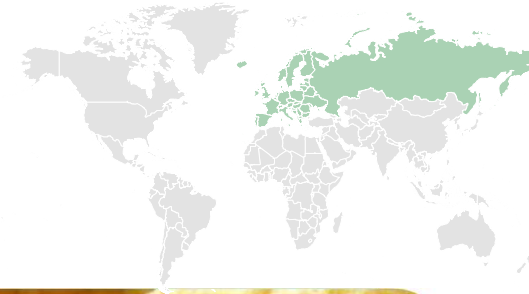
Tortilla products, from a local staple food to a global snack.



01

Market Overview
Europe

Market potential Europe



Tortillas – increasing popularity in Europe



Tortilla Chips – Fastest growing segment within the baking industry



*source: FAOStat, 2022

*1source: Euromonitor, 2025

From Nixtamal flour to various food products

Popularity of Mexican food worldwide: Tortilla Chips the Trojan Horse



Nixtamal maize flour

End product examples

Tortilla Chips and Snacks



Corn Tacos in Restaurants



Fresh Table Tortillas



Tamales, Empanadas, Gorditas



Example of diversification of Nixtamal Based Products

Integration of new ingredients to enhance nutritional flavor



Table Tortilla
will see
similar trends

Tortilla Trends Worldwide. More Dynamics – More Potential.

MORE DEMAND FROM THE ENVIRONMENT



New flavors and ingredients



Fast food chain expansion



A driver of corn tortillas vs. wheat wraps



Conscious nutrition/ Whole grains/ added vitamins/ GMO banned

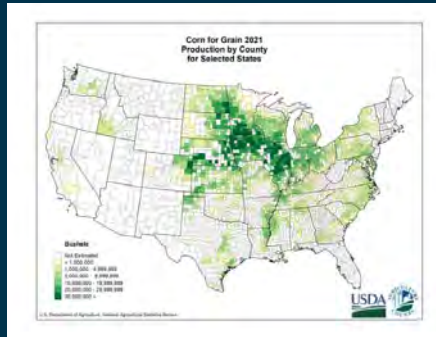
Supply Chain Issues

Limited dry masa suppliers, geographically centered

Corn Supply
White / Yellow

Small produces can make their own masa
Until regulations allow it.

Producers



Small



Medium



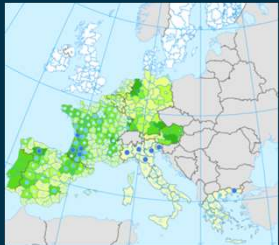
Large



Mostly in the US, Mexico
and Central America

Supply Chain Europe

Europe



Bottle Neck of Masa Suppliers

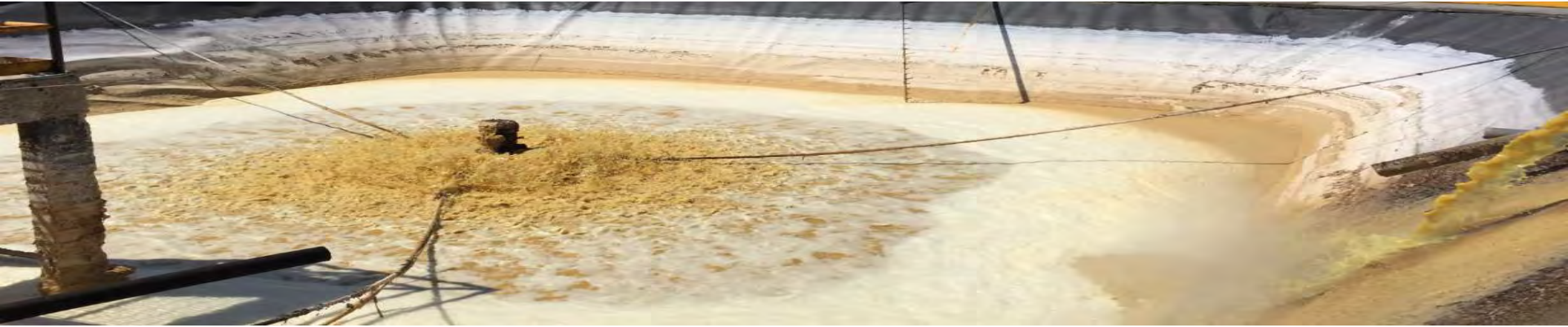
Tougher Regulations



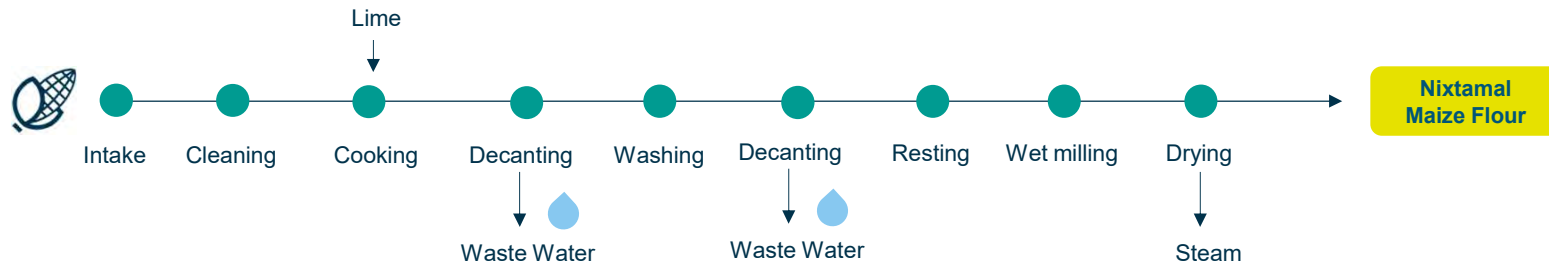


02

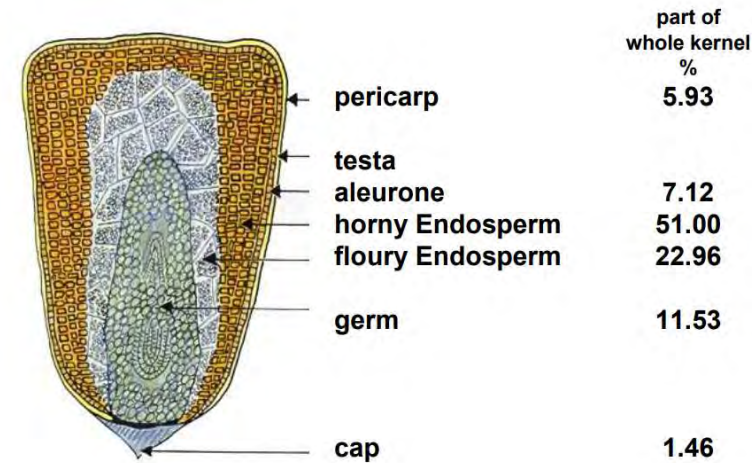
Traditional Nixtamal Process and its challenges



Wastewater Nejayote: diminishing corn nutritional value and consequently, of the foods obtained from it.



- 1.5 tons of wastewater per ton of corn
- Loss of healthy fibers, nutrients and starch
- Additional energy for cooking and drying required
- Wastewater needs treatment



Wastewater Nejayote: diminishing corn nutritional value and consequently, of the foods obtained from it.

Nutritional Loss : Corn Germ and Pericarp

- Soluble and insoluble solids
- Polysaccharides, Starch, Protein and Lipids
- Bioactive compounds: polyphenols, carotenoids.
- Parts of the endosperm: cellulose and hemicellulose

Process Complications

- High pH Value, Biological and Chemical Oxygen Demand
- High Temperature, important energy loss
- Water Treatment Needed
- Hard to treat organic-inorganic mixture.
- Waste solids after filtration
- Overloads Cities Wastewater treatment plants
- Spraying on fields creates odor issues.

Prime Masa Addresses the Nixtamalization Challenges



Eliminate **Waste** Production

Reduce **Water** Consumption

Reduce **Energy** Consumption

Improve **Yield**

Enhance **Nutritional** Value

Green Forward





03

Innovative Prime Masa Nixtamal
Process

Prime Masa Nixtamal

Sustainable and innovative solution for tortilla flour

Benefits over the entire Bühler Prime Masa Nixtamal process

Save water



up to
-84 %

Waste reduction



up to
-96 %

Save energy



up to
-52 %

Increase yield



up to
+3 %

Corn/maize



Intake & Cleaning



Degerminating



Conditioning & Tempering



Lime Water Addition



Steaming



Flaking



Drying



Cooling



Grinding



Blending

Nixtamal Flour

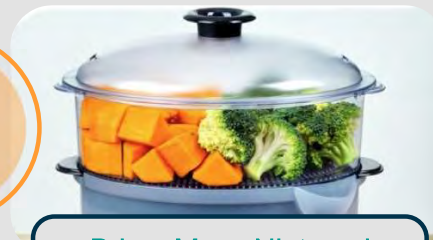
Nutritional Value of Steam Cooked Nixtamal

Products produced with Prime Masa Nixtamal, have overall a **better nutritional profile**, than traditional nixtamal.

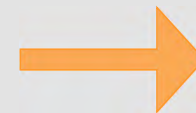
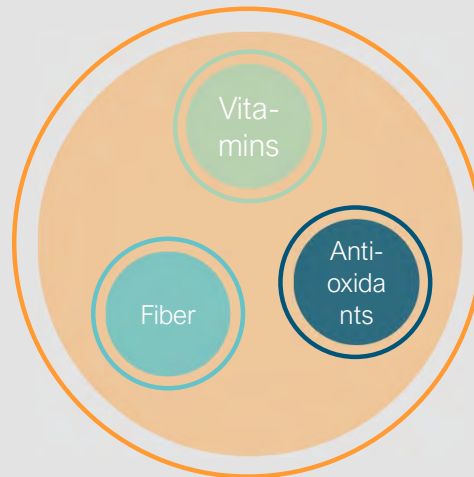


Traditional Nixtamal Method
Cooking maize in alkaline environment and water excess

VS.



Prime Masa Nixtamal
Cooking maize in a steamer



Wastewater (Nejayote)

Water consumption comparison

Traditional nixtamal process
Cooking of maize



- Expensive wastewater treatment:
- sewage plant investment and high operation/maintenance costs

Prime Masa process
Steaming of maize



- 90% less water/waste
- Same rheological properties of the traditional masa

PrimeMasa Technology

A 4.5 tph mill will save

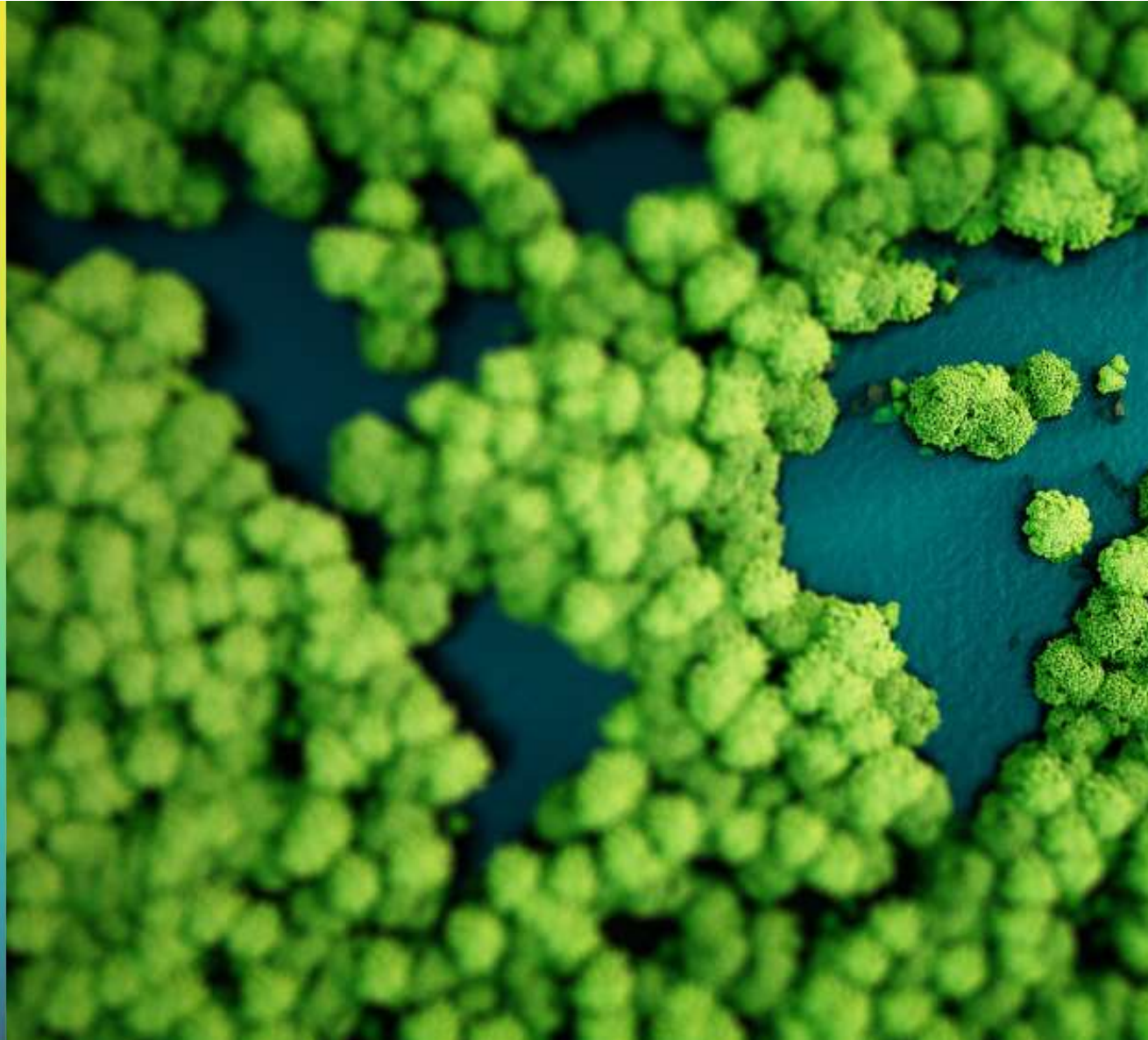
4'100 tonnes CO₂e per year

- ▶ equivalent to the annual carbon captured by 205'000 trees

1 kg of Masa Flour saves

121 g CO₂e

- ▶ equivalent to carbon captured by 25 million trees per year (for consuming 8.4m tortillas are)

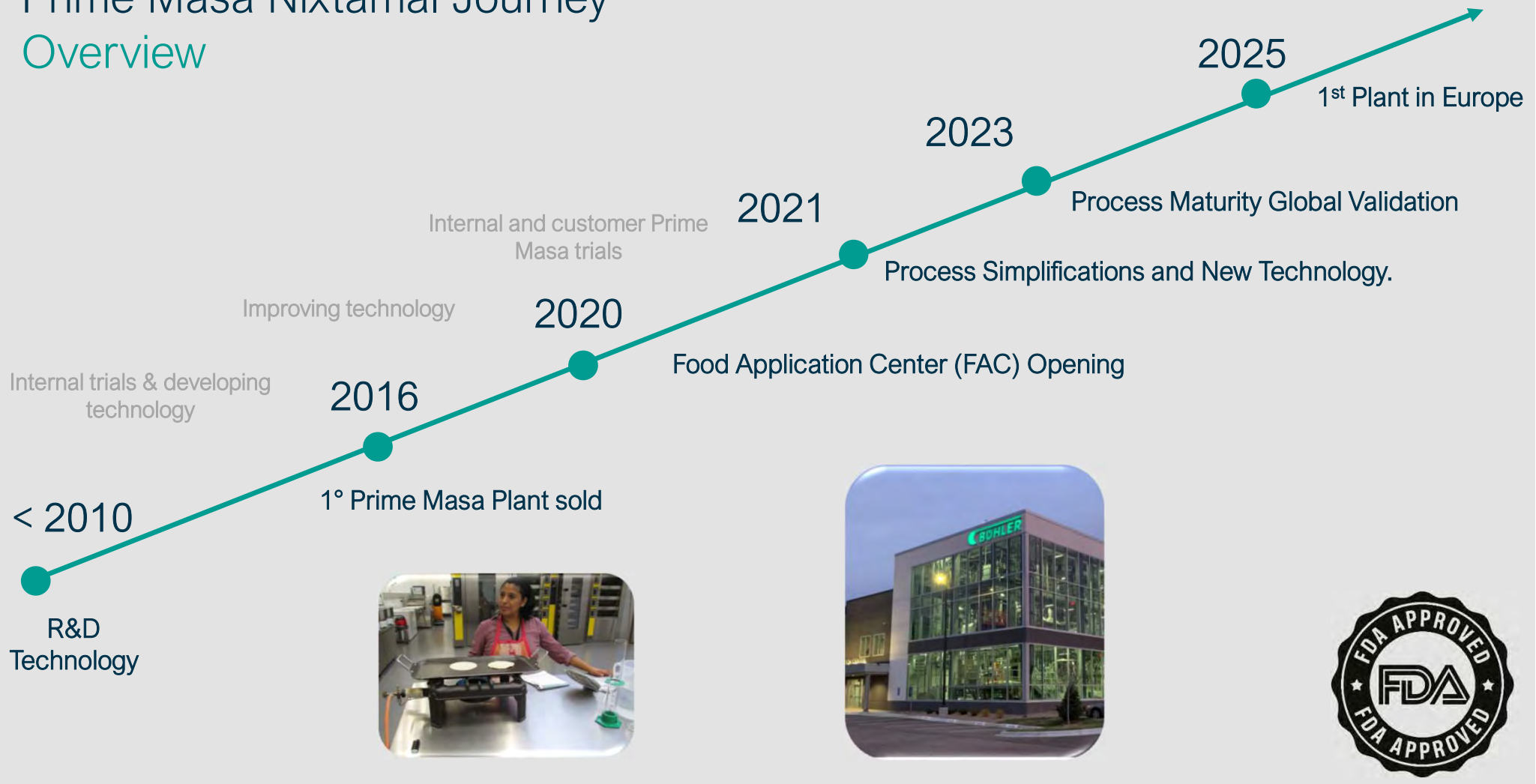




04

Journey Where we are at today

Prime Masa Nixtamal Journey Overview



Food Application Center
Minneapolis, USA

BUHLER

Industrial
Pilot
Plant

Know-how
Experience
Training

Playground
to Innovate

<https://www.youtube.com/watch?v=PINBMkXxpWA>

Virtual Tour:

<https://www.youtube.com/watch?v=ZHld1e1yQcU>



New Horizons for Nixtamalization and pre-cooked grain flours

Buhler Innovation

CORN
+ 50 Trials
Food
Application
Center

Buhler + Partners Innovation

Validation for
Tortillas and
Snacks for Global
Brands.
New Grains like:
Sorghum, Millet,
Quinoa,
Chickpeas

Customer Innovation

Bake Goods
Snacks
Cereals
Alternative
Proteins
Revalorization of
Waste Streams
Healthy Foods

A glass terrarium containing small green plants and moss, set on a forest floor. The background is a lush green forest with sunlight filtering through the trees, creating a bokeh effect. The text "Innovations for a better world." is overlaid at the bottom of the image.

Innovations for a better world.



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