Franz Haas SWAKT-Eco wafer baking oven.
Solutions for highest demands.

Innovations for a **better world.**

BÜHLER

Franz Haas SWAKT-Eco wafer baking oven.

Franz Haas SWAKT-Eco wafer baking ovens produce high-quality flat and hollow wafers. They feature an innovative, easily adjustable heating system which significantly reduces production costs, gas consumption and noxious emissions.

Modular design is our standard
Increase the capacity of your Franz Haas SWAKT-Eco oven with modules of eight baking plates, from 32 to 128 plates. This makes transportation easier and provides the opportunity of future oven extensions.

Superior wafer sheet quality
Franz Haas SWAKT-Eco ovens are designed for highest quality standards. Due to the optimized heating system adjustment, precise heat distribution for higher wafer sheet quality is possible.

Simplified control
Easily adjust the heating system via the PLC. Regulate the heating system to adapt it to product, output or line specific conditions.

Operating principle

At the oven head the baking plate pairs open and wafer batter is applied onto the lower plates. After batter deposition, the baking plates close and are pulled by the interlinked baking chain into the fully isolated baking zone. Water is vaporizing and the wafer sheets are baked. After one turn, the plate pairs open again at the oven head. The baked wafer sheets are taken off and are handed over to the next processing machine.

Energy efficiency

Think green

Thanks to innovative burners which allow for the full insulation of the baking zone, the Franz Haas SWAKT-Eco uses heat in the baking process more efficiently. Gas consumption is reduced by up to 30% and noxious emissions are up to 90% lower.

Quality

Optimized heating

The heating system can be easily adjusted with the userfriendly HMI. This enables changes during running production and optimizes heat distribution. Precise adjustments ensure highest wafer sheet quality with consistent weight and moisture distribution.

OEE improvement

Less downtime

Adjust heat distribution via PLC. No cool-down is required for mechanical adjustments. The burners are positioned on top of the baking plates so that no baking waste can drop onto the burners. This results in less cleaning and thus less downtime.

Technical features

Baking plates

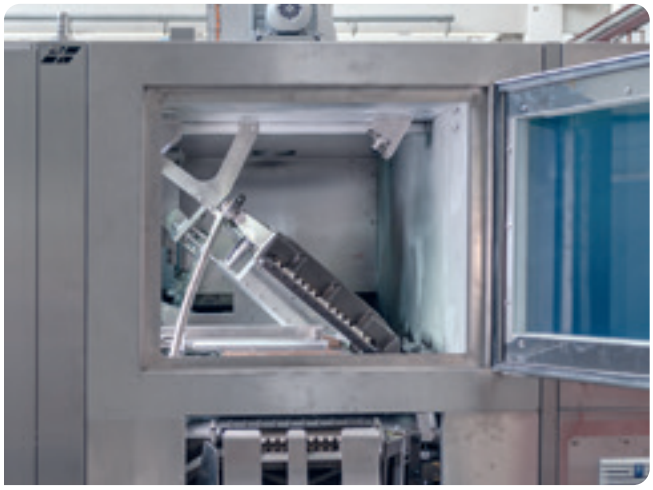
- special cast iron baking plates ensure a long service life
- renowned self-supporting design for optimal energy exploitation, uniform heat and moisture distribution and even wafer color
- high baking plate strength due to longitudinal ribs
- pneumatic self-adjusting locking system and spacer shims allow for constant, easily adjustable wafer sheet thickness as well as ensuring a stable baking process
- taper roller bearings facilitate of the upper and lower hinge parts as well as easy maintenance
- vertically adjustable baking ledges ensure minimized and dry baking waste
- optional: chrome-coated baking plates for an extended service life

Baking chain

- speed of the baking chain infinitely controlled by a frequency converter
- baking plates can be removed without opening the chain, production can continue despite removed plates
- maintenance free ball bearings for running wheels and locking rollers and chain guiding side wheels
- extended service life and smooth movement of the baking chain thanks to the pneumatic chain tensioning system which compensates the difference in thermal expansion between the oven frame and the baking chain

Construction

- highly rigid, durable frame with rectangular tubular sections and stainless steel cladding
- steel plates as a counterweight at the oven head walls to eliminate most vibrations
- energy savings, lower noise and high safety facilitated by insulated oven head
- easy access for maintenance through horizontally opening side doors positioned next to the burner modules
- modularity of the oven frame enables easy line expansion at a later stage
- optional: Macrolon windows at the oven head



Macrolon windows at the oven head

Batter depositing

- automatic batter depositing by rotary lobe pump, return function of the rotary lobe pump prevents batter dropping by everse rotation
- automatic depositing stop enables continued production even in case of removed baking plates

Full insulation of baking zone.

Easy operation via touch screen terminal

Heating

- optimized heat distribution and tremendously decreased gas consumption thanks to the convection heating system: up to -30% gas consumption*
- noxious emmissions up to 90% lower (NOx and CO)
- controlled burning process through new, innovative radiation burners
- 1-4 burner modules, depending on oven length and heating capacity required
- highest efficiency of gas and power usage through the fully isolated baking chamber with optimized air circulation
- less cleaning, maintenance and down time since bubbles and baking waste no longer drop onto the burners, as the new burners are arranged on top of the baking plates
- in case of pressure loss the system shuts down automatically

Wafer sheet take-off

- wafer sheet take-off synchronized to the speed of the baking chain
- sheet checking system for recognition and rejection of faulty or incomplete wafer sheets
- optimal production results by tuning the settings of the servo motor drives for the batter depositors

Electrical control

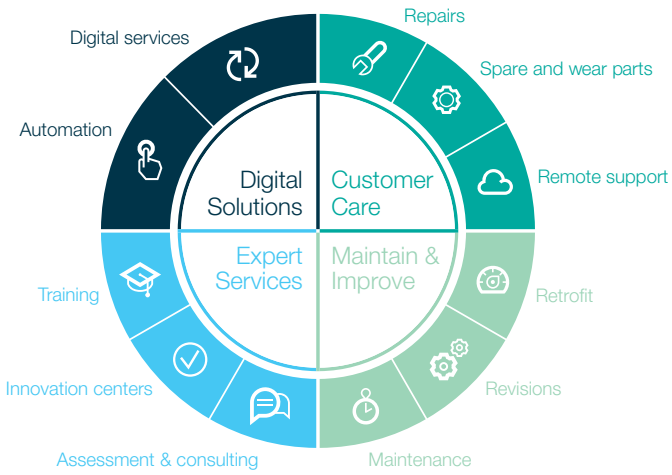
- user friendly PLC control
- automatic operating data logging and heating system control
- all control components integrated in the oven remote maintenance

*assumed heating value: 8.200 kcal (34,34 MJ)/m3LNG; the gas consumption depends on several factors (recipe, ingredients, wafer sheet thickness, format, machine setting,..) and is therefore always product-specific

Franz Haas SWAKT-Eco wafer baking oven.

Customer Services
Wafer - From expertise to excellence.

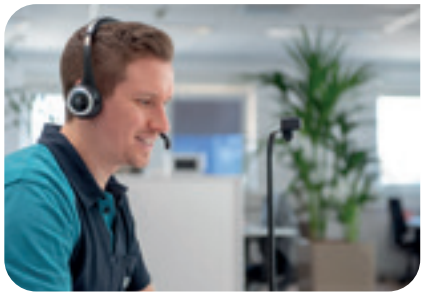
Bühler stands for more than just high-quality machinery and best value for money. We also stand for lifetime partnerships. To continuously keep your production at the highest productivity level, our customer service supports you in all service dimensions.



We accompany you through the entire lifecycle of your products and offer an all-round service from consulting to individual spare and wear part solutions and retrofits.

Expand your knowledge base and gain a competitive edge: find out just what it is that makes the perfect wafer so delicious in our Wafer Innovation Center and take part in technical training courses at our Training Center or directly at your site.

Let's work out a service solution tailored to your specific needs. Feel free to e-mail us at **service-sales.bhwl@buhlergroup.com**



Facts about our Wafer Innovation Center

1000 m²

Workspace for innovation

Where we transform your ideas into products and refine your recipes and processes.

8

Well-experienced food technologists

Our specialists can help you gain a competitive edge by finding your perfect recipe tailored to your market needs.

> 50

Technical and analytical tools

An optimal combination of machines, technical instruments and analytical tools supports you in finding your best solution.

Technical data

Type Franz Haas SWAKT-Eco	32	40	48	56	64	72	80
approx. output wafer sheets/min.)*	16	20	24	28	32	36	40
approx. gas consumption (MJ (kcal)/kg wafer sheet)**	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)
installed power (kW)	50.0	50.0	50.0	50.0	50.0	50.0	50.0
approx. power consumption (kW)***	13.0	13.0	13.0	13.0	13.0	14.0	14.0
approx. oven length (m)******							
T=335******	6.38	7.72	9.06	10.40	11.74	13.08	14.42
T=375	7.03	8.53	10.03	11.53	13.03	14.53	16.03
T=425	7.83	9.53	11.23	12.93	14.63	16.33	18.03
approx. oven width, doors open (m)							
RB = S / M / L			3.75 / 3.85 / 3.95				
approx. oven height (m)			2.29				
approx. oven weight (t)							
T-335	15.2	17.9	20.9	24.0	27.0	29.9	33.0
T-375	16.7	19.8	23.1	26.4	29.7	33.0	36.3
T-425	17.7	21.1	24.6	28.2	31.7	35.3	35.3

Type Franz Haas SWAKT-Eco	88	96	104	112	120	128
approx. output wafer sheets/min.)*	44	48	52	56	60	65
approx. gas consumption (MJ (kcal)/kg wafer sheet)**	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)	7.5 (1800)
installed power (kW)	50.0	50.0	50.0	50.0	50.0	50.0
approx. power consumption (kW)***	14.0	16.0	16.0	16.0	16.0	16.0
approx. oven length (m)******						
T=335******	15.78	17.10	18.44	19.78	21.12	22.46
T=375	17.53	19.03	20.53	22.03	23.53	25.03
T=425	19.73	21.43	23.13	24.83	26.53	28.23
approx. oven width, doors open (m)						
RB = S / M / L			3.75 / 3.85 / 3.95			
approx. oven height (m)			2.29			
approx. oven weight (t)						
T-335	36.0	38.9	41.9	45.0	48.0	51.2
T-375	39.6	42.9	46.2	49.5	52.8	56.1
T-425	42.4	45.9	49.4	52.9	56.2	60.0

* assumed baking time of 2 minutes; the actual baking time depends on several factors (recipe, ingredients, wafer sheet thickness, format, machine setting,..) and is therefore always product-specific

** assumed heating value: 8.200 kcal (34.34 MJ)/m3LNG; the gas consumption depends on several factors (recipe, ingredients, wafer sheet thickness, format, machine setting,..) and is therefore always product-specific

*** the power consumption includes all available upgrades

**** without wafer sheet conveyor (standard length of transfer conveyor: 2167 mm)

***** T is the distance in mm from one baking plate front edge to the front edge on the next baking plate

Technical modifications reserved. Images may differ from the latest execution of the machines.

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