# TU Tunnel Oven


## High performance and reliability

SVEBA DAHLEN

# to meet
# the requirements of the future

## Sveba-Dahlen's tunnel ovens are equipped to meet the requirements of the future

Sveba-Dahlen has been manufacturing baking ovens for over 50 years, and tunnel ovens for almost as long. Over 300 installations have been delivered to customers all over the world. Our extensive experience and our aim always to find the correct solution for our customers means that we have a unique tunnel oven concept today, for all conceivable types of products and requirement.

We adapt our ovens to fit the specific wishes of the customer. Our tunnel ovens offer unique flexibility and can be used for all types of products. An oven is divided into a number of heat zones, each of which has separate regulation of top and bottom heat. This makes it possible to give an optimum setting of the heat curve for each product. Our tunnel ovens can be delivered in three ways of heating; electricity, gas or oil, on customers' request. They can be fitted with many types of bands, for example fine or wide spaced wire mesh bands, solid steel bands, sheet metal bands or stone sole. For ovens with wire mesh band, the width of the band can be up to fully 4 metres. The size of each tunnel oven is calculated in accordance with the capacity requirements of the customer and the layout of the premises.

Tunnel ovens are manufactured in two basic versions, depending on the temperature range for which they are prepared, for exampel normal temperatures up to 350 °C and high temperatures up to 500 °C.

Sveba-Dahlen's tunnel ovens are very flexible and user-friendly, known for high performance, high reliability and low maintenance costs.

## Control

The control panel is designed to give best overview and simple control displaying baking time, temperature etc.

PLC control with recipe handling of process parameters and handling of alarms and data logging is available as option. Connection to a master control system is another possible choice.

*Instrument panel with PLC control.*

## Driving equipment

The speed of the drive motor is controlled by a frequency converter to maintain the exact baking time. Long ovens and ovens for heavy products are fitted with double drive rollers. The driving rollers, each of them has their own driving unit, are controlled by a common frequency converter.

## Steam system

In ovens built for connection to a steam generator, a part of the first oven chamber is provided with steam spreader boxes made of acid proof stainless steel. Regulating indicator valves with dial clocks are fixed on the sides of the oven to set the correct volume.

Steam control with quantity control/photocell control can be selected as an option.

## Inspection door

The ovens have inspection doors made of glass, with built-in-lighting for easy supervision of the baking process. (Not applicable for high temperature vision).

Exhaust damper manually adjustable or, as an option, motor-driven together with PLC control.

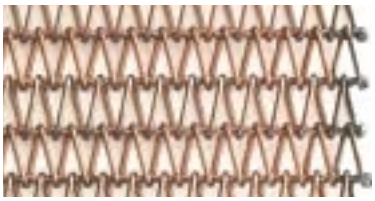
*The belt driving system is designed for adequate baking and optimal reliability.*

*Inspection doors on strategical places along the oven.*

## Different bands

| | Minimum band width | Maximum band width | Exemples of use | | | | |
|---|---|---|---|---|---|---|---|
| | m | m | Individual loaves | Products in tins or on plates | Buns and cakes | Swiss rolls and rolls | Pizzas |
| Fine wire mesh band | 0.5 | 4.2 | x | x | x | | x |
| Wide-spaced wire mesh band | 0.5 | 4.2 | | x | | | |
| Solid steel band | 0.5 | 3.56 | | x | x | x | x |
| Stone sole | 0.5 | 3.0 | x | | | | x |

Fine wire mesh band



Wide-spaced wire mesh band

Solid steel band, riveted and welded joint respectively

## Materials and components

We manufacture the exterior of the oven in stainless steel. The materials in the oven chamber are specifically selected for each oven, for the baking temperature and the product range. All the ovens are insulated with rockwool to minimize the heat loss.

## Heating

The electric tunnel ovens are heated by tube elements with double heating spirals. The elements are installed over and under the oven chamber, along the entire oven, and are easily accessible from the side. Each element has its heat-emitting part positioned so that the band is heated efficiently over its full width. The tube elements are specially manufactured for each individual oven for maximum control of the heat distribution and quality. On an average, a tunnel oven consists of about 12 elements per metre.

Direct gas-fired or indirect oil/gas heating is also available.

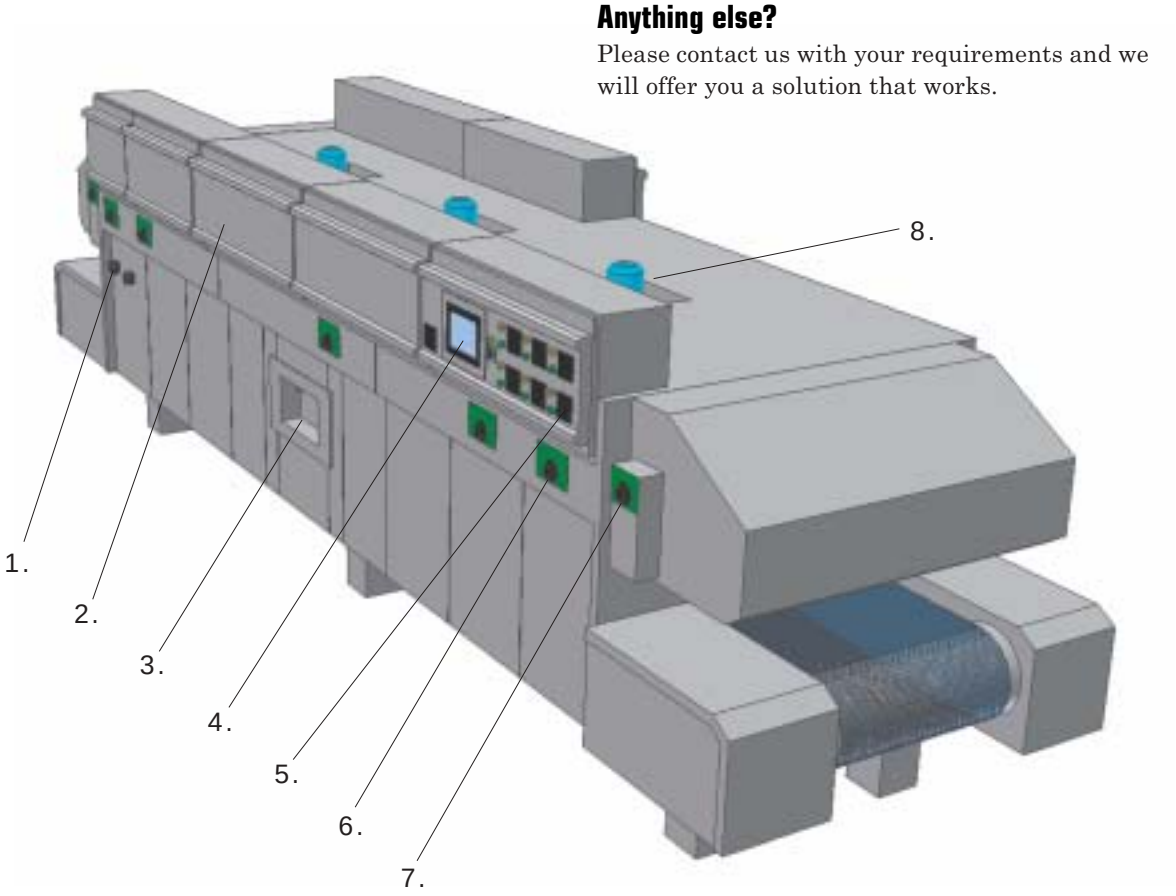
## Air turbulence

For many types of products, it is appropriate to use a combination of radiant heat and air circulation. If so the oven can be equipped with turbo zones. In wire mesh band ovens, air circulation is most often vertical, up through the band, in steel band ovens it is horizontal along the band. With air circulation, the baking time can be shortened, and lower temperatures utilized. This also gives the sides of the bread better colour, especially by baking with tins. By controlling the speed of the drive motor, optimal turbo power of the turbo fans can be obtained.

*Fan motor for air turbulence.*

## Anything else?

Please contact us with your requirements and we will offer you a solution that works.




| | |
|---|---|
| 1. Steam regulating valve | 5. Control panel |
| 2. Electrical component box | 6. Damper control |
| 3. Inspection door | 7. Lever for roll-type door |
| 4. Touch screen, PLC control (option) | 8. Fan motor, turbo section (option) |

## Calculate the size of your own tunnel oven

Following the examples below, you can easily calculate the approximate size of a tunnel oven that will meet your capacity requirements.

### Size $m^2$ = Length x Width of the product x Number of products/hour x Baking time/60 x Constant

The constant varies between different products, but is most often within the range 1.3 – 1.6; at the first attempt to calculate the size the factor 1.3 can most often be used for products in tins, 1.6 for products on indented trays for hamburger buns and for individual loaves.

**Example 1**

**Oven for individual loaves: 2 000 loaves per hour. Product size: 300 x 140 mm. Baking time: 25 minutes.**
**Size: 0.3 x 0.14 x 2 000 x 25/60 x 1.6 = 56 $m^2$ baking area, for example, oven size L = 19 and W = 3 m (TU 19/3).**

**Example 2**

**Oven for products baked on indented trays: 25 000 loaves per hour. Product size: Ø100 mm. Baking time: 10 minutes.**
**Size: 0.1 x 0.1 x 25 000 x 10/60 x 1.6 = 66.5 $m^2$ baking area, for example, oven size L = 18 m and W = 3.8 m (TU 18/3.8)**

**Example 3**

**Oven for products baked in tins: 4 000 loaves/hour. Product size: 280 x 110 mm. Baking time: 30 minutes.**
**Size: 0.28 x 0.11 x 4 000 x 30/60 x 1.3 = 80 $m^2$ baking time, for example, oven size L = 27 m and W = 3 m (TU 27/3).**

The values above should only be used for a rough estimate of the size of the oven.
Always contact Sveba-Dahlen AB for a more exact calculation of size.

Product: Individual loaves
Number per hour: 1 500
Size: TU 13/4

Product: Hamburger buns
Number per hour: 24 000
Size: TU 20/3.75

Product: Russian pasties
Number per hour: 11 000
Size: TU 12/3

## Fermentation lines

Sveba-Dahlen has over 40 years of experience of manufacturing fermentation lines.

The fermentation lines are manufactured in one or two level versions, and the size is calculated in view of the capacity requirements and the lay-out of the premises. The maximum band width is 4 metres, and the bands are threaded over the full width. A modular plastic belt is commonly selected where tins or plates are used.

The fermentation channel is well insulated with cellular plastic and lined externally and internally with aluminium sheets or plastic.

Most of the side panels can easily be removed to facilitate cleaning of the band.

*Proven products in transition between the fermentation line and tunnel oven.*

# Partner of professional bakeries since 1948

Sveba-Dahlen develop, market and manufacture rack, deck and tunnel ovens, proving chambers and fermentation lines for both small and large bakeries, supermarkets, industrial bakeries and restaurants and large kitchens.

Our products are designed and manufactured using the most modern methods, the latest techniques and a most experienced staff. They are well known for high-quality material, reliable availability and perfect baking results. Sveba-Dahlen has been certificated in accordance with ISO 9001 since 1996.

Clients all over the world purchase our ovens and we have today more than 40 distributors with their own service-teams located strategically in all parts of the world. Well-trained and experienced technicians are a guarantee that installation, adjustment and service will be conducted correctly.

Despite our world-wide activity, we remain at heart and soul a family enterprise. We take pride in short lines of communication, quick decisions and straightforward answers. And to meet our clients honestly and with respect.

That has been our formula since 1948. You can rely on that we do our outmost to keep on this course.

SVEBA DAHLEN

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