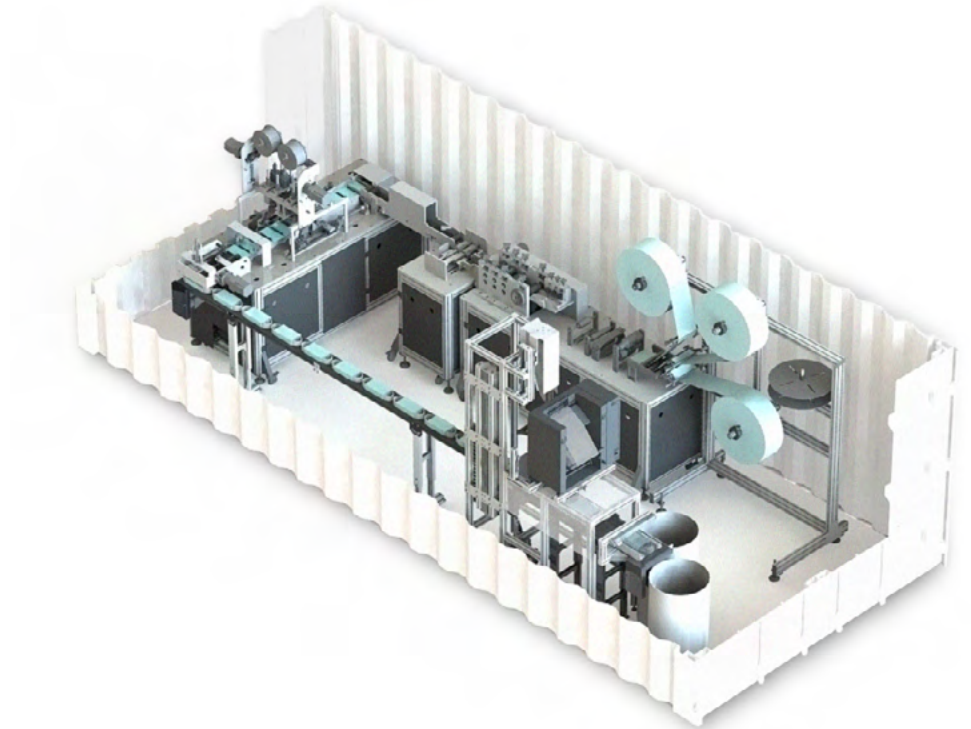


Production line Medical face masks according to DIN EN 14683

Powered by pi4



- + Face masks are in short supply due to the corona crisis and thus endanger people's health
- + Face masks are currently expensive due to the increased demand
- + It is important to produce locally, as every country currently has high demand

Assessment of face mask demand

- 1.2 million medical and non-medical staff were working in German hospitals in 2017
- 500 thousand hospital beds and 28 thousand intensive care beds were available in 2017
- 172 thousand private practice doctors work with 250 thousand medical staff in 101 thousand practices and deal with 553 million treatment cases, resulting in 1 billion patient contacts per year
- It can be assumed that every German citizen has to wear a mask and wear this mask for a month. So our current annual demand would then be a further 960 million masks, in addition to those for medical staff. This corresponds to 32 pi4-respiratorbot production lines, just for the German Federal Republic.

Federal Minister of Economics Peter Altmaier expects a demand of up to twelve billion protective masks per year for Germany.

Specification of the PBHC0001

- The fully automatic machine has been designed for mouth-nose protection with a fixed mouth-protection size of 175 x 95 mm
- Certification of the masks as medical products must be arranged by the customer
- Mouth-and-nose protection produced with the equipment does not fulfill any FFP class
- Technical cleanliness of the environment must be ensured by the customer. Alternatively, we recommend an option of our container enclosure with air conditioning and air purification.

Product features

Description	Material	Specification
Mouth-and-nose protection	–	175 x 95 mm
Inner layer	Spun-bonded fabric, single layer	195 x 175 mm initial width 25 x 50 g/m ² or comparable material
Outer layer	Spun-bonded fabric, single layer	175 x 175 mm 25 x 50 g/m ² or comparable material
Center layer	Non-woven, melt-blown fabric	175 x 175 mm 20 x 50 g/m ² or comparable material
Folds	Triple	–
Nose bar	PU insulated wire	Width 3 – 4 mm Wire diameter 0.4 mm Length 130 mm
Ear loops	PA elastic cord	Diameter 3 – 4 mm Length 140 mm Weldable material

Description of mouth-and-nose protection

- High resistance to liquids
- Good breathability
- Inner and outer surfaces are clearly marked

Standards

- EN 14683 Type IIR high performance in bacterial efficiency, breathing and splash resistance
- ASTM F2100 Level 1 or Level 2 or equivalent
- Fluid penetration resistant at pressure of at least 120 mm Hg based on ASTM F1862-07, ISO 22609 or equivalent
- Breathability: MIL-M-36945C, EN 14683:2019+AC, or equivalent
- Filtration efficiency: ASTM F2101, EN 14683:2019+AC or equivalent standards. Reusable (produced in robust material that can be cleaned and disinfected) or usable as a single use article

General performance and technical data of the machine

Footprint	4.9 x 2.3 x 1.9 m (L x W x H)
Permissible ambient conditions	min. 15 °C, max. 35 °C, max. 70 % relative air humidity, without condensation, short-term fluctuations are not permitted
Electric power connection rating	230 / 400 V, 50 Hz
Pneumatic connection	Specified value within the limits of 5.5 to 10 bar, consumption 350 liter/h, compressed air purity class according to ISO 8573-1

The plant is secured by a protective fence for reasons of occupational safety. Installation and system operation in a 20 foot sea freight container (6.05 x 2.44 x 2.59 m) is possible.

Advantages

- + Compact design with small footprint
 - + Convenient access for maintenance activities
 - + High performance, up to 50 masks / minute
 - + Maximum number per bag: 10 masks
 - + 26 years experience in mechanical engineering
 - + 100 % developed and manufactured in Germany
-

Individual functions

- 1 Cell 105**
Station 105 05: Reeling area (fleece and nose bow)
Station 105 10: Nose clip application
Station 105 15: Profiling / ultrasonic welding / cutting
- 2 Cell 110**
Station 110 05: Transport and separation
- 3 Cell 115**
Station 115 05: Ear-loop application and ultrasonic welding
Station 115 10: Packing



Available options of the production line for mouth-and-nose protection masks

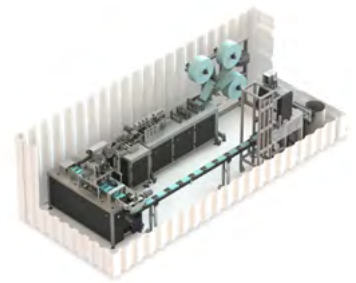
Description	Concept
Specification of the PBHC0002 Option: 20-foot sea freight container	20-foot sea freight container (6.05 x 2.44 x 2.59 m) as operating environment, with air conditioning unit and air filter.
Specification of the PBHC0003 Option: Bag packing	<p>The masks are conveyed out of the machine in stacks and sealed in LDPE bags.</p> <p>The customer can use a container at the end of the conveyor belt to collect the bags (container height approx. 700 mm).</p> <p>Cycle time: up to 10 bags per minute with up to 10 masks per bag Free passage or stacking height: up to 85 mm Bag thickness: 35 to 100 µm Bag sizes: Width 55 to 260 mm, length 100 to 420 mm</p>
Specification of the PBHC0004 Option: Printing the bag packaging	<p>The masks are conveyed out of the machine in stacks and sealed in LDPE bags.</p> <p>The customer can use a container at the end of the conveyor belt to collect the bags (container height approx. 700 mm).</p> <p>Cycle time: up to 6 bags per minute with up to 10 masks per bag Free passage or stacking height: up to 85 mm Bag thickness: 35 to 100 µm Bag sizes: Width 55 to 260 mm, length 100 to 420 mm</p>
Specification of the PBHC0005 Option: Factory outlet sale (requires sea freight container option)	<p>The products, packed in LDPE bags can be ordered, paid for and purchased directly at a payment counter.</p> <p>A robot system hands over the products to the customer.</p> <p>Payment can be made by cash, EC- and credit card or card with a RFID (NFC) chip.</p>

Advantages

- Integrated air conditioning and air purification
- Cleanroom requirements fulfilled
- Easy worldwide transport
- Production directly at the place of need
- Scalable production concept
- No additional transport packaging necessary



- Fully electronic system requires no external compressed air connection
- The rotatable machine allows fastest change of bag formats
- Good possibility of loading and safe closing of the bags
- Operator-friendly display
- On-board diagnostics allow easy maintenance
- Next-bag-out printing function ensures accurate printing
- Integrated air release device
- The bags are counted and fall directly counted into a prepared cardboard box
- The printer can print individual high-resolution barcodes, texts or labels directly on the bag
- Production of separate labels is not necessary
- The printer contains a maintenance-friendly tilting print head
- Optional design software can be used for easy label creation



- No packaging and transport effort for the end products
- Production and sale at one location



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