

## BUSE-Freezing equipment ► tailored and economical

### Why cryogenic freezing and cooling?

Cryogenic freezing (also called shock freezing) using Nitrogen and Carbon dioxide, as cryogenic liquefied gases, is at present the most efficient freezing technology for preservation of foods concerning shelf-life and quality.

Water is the main component of a lot of foods. The challenge of efficient freezing is to obtain small water ice crystals at very high freezing rates. This is the key for optimum preservation of frozen food quality:

- **Slow freezing rate**  
Big water ice crystals are damaging the cell walls  
Drip losses after thawing  
(reduction in food quality regarding appearance, consistence and taste)
- **High freezing rate**  
Small water ice crystals, inside and between the cells  
Cell walls are not damaged, no drip losses, preservation of high product quality

Flüssig-Stickstoff (N <sub>2</sub> )	Kohlendioxid (CO <sub>2</sub> )
<ul style="list-style-type: none"> <li>○ <b>-195,9 °C</b></li> <li>○ Boiling point (at atmospheric pressure)</li> </ul>	<ul style="list-style-type: none"> <li>○ <b>-78,9 °C</b></li> <li>○ Sublimation temperature (at atmospheric pressure)</li> </ul>
<ul style="list-style-type: none"> <li>○ Nitrogen is a colourless and odourless, non combustible, nontoxic, inert gas The atmosphere contents approximately 78 Vol. %.</li> </ul>	<ul style="list-style-type: none"> <li>○ Carbon dioxide is a colourless, non combustible, odourless and tasteless gas The atmosphere contents approximately 0,03 Vol. %.</li> </ul>

### Why BUSE freezing equipment?

With the high performance cryogenic freezers from BUSE, the cryonic refrigerants Nitrogen and Carbon dioxide are used in direct contact with the foods to be frozen. The optimized design, the use of high quality materials and the modern control systems ensure highest freezing rates, excellent preservation of foodstuffs and economic use of utilities.

All BUSE freezers comply with the requirements of the food manufacturing industry and their hygienic standards. Additionally, the variety of the equipment is continually being extended for individual customer developments and special Carbon dioxide and Nitrogen applications.

#### Cryogenic freezers are mainly composed of

- Insulated housing
- Gas injection system
- Fans for cold gas circulation
- Off gas exhaust system
- Belt drive system (continuous freezers)

#### Types

- SF - Cabinet freezer (Batch freezer)
- LF H - Linear freezer (Tunnel freezer)
- EF H - Multibelt freezer
- WF - Spiral freezer

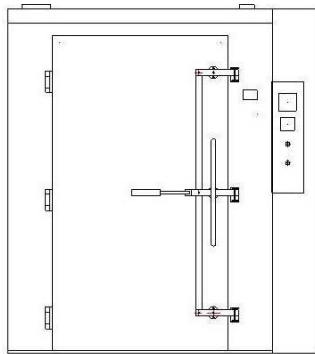
#### Advantages

- Modularly system ensures adaptation to the customer needs regarding freezing capacity and costs
- Manageable investment costs
- High production rate and low space requirement
- Flexible solutions regarding foods and production rates
- High quality of equipment
- Highest freezing rates and low dehydration
- Optimized consumption of Nitrogen and Carbon dioxide

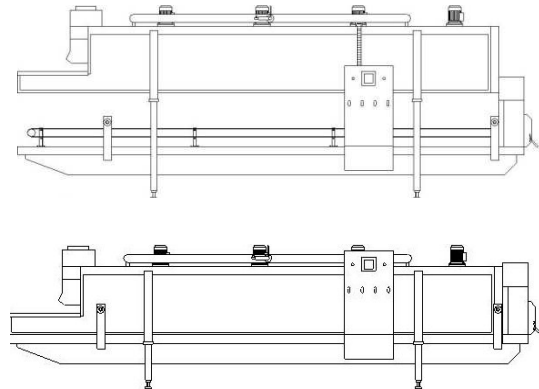
#### Application

- Meat products
- Convenience food
- Fish and seafood
- Bakery goods
- Pasta
- Vegetables
- Fruits
- Dairy - products
- Steel- and pharmacy products

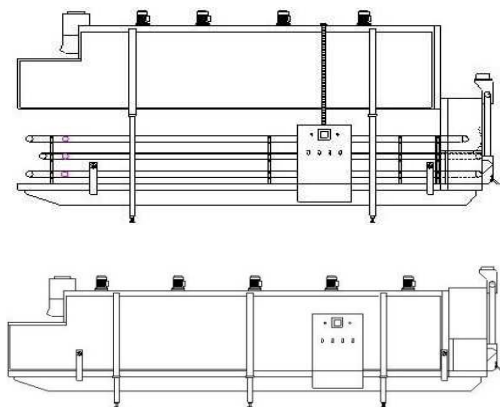
## BUSE - Freezing equipment



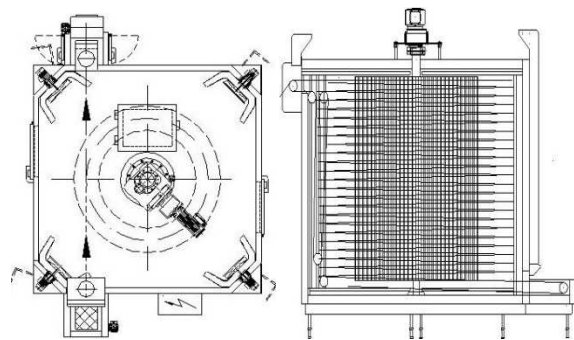
**Cabinet freezer SF**



**Linear freezer (tunnel freezer) LF H**



**Multibelt freezer EF H**



**Spiral freezer WF O**

## BUSE Gastek GmbH & Co. KG

**this means competence in manufacturing of freezing equipment, handling of pressure vessels for cryogenic gases and extensive range of services.**

Cryogenic technologies	Pressure vessels
<ul style="list-style-type: none"> <li>○ Design and construction of cryogenic freezers</li> <li>○ Assembling and disassembling</li> <li>○ Competent after-sales-service</li> <li>○ Spare parts service</li> <li>○ Conversion works (also on-site conversions)</li> <li>○ Inspection and maintenance service</li> <li>○ Refurbishment and in-house storage</li> </ul>	<ul style="list-style-type: none"> <li>○ Storage and complete refurbishment of pressure vessels</li> <li>○ Detection and repairing of vacuum leaks (acuum insulated pressure vessels)</li> <li>○ Periodic inspections</li> <li>○ Sand blasting and painting works</li> <li>○ Qualified welding and soldering</li> <li>○ Certificate: Manufacturer and welding shop according AD 2000-Merkblatt HP 0</li> </ul>