Be cold and calculating in using our benefits

Maximizing the quality and durability of materials in cold chambers
Minus temperatures are plus points for quality
Whether during manufacture, processing or later use – low temperatures decisively influence a material’s quality and durability. This advantage can be realized efficiently and economically by cryogenic cold chambers whose interior temperature attains levels as low as -180 °C. Typical applications for cold chambers include conversion of residual austenite after hardening as well as shrinkage applications and the testing of components, material samples and equipment.

Optimized use of cold nitrogen
All cryogenic cold chambers obtain their low temperature from liquid nitrogen at a temperature of -196 °C. The nitrogen is sprayed via nozzles into the interior where it immediately vaporizes, thereby withdrawing heat energy from the chamber and the product requiring cooling. A special fan ensures an even distribution of cold.

The nitrogen supply is regulated by a programmable temperature controller which is user-friendly and reliable, its temperature adjustment function allowing fast attainment and retention of the desired temperature. This prevents energy losses while increasing cost efficiency.

The right solution for every requirement
Messer offers cryogenic chambers in a variety of designs which take account of the different types, sizes and consistencies of the products to be cooled.

Key common features on all models: cost efficiency, reliability, high-grade stainless steel housing and temperature-specific insulation.

<table>
<thead>
<tr>
<th>Sector</th>
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<th>Application</th>
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<tbody>
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<td>Steel industry</td>
<td>Metal processing</td>
<td>Hardening, conversion of residual austenite, annealing, shrinkage</td>
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<td>Research &amp; development</td>
<td>Material tests</td>
<td>Temperature variation tests</td>
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<td>Industry/ government agencies</td>
<td>Load and performance tests</td>
<td>Material tests at extremely low temperatures</td>
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Fast and reliable cooling in every situation
Messer’s cold chambers set standards not only due to their cooling performance but also their operational reliability. When a chamber is opened, for instance, its supply of cooling medium is turned off automatically.

All cold chambers are delivered ready for connection in order to expedite installation at the desired location and make all benefits immediately available. The cold chambers can also be relocated easily and quickly.

Your advantages at a glance:
- Versatile application
- Economical operation through a supply of liquid nitrogen
- High durability due to zero-wear construction
- Rapid attainment of the cooling temperature
- High temperature constancy
- Fast temperature changes possible
- Easy temperature control by means of a processor
- Easy installation
- High-grade construction and insulation
- High load-bearing capacity
- Demand-oriented dimensioning of nitrogen reservoirs

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<th>Type</th>
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If you have enquiries or need advice from our application specialists, do not hesitate to get in touch with us.

Contact persons in your region are listed in the Internet at:

www.messergroup.com/de/Standorte

This brochure and many others can also be downloaded in PDF format via the Internet: www.messergroup.com