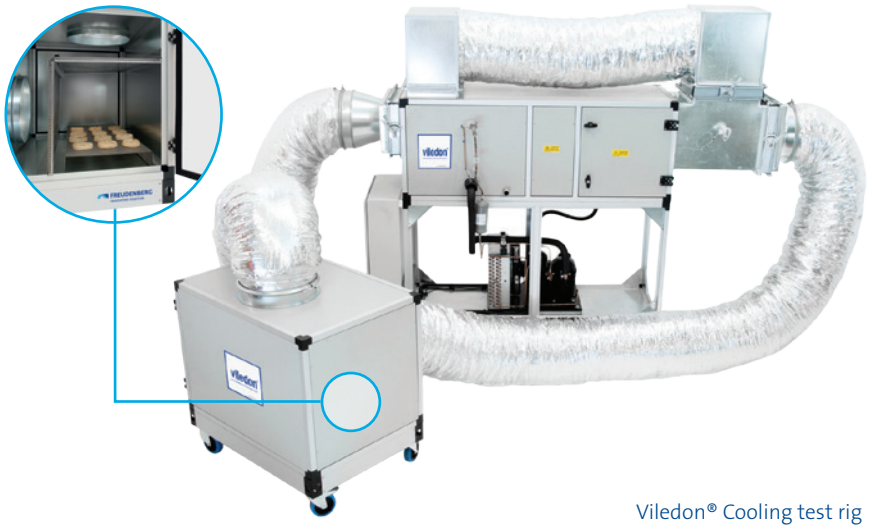
CASE STUDY

viledon® engineering

PRODUCT COOLING TEST RIG FOR THE FOOD AND BEVERAGE INDUSTRY

Case

The mobile test rig has been designed and built for optimizing the product cooling process at any bakery, dairy or cooked chilled meal manufacturing site. When a site is considering a new product, expanding a production line or increasing manufacturing output, accurate process cooling data is an essential tool in determining product cooling cycle times. By using an onsite cooling test rig it's possible to obtain real time measurements and remove any guess work from the process cooling design calculations. The result is an optimised and energy efficient product cooling system.



Viledon® Cooling test rig

Method

The following example case study shows two cooling tests carried out on a crumpet type product and clearly shows how different air velocities can effect process cooling times.

Test

- Initial Crumpet Temperature – Test Start: 60 °C
- Target Crumpet Temperature – Test End: 20 °C
- Supply Air Temperature: 10 °C
- Air velocity at product:
  - Test A: 1.25 m/s
  - Test B: 2.50 m/s

Results

Page 2, shows two cooling times cycle time curves at the two air velocities:

- Test A: 14 minutes required to hit 20 °C
- Test B: 11 minutes required to hit 20 °C

Using the Cooling test rig we have been able to take a post oven product and increase the air velocity till we can reduce the cooling residency time by over 20 %.

In practical terms this would mean that if we increased the size of the air handling plant we could reduce the length of cooling belt required. Alternatively by lowering the air temperature of the cooling air it would also be possible to reduce the cooling conveyor length which could be a critical factor if there is a physical constrainst on available space.

energy efficiency performance

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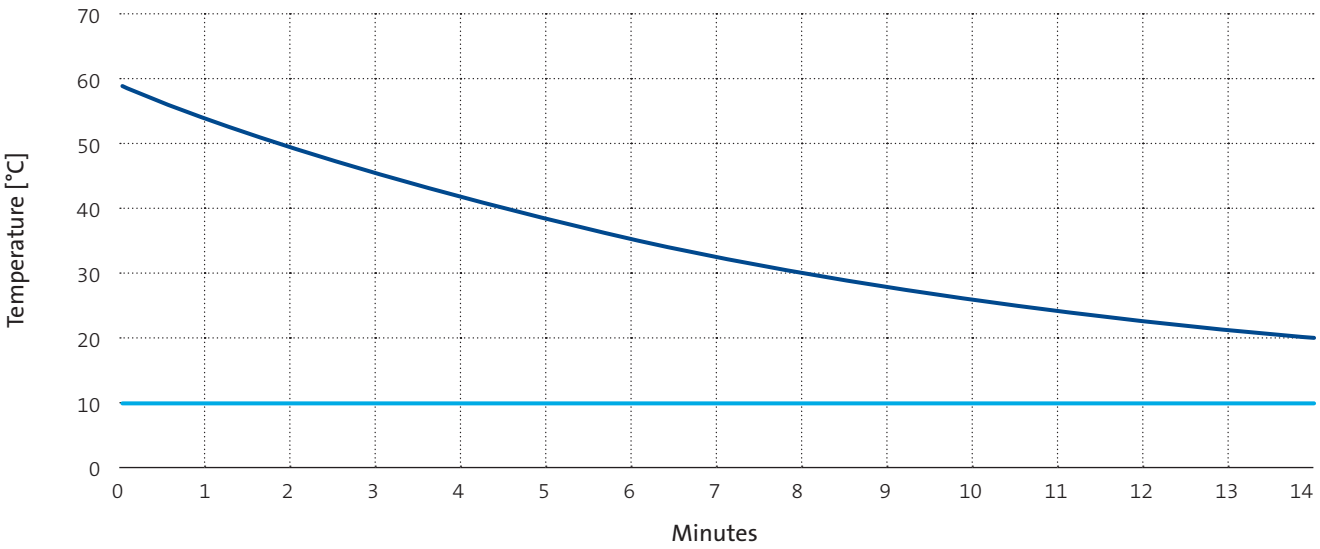
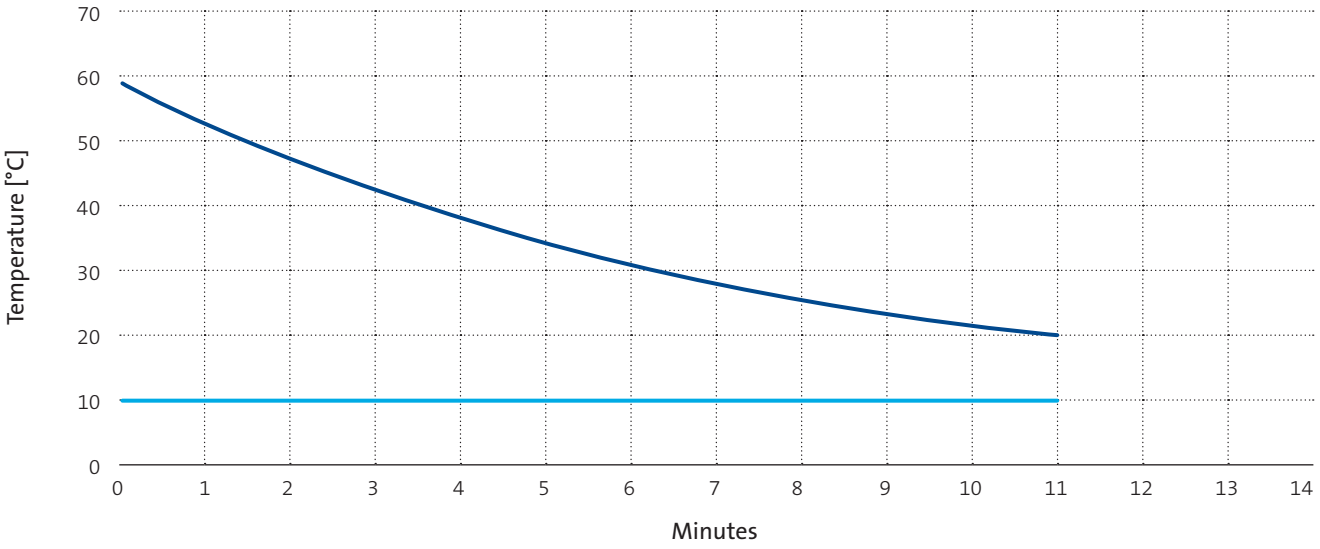
Test A: Air Velocity 1.25 m/s @ 10 °C



Test B: Air Velocity 2.5 m/s @ 10 °C



Product Temperature — Cooling Air Temperature

Your benefits at a glance

With the above information determined, the client is able to make an informed choice on the design of a suitable cooling enclosure and duty of the associated cooling plant required giving total peace of mind at the design stage of the project.

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