J&B HotTack Tester

Model 5000MB

Automatic testing of Hot Tack Strength
on heat sealable packaging materials

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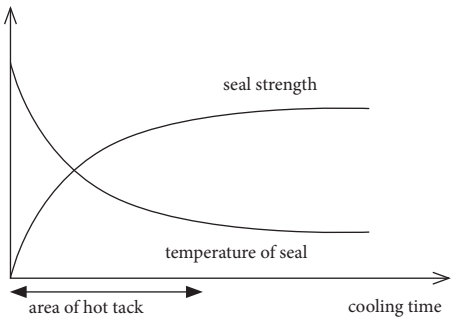
Hot Tack Tester

The Hot Tack Tester is a highly sophisticated instrument for testing sealing properties of packaging material. It is being used in research and development as well as in Statistical quality control (SQC)/ Statistical process control (SPC) applications for raw materials; semi finished goods and finished packaging products.

The Hot Tack Tester permits evaluation of sealability and hot tack under a broad range of testing conditions to optimize packaging machine settings and to ensure consistent quality of the product. The instrument is also a practicable and helpful tool to packaging material manufacturers and end-users for incoming material inspection and for obtaining optimal production line speed.

Hot Tack

Hot Tack is the strength of a heat-seal immediately after sealing, that is, before it has cooled down and reached its maximum strength. Conventional testing with a separate heat sealer and tensile tester seldom correlates with the strength of a hot seal as it is first exposed to stress on a packaging machine. The Hot Tack Tester has been designed for testing the heat seal strength under accurately controlled conditions.

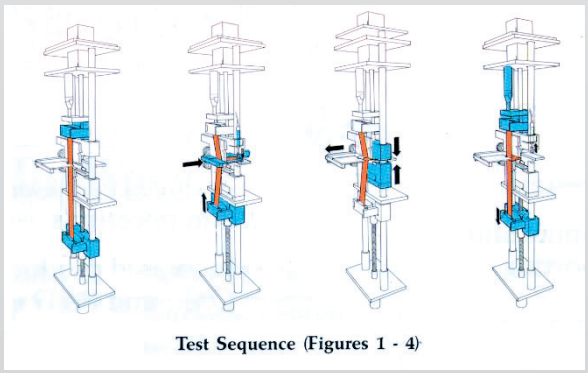


Seal Strength and Temperature versus Time

Simulation of an automatic packaging machine

The Hot Tack Tester simulates heat sealing on an automatic packaging machine. It makes a hot seal and stresses it under pre-programmed conditions.

First the operator selects the desired parameter values in the Microsoft Windows® software by using the keyboard & mouse and inserts the sample (fig.1). The testing sequence is activated and the lower sample clamp is moved to its upper position. The sample is automatically folded between the sealing bars with a special folding device (fig.2). The bars close (fig.3) and after the pre-set sealing time has elapsed, the sealing bars open and the heat seal is complete.


Test Sequence (Figures 1 - 4)

The selected cooling time elapses and the lower sample clamp moves down, peeling the seal (fig.4). During peeling, the force transducer attached to upper sample clamp measures the hot tack force. The signal from the transducer is transmitted to the computer to initiate data processing, displaying, reporting and storing of the testing data.

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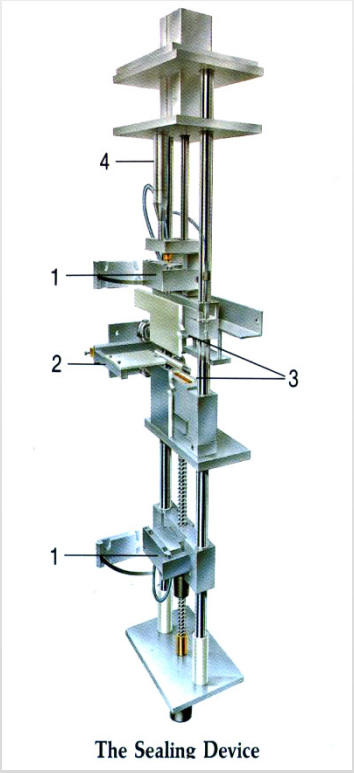
Fully adjustable sealing conditions

Computerized control of the parameters enables simulation of different packaging machines. An extensive adjustment range of parameter values enables testing of various materials used in different applications. The values of the following parameters are user-selectable:

- ***Sealing Temperature***
- ***Sealing Time***
- ***Sealing Pressure***
- ***Cooling Time***
- ***Peeling Speed***
- ***Sample width***

Automatic sealing device

The sealing device is conveniently located in the front panel allowing easy use and access to the most frequently used components. The clamps are specially designed for easy attachment of the sample. The clamping plates are automatically activated and firmly hold the sample during the test. Vertical movement of the lower clamp is controlled by an electric motor that enables accurate positioning and speed. The fully automatic folding device provides perfect alignment of the sample and a fully operator-independent operation. The sealing bars are Niptef® coated to prevent sample sticking. The sealing bars include integrated heating-elements and thermocouples to keep the selected sealing temperature constant regardless of the ambient temperature.



The Sealing Device

Sealing device parts

1. *Sample clamps*
2. *Automatic sample folding device*
3. *Sealing bars*
4. *Seal force transducer*

User-friendly operation

The software is a modern Microsoft Windows® .NET software. It is easy to learn, easy to use and versatile. The software is keyboard & mouse-operated and the functions are easy to activate. The parameter settings as well as the measuring results can be stored for future use. The software is compatible with commercially available SQC and through Microsoft Excel® compatible export. The advanced software enables efficient use of the instrument by any person involved in testing, from a production machine operator to quality control and R&D personnel.

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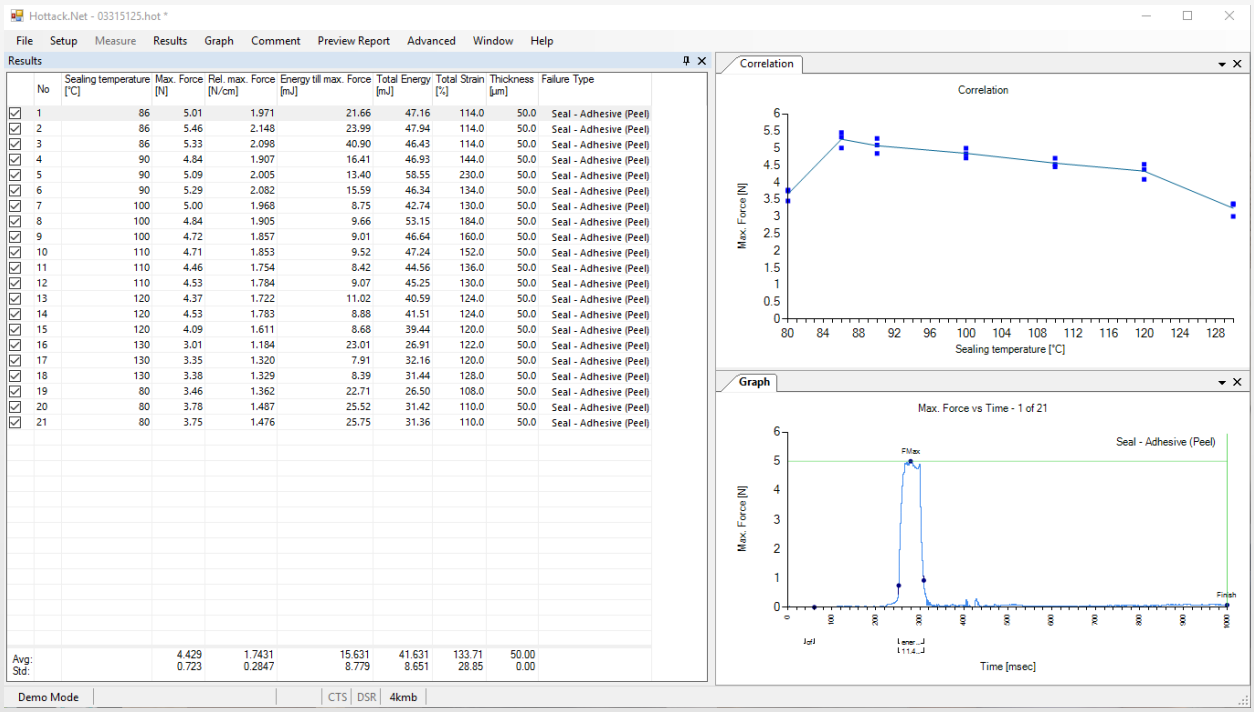
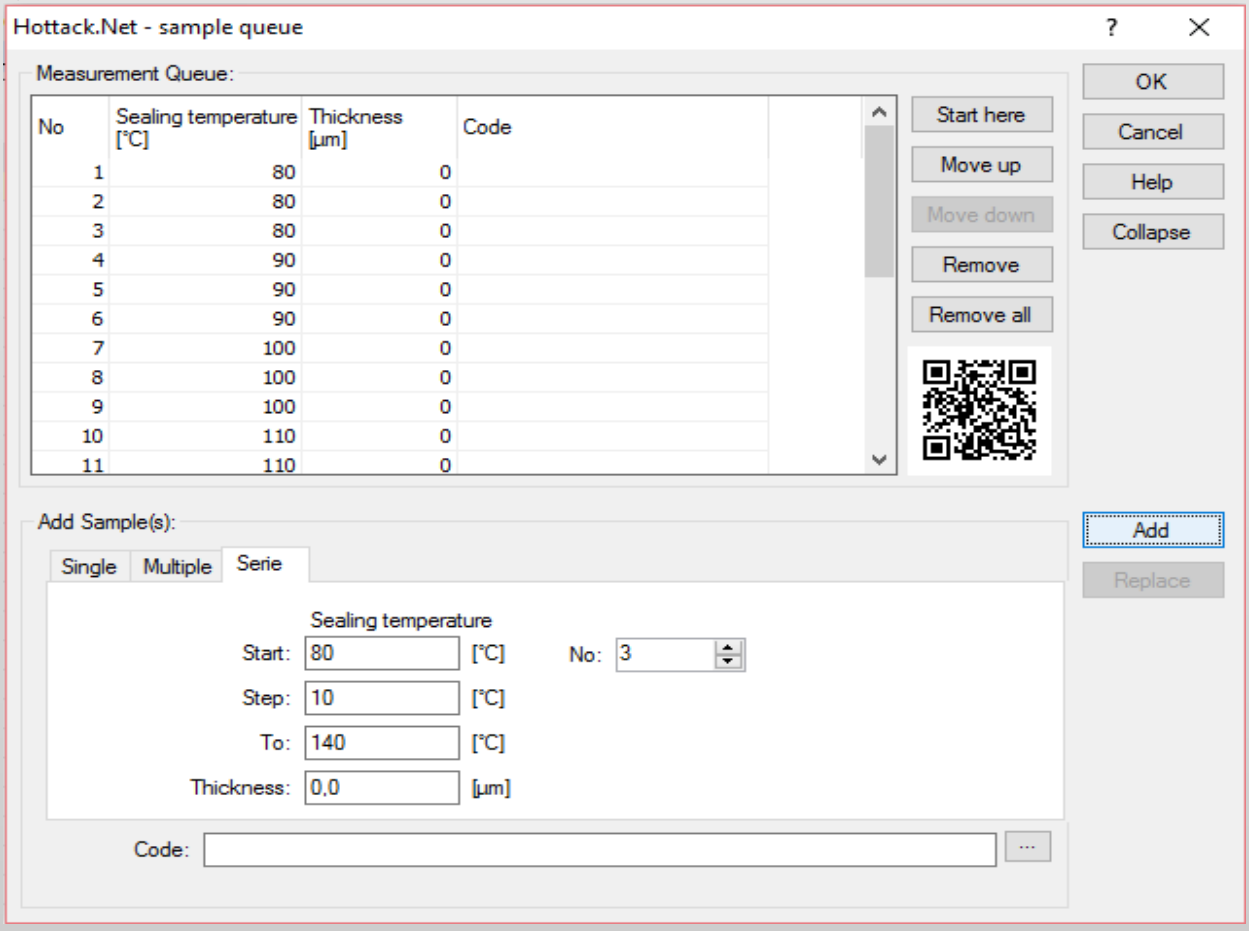
Excellent reporting capabilities

A computer monitor and printer are used for reporting. Once a test is completed, a graph of hot tack force versus time is displayed. The hot tack force is calculated automatically as well. The operator can also activate summary graphs from a testing sequence including hot tack force versus selectable variables. The summary graphs are especially useful when analyzing optimum seal settings for different materials.



THE MAIN WINDOW OF THE HOT TACK SOFTWARE WITH A FORCE GRAPH, RESULTS TABLE, CORRELATION GRAPH AND SAMPLE QUEUE



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Advanced new features

- Maintenance free
- Hot tack, peel only, seal only and rigid sample mode (rigid sample mode optional)
- Pneumatic software-controlled protection plates for easy cleaning
- Starting seal pressure of 0.05 N/mm²
- Minimum sample size 250 mm
- Maximum peeling distance 130mm
- Optional Build-in tablet computer, keyboard and mouse
- Optional seal bar 10mm width x 50mm
- Optional higher force measurement up to 450N possible but this is less accurate
- Optional sample feeder for full automatic measurements
- Optional peeling speed up to 1000 mm/s

One of the biggest advantages of our J&B Hot Tack tester is the option of an automatic sample feeder, it has not only the benefit of measuring several measurements automatically without the need of an operator but also by using the automatic sample feeder we can reduce the influence of the operator or enlarge the repeatability of the measurements.

There can be multiple measurements done automatically, depending on the length of the samples which you can cut yourself very easy and without the need of expensive cutting tools. In the time our J&B Hot Tack tester is testing the samples, the operator can do other jobs, less man hours and more work done.

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J&B HotTack.Net Software new features

User Interface
32/64bits application
Dockable windows for more control of screen layout
Save / Restore windows layout
Most Recently Used (MRU) list added to file menu

Setup
Create a new file based on an existing one
Add custom fields to setup
Ability to edit calibration values from within the program

Measuring
Saves to a single file for a series of measurements
Only zero or one variable per file
Exclusion of measurements instead of deletion
Setup a queue of measurements before measuring
Re-arrange, add or delete measurements from queue during measuring
Automatic save of measurement queue items left to measurement file

Analysis
Customizable tabular view of measurements results
Add calculated results the tabular view
Waterfall display of multiple measurements
Reference graph for correlation graph
View included and/or excluded samples in correlation graph
Sorting of results in tabular view
Copy measurements and graphs to the clipboard

Import/Export/Reports
Export to Microsoft Excel®
Merge data into Microsoft word® template
Custom Export using java scripts
Import to and export from Hot tack for Windows
Export of multiple hot tack files in to one Excel® file for easy comparison
Print only selected items and save those layouts for later use
Print preview

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Specifications

Sealing specifications

- Sealing bars: 2 NIPTEF®-coated, including sensors and heaters
- Seal bars: 5 x 50 mm (≈ 0.2 x 2") or 10 x 50mm (≈ 0.4 x 2")
- Sealing operation: asymmetrical and symmetrical, two sided or separately, one sided.
- Sample width: max. 40 mm (1.6")
- Sample thickness: max. 1 mm (0.04")
- Sealing time: 0.1…20 s
- Sealing temperature: 21ºC or ambient … 260ºC (500 ºF)
- Sealing pressure: 0.05…2.0 N/mm² (7.5…570 lb/inch)
- Sealing pressure control: electronic PID control
- Sealing pressure sensor: Strain gage
- Sealing temperature control: electronic PID

Peeling specifications

- Cooling time: 0.1…999 s
- Peeling speed: 8…600 mm/s (0.32…23.6 inch/s), optional up to 1000 mm/s
- Peeling by: vertically moving lower sample clamp
- Peel control: electric servo motor
- Sample length: min. 250 mm (9.8 inch)

Hot tack force measurements

- Measurement range: 0…45 N or 450 N as option (0…22 or 220 lb) auto scaling
- Sampling speed: max. 20 kHz depending on peel speed
- Number of samples: fixed 1000 per measurement
- ADC Resolution: 12 bits
- Sensor: Piëzo electric force transducer

Testing mechanics

- Sample clamps: 2 automatic air activated clamps. Clamping Force > 100 N
- Sample folding: automatic, servo motor-controlled
- Optional full automatic measuring mode

Software

- Compatibility: Microsoft Windows®7 and Windows® 8, Windows®8.1 and Windows®10 (32 and 64 bits version)
- Mouse operated graphic user interface
- Setting, storing and re-calling of test parameters
- Storing, re-calling and reporting of measuring results

Reporting

- Measurement result: hot tack force versus time graph
- Analysis: graphs from testing sequence versus variables
- Numeric: reporting with data export capabilities

Recommended PC

- Microsoft Windows® PC
- Inkjet or Laser printer
- USB port for interface to the instrument

Connections

- Power: 90 to 264 VAC – Power Consumption max. 150 VA
- Dry air supply: 6…8 bar (85…115 psi), ISO Norm 8573-1:2010 classe 7.4.4

Dimensions

- Weight: ca. 14 kg (31 lb)
- Size (w x d x h): 220 x 287 x 556 mm (8.7 x 11.3 x 21.9 inch)

Design

- Specially designed to fulfill all ASTM* Hot tack measuring requirements

All specifications subject to change without notice

*) ASTM F1921-12. Standard Test Methods for Hot Seal Strength (Hot tack) of Thermoplastic Polymers and Blends Comprising the Sealing Surfaces of Flexible Webs.

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