novomatics
labtech solutions


# AlphaTack Plus

*accurate tack measurements made simple*

# Introduction

The **AlphaTack Plus** instrument allows quick tack determination of printing inks with a high degree of accuracy and reproducibility. Due to its closely controlled test conditions the **AlphaTack Plus** methodology offers significant advantages over the usual tack testing methods. The **AlphaTack Plus** provides a problem-solving approach to measuring pure tack (QC), ink length, tack stability vs. time, vs. temperature, vs. lineforce and offers a practical and consistent solution to commonly encountered problems of splitting ink films.

# Typical applications

- Quick and accurate tack value determination of printing inks in QC and R&D
- Tack stability tests vs Temperature
- Tack stability tests vs Time
- Determination of ink splitting, classification of long and short splitting inks
- Applications for engineering in print houses
- Reference instrument due to excellent short and long term stability

The **AlphaTack Plus** is a new, innovative tack measuring instrument. It features a fully automated system, providing accurate results under controlled conditions.

## Features

- Operator independent, fully automated measuring system
- stable measurements over the lifetime of the instrument
- Accurate, reliable and easy to operate
- Cost savings through minimal labour time and accurate measurements
- Automated, embedded ink film dispensing unit
- Internal, liquid free temperature control for high reliability and energy saving
- Temperature controlled rollers (metal and elastomer)
- Provides compatible tack numbers with previous tack measuring instruments
- Automatic tack and temperature calibration
- No balance or manual dispensing tools required
- Cleans in just a few seconds
- Space saving, compact design
- Easily transported by one person
- Ideal for use outside of the laboratory

# Measuring procedure

When not chosen before, one measuring program must be selected. The operator fills the embedded dispenser unit with the ink for testing.


The operator then presses the start button. The **AlphaTack Plus** simultaneously, applies roller speed, line force and ink within a few seconds. The ink dispenser unit provides the exact volume of ink in a controlled manner and an equal ink film is created.

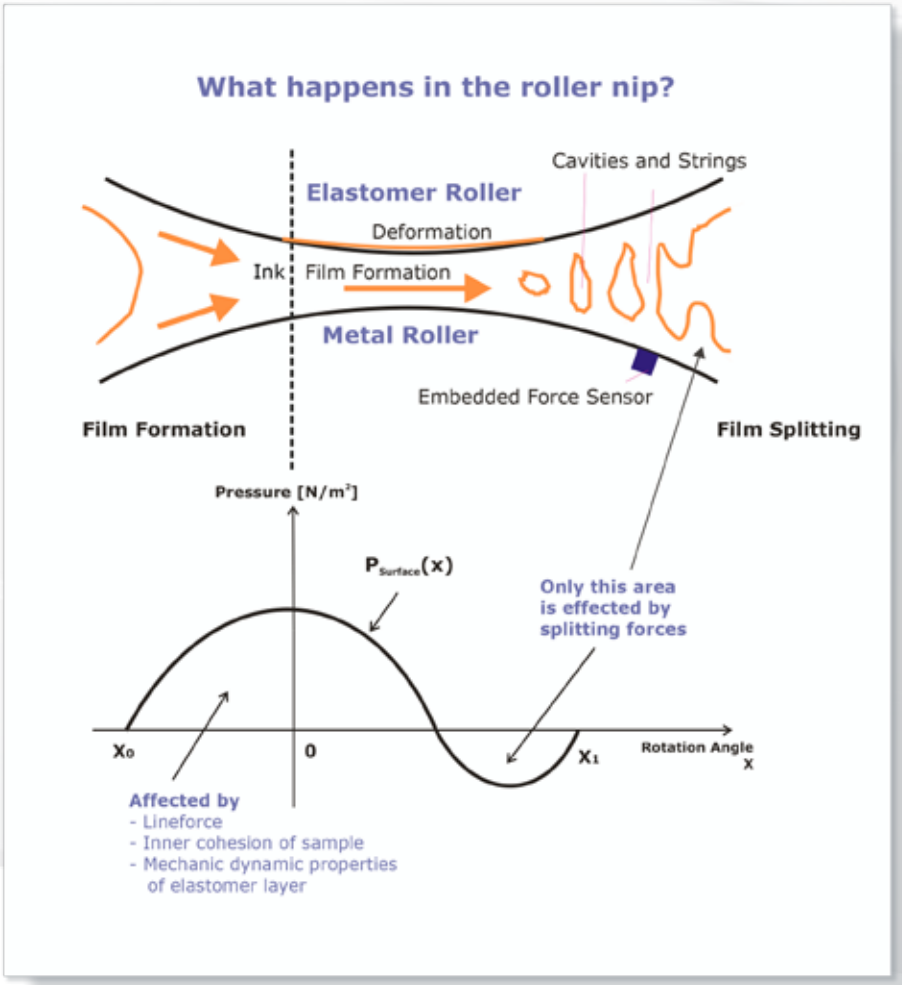

The tack and further measuring parameters of interest are recorded via a PC. When the test is completed the measuring data are saved automatically and the **AlphaTack Plus** changes to cleaning mode. The small roller areas including the dispenser unit will be cleared with just one or two wipes.


After cleaning the operator presses the stop button. The rollers are disengaged and stopped with the ink dispenser unit on top. The **AlphaTack Plus** is now ready for the next test.

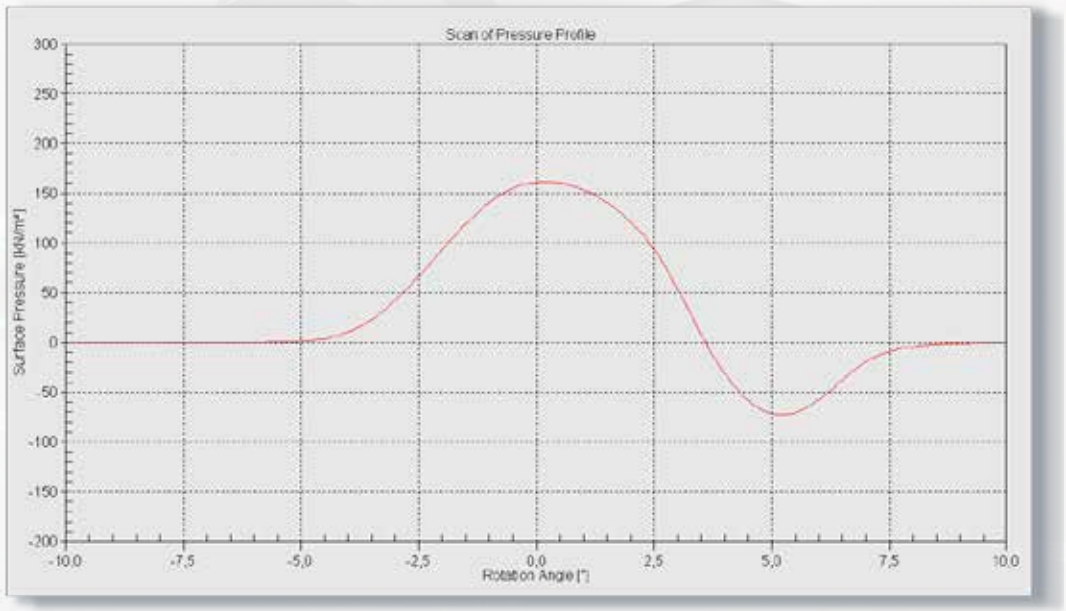
# Principle of tack measurement

Tack measurements usually provide a tack value which includes the fim splitting force combined with contributions from the elastomer roller elasticity, ball bearing friction and forces for ink film formation.

Owing to its innovative technical design the **AlphaTack Plus** overcomes all the principle-based difficulties of the usual tack measuring method. A solid state force sensor is embedded seamlessly into the surface of driving metal roller. This sensor measures the complete pressure profile in the roller nip and transfers this data to the PC after each nip passage.



The measuring software considers only the negative parts of the pressure profile, which represent the pure splitting force in the vertical direction. The summarized parameter is called LineTack [N/m] and expresses the pure force for film splitting based on SI units. Consequently factors like variations of elastomer roller elasticity or ball bearing friction are eliminated and do not influence the test results anymore. That's why the **AlphaTack Plus** provides uniquely accurate and reproducible measurements over the lifetime of the instrument.



# Principle of temperature control

The correct and stable temperature setting is one of the key factors for reproducible and accurate measurements. A deviation of one degree in temperature may lead to a deviation in tack of five percent or more.

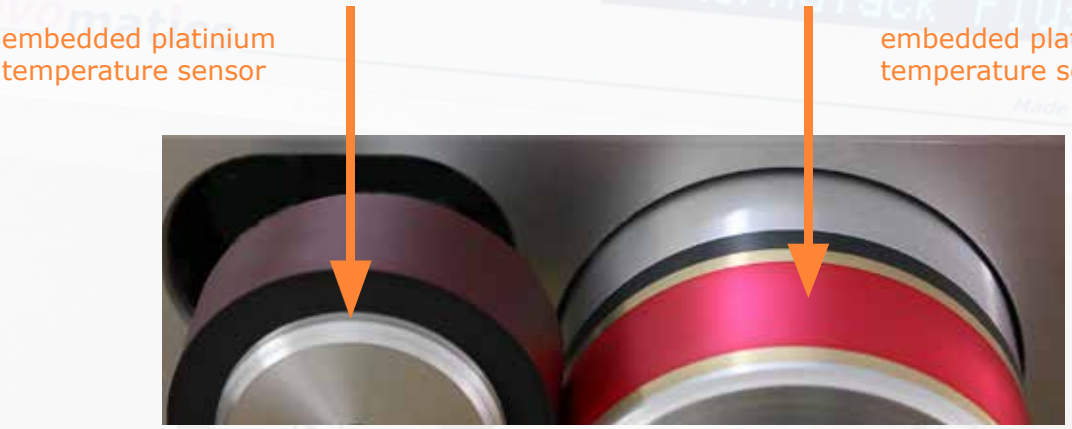
The **AlphaTack Plus** controls metal and elastomer roller temperature independently of each other, but to the same set temperature. Platinum temperature probes are placed inside the rollers close to their surface, so the nip temperature is stabilized with an accuracy better than 0.1 °C. The **AlphaTack Plus** active heating and cooling systems are encapsulated in the rollers and operate without liquids for high reliability. Compared to a water bath only a fraction of the electrical energy is consumed, essentially lowering operational costs during the instruments lifetime.

## Why does the **AlphaTack Plus** stabilize the elastomer roller temperature?

Controlling only the metal roller may lead to deviations of nip temperature. Measurements have shown that the produced nip temperature is determined approximately 70 % by the metal surface and 30 % by elastomer surface. So the temperature of the elastomer roller has a profound affects on the accuracy of tack measurement.

Consequently the **AlphaTack Plus** has no specific warming up period. For example, after switching on, the rollers' temperatures are stabilized exactly at 30.0 °C in less than 3 minutes.

Because of these short response times the **AlphaTack Plus** can vary the nip temperature during a measurement in a defined manner too. So specific measurements like tack stability vs. temperature can be performed easily.




# Automated ink dispenser

Manual ink dispensing units for tack tests based on piston-tube design are known from lab practice. The **Alpha-Tack Plus** has been equipped with a similar but embedded, automated ink dispensing unit. Its dispensing volume is defined indirectly via the film thickness parameter of the selected measuring program.



Before the measurement is started the operator fills up the ink with a small smooth spatula to its upper edge.

During the first seconds of test the ink is continuously dispensed and in cooperation with the oscillating elastomer roller a reproducible ink film is created.


The ink dispensing unit does not require attention for cleaning. It is cleaned during the roller cleaning process.

# Rapid cleaning

The small surfaces which are contaminated with ink require only a minimum of cleaning time. Just the metal roller has to be wiped off and so the elastomer roller and piston of the embedded dispensing unit are cleaned at the same time.



sec.



sec.



sec.

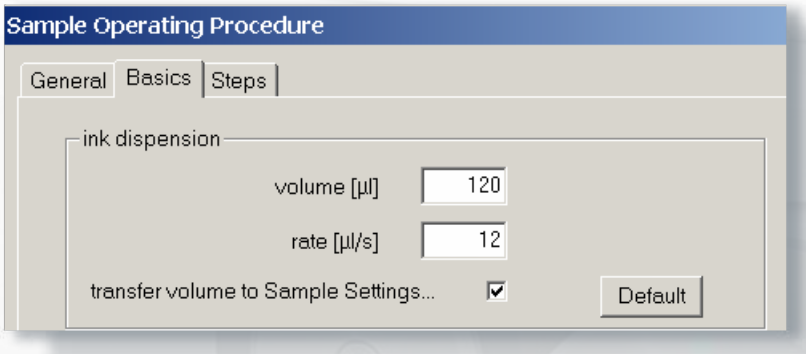


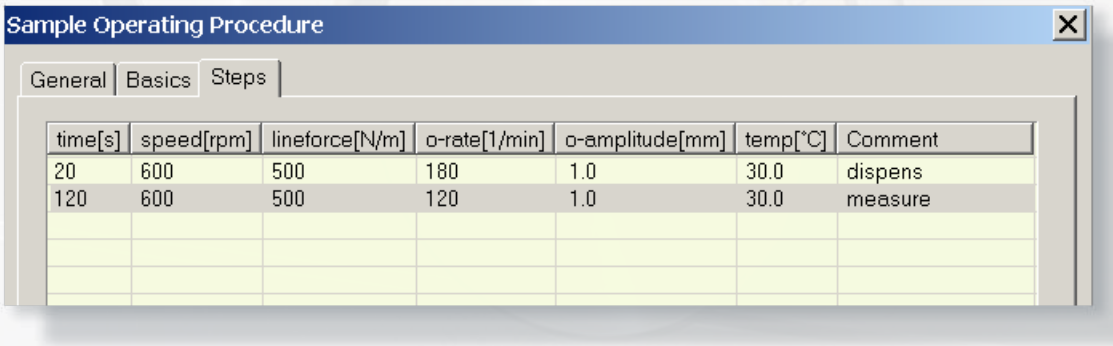
sec.

# Pre-defined and own measuring programs

The **AlphaTack Plus** offers proven pre-defined measuring programs for instantly starting your tests which are compatible with the testing programs of previous tack measuring instruments.

The measuring parameters are flexible and split into steps. For every step the operator can define parameters like, step time, speed, lineforce, temperature, oscillation amplitude and oscillation rate.



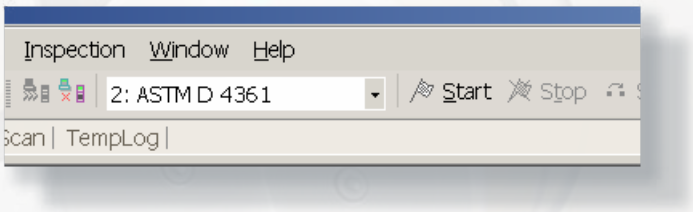
# Compatibility to previous tack measuring instruments

The compatibility to a previous tack measuring method is one of the reasons for using the **AlphaTack Plus**.

For this purpose the **AlphaTack Plus** offers already pre-defined measuring programs compatible to measuring methods like ASTM D 4361.The program parameters, time, surface speed, temperature and film thickness correspond exactly to previous standard test methods.

The **AlphaTack Plus** software calculates the corresponding tack number including the measured LineTack [N/m].

The final measuring report prints out not only the pure LineTack [N/m] but also the corresponding tack number of the corresponding method, for example ASTM D 4361.



# Compact design and portability

With its mass of 15 kgs (33lbs) the **AlphaTack Plus** is lightweight compared to usual tack measuring instruments. Note: An external water bath is not required. Dimensions of the **AlphaTack Plus** are 36 x 28 x 27 ccm (14.1”x 11” x 10.6”). The **AlphaTack Plus** is easily transported by one person – also ideal for usage outside the laboratory.

**AlphaTack Plus** needs standard power supply and USB connections only.

# Technical data

## Conception

Two slim - roller measurement system. Robust metal case consisting of anodized aluminium and stainless steel components. Sensitive measurement devices are completely encapsulated. User friendly measurement control by WinTACK PC-software via USB interface.

## tack force measurement

| | |
|---|---|
| Sensing Principle | inertia free solid-state force sensor, seamlessly integrated into the metal roller |
| Pressure measurement range | -500 to 500 kN/m2 |
| LineTack measurement range | 0 to 500 N/m |
| Sampling rate | up to 120.000 s-1 |
| Relative accuracy | < 1 % |

*Info: Low tack newspaper inks may have a linetack down to 20 N/m, heatset inks may have a linetack of 120 N/m, high tack varnishes may have a linetack of up to 300 N/m.*

## roller system

two roller slim system, consisting of a driven metal roller and engaged, oscillating elastomer roller

| | |
|---|---|
| **metal driving and measuring roller** | 0– 300 m/min, higher speeds on request, embedded tack measuring and temperature measuring device, self-calibrating over instrument life time |
| **elastomer impression and distribution roller** | embedded temperature measuring device, self-calibrating over instrument life time hybrid elastomer material usable for conventional and UV curing samples, pure UV materials on request, easy roller exchange |

# Technical Data

| | |
|---|---|
| **elastomer oscillation rate** | 0.5 – 3 s-1 |
| **elastomer oscillation amplitude** | 0.5 – 3 mm |

**lineforce setting**

| | |
|---|---|
| Range | 300 – 1000 N/m, standard 500 N/m |

temperature control

independent control of metal and elastomer roller, fast response, no liquids, precision platinum probes are placed in metal and elastomer rollers close to the surface, self-calibrating by internal references

| | |
|---|---|
| setting range | 20 to 40 °C |
| accuracy | 0.05 °C |
| setting time to 0.1 °C accuracy | < 3 min |
| water bath | obsolete |

**Power Supply**

| | |
|---|---|
| Operation voltage | 90 - 250 V, 50 – 60 Hz |
| Power consumption | < 200 VA |

**dimensions, weight**

| | |
|---|---|
| L x W x H | 36 x 28 x 27 ccm |
| weight | 20 kgs |

**computer**

| | |
|---|---|
| interface to AlphaTack Plus | USB 2.0 |
| operating system | Windows 7,10 |
| software | WinAlphaTACK provided with the measuring system |

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