Phoenix

DESIGN AND MANUFACTURE

Your **specialist** testing partners

# Compaction Simulator **Accessories**

# Introduction

Phoenix has developed a range of highly accurate instrumented accessories to enhance the Compaction Simulator. The accessories enable the operator to measure the widest possible range of parameters, such as radial die wall pressure, to suit the specific project or product, as well as simulating a variety of production environments.

These accessories can be purchased with the base system, or can easily be added as user requirements evolve.

# Accessories

**Adhesion Punch**
The adhesion punch is designed as an upper punch with an internal piezo electric sensor, capable of accurately measuring adhesion of the punch to the compacted powder as it retracts. The adhesion punch is scaled from 200N down to 0.1N, and will be supplied complete with a single channel amplifier and all necessary electronics to be connected to the Phoenix alpha digital control system for data acquisition.

The punch tip is an independent component part and can therefore be supplied in a range of geometries and surface finishes, including coatings. The tip can also be removed and weighed if the user is looking to record build-up of material on the punch surface throughout a test programme.

**Low Load, High Speed, Force Measuring Punch for hardness testing on the simulator**
This instrumented lower punch is fitted with a load sensor that will measure compressive forces up to 1000N. The punch can be used, complete with specially written software, to capture the full force v displacement profile during tablet hardness testing, at varying speeds up to $1ms^{-1}$. This is distinct from traditional tablet hardness testers which merely produce a peak force reading.

*NOTE: This punch will withstand the full 50kN compaction simulator force*

**Temperature Controlled Die Holder**
An insulated B type die holder with a temperature range from 70°C down to -10°C, accurate to within 0.5°C.

The fluid temperature control unit and pump are housed in a free standing compact box, which can be located alongside the powder compaction machine frame. The unit can be equipped with a high pressure pump, the customer can locate the temperature control unit and pump in a separate room if required.

# Intelli-Punch

The Phoenix Intelli-Punch is a unique punch designed to measure the actual displacement profile of production presses.

The Intelli-Punch fits into a standard production tablet press in place of a production punch, the turret is rotated so that the Intelli-Punch completes several full rotations while it measures and records the genuine displacement profile of the production punch. The results are transmitted wirelessly and also stored on the punch to be accessed later via a USB lead. The Intelli-Punch is powered using rechargeable batteries that are charged via the USB lead.

The Intelli-Punch is supplied with adaptors to configure it as a B or D type punch with EuroStandard or U.S. TSM heads.

The "real" displacement profile data can be imported into either compaction simulator to be used for the test profile (powder compaction) or directly into a spreadsheet such as Excel for desktop comparisons between production presses.

The Intelli-Punch is supplied with calibration certificates traceable to national standards.

Merlin powder characterisation

Merlin Powder Characterisation has a full suite of these accessories and can carry out sub contract testing where specific information may be required. Visit **www.merlin-pc.com** for more information.

**High Capacity Instrumented Die**
High capacity instrumented die, complete with three off, equally spaced, 2mm piezo electric miniature force sensors at customer specified distances from the die top. These sensors will measure pressure up to 795MPa.

Specifications to be agreed on order:
Bore diameter – standard size is 10mm
Height of sensor face centres from top of die to be agreed when placing order.

This is supplied with the three channel amplifier required for these sensors. The amplifier and sensors would be set-up and calibrated at Phoenix's site, requiring no on-site installation.


**Heated High Capacity Instrumented Die**
The High Capacity Instrumented Die can also be offered with heating from ambient to 75°C.

**Automated tablet dimensions, weight and hardness measurements**
A high precision inline automatic tablet tester. The system will take tablets direct from the simulator tablet chute and measure the tablet dimensions, weight and hardness. The data will be exported to the Phoenix control system to be saved with the rest of the test results for each tablet.

The automatic tablet weight, hardness and dimensions system can be set to feedback into the Alpha digital control system to automatically correct for tablet weight or hardness.

**Other accessories available include:**

- Extraction
- Tablet within Tablet
- Punch Lubrication
- Temperature Controlled Punch
- Instrumented (temperature measuring) Punch
- Stirring Hopper (Paddle Feed)
- Large Capacity Hopper

For more information, a demonstration
or a quotation please contact us.

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