The Nail Penetration and Crush Option (NPCO)

THT product code = ARCSYS-NPCO

The Nail Penetration and Crush Option comprises:

- Integrated support electronics
- Solenoid pneumatics
- Interchangeable tips and support brackets for penetration and crush tests. (comprising: 3 nail tips, 3 support brackets with inserts for nail test, 3 plunger tips, 3 support brackets with inserts for crush tests)
- Fully integrated control and data collection software
- (Please Note: Maximum sample size 26650 or for prismatic width 55mm. Depth: 80mm x thickness 10mm)

Test set-up is simple. Additional hardware is attached to the standard calorimeter prior to the test. Test control is fully integrated into the esARC control software. If the user is running a nail penetration test they set the temperature at which they want the penetration to occur. If they are running a crush test they have to set the temperature at which the crushing will begin and also the time period for the crushing to take place. (Figure 6)

Figure 1 shows the crush hardware while Figure 2 shows the nail penetration in-situ with an 18650.
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Example: Nail Penetration Test

Figure 3 and 4 show the Solenoid pneumatics, Figure 5 shows the nail penetration hardware and Figure 6 shows the NPCO software control.

Note in Figure 6 you select the test type followed by the temperature for implementation and the time period (crush test only).

Figure 7 shows data from a nail penetration test.

Initially the system was held isothermally before nail penetration commenced. Following the penetration the cell led into complete thermal disintegration (in fully adiabatic conditions).

Note: The OSU must be purchased with this option.