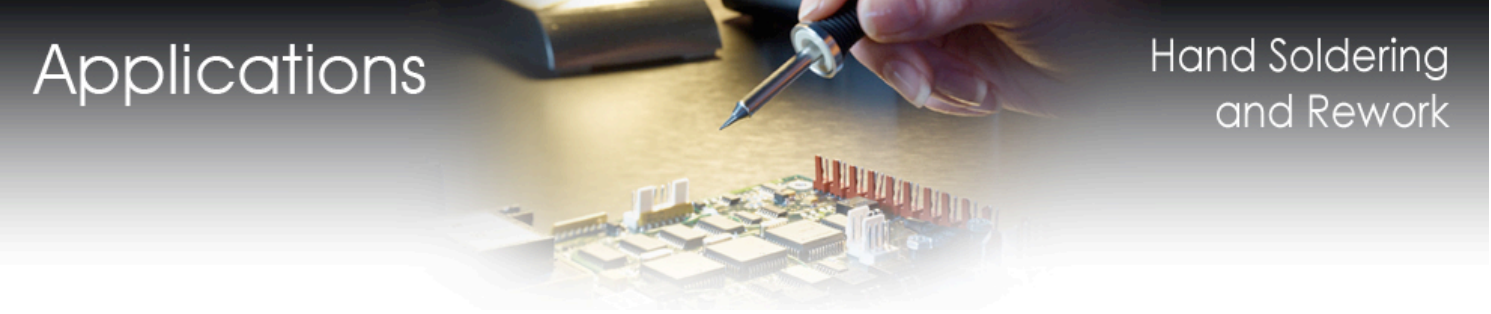


Smartheat Technology:

• No overshoot

• No Calibration

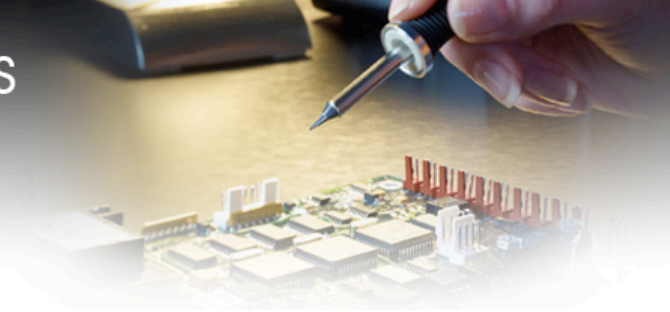
• Higher throughput at lower temperatures

But what about calibration?
The term calibration implies that because of various components, periodic adjustment must be made to a system to maintain correct operation. Calibration schedules are based on anticipating when these components will go out of tolerance and making adjustments in an attempt to anticipate that timeframe and catching it before it can be detrimental to your process. Smartheat's calibration schedule is in effect, longer than the useful life of the system. There is nothing to adjust, so the system cannot be changed from its initial state. As a result, NO CALIBRATION IS REQUIRED. Smartheat cartridges control temperature by the physical properties of their materials.

Frequently Asked Questions:
How Come my 600 (700, 800) Degree Cartridge isn't 600 degrees?
All Smartheat cartridges are manufactured to a temperature series. We use the same 600 series heater in all of our 600 series cartridges, **as a result of the tip geometry** that they are inserted into; **the resulting tip temperature will be different. For example; a long skinny tip will have a different idle temperature than a short stubby tip.** Regardless of the final temperature, the cartridge will be repeatable to ±5°C.

What is Temperature Repeatability?
This is the ability of your soldering system to maintain a set tip temperature over a period of time. Many people confuse this with calibration. Repeatability means that if you test your Smartheat system today, with a specific cartridge and measured 621°F, and then you checked it again in six months, it would have to measure 621°F±10°F to be repeatable. In reality, your Smartheat cartridge is repeatable to ±5°C.

So what about Calibration?
Your Smartheat system does not ever require calibration. But a conventional soldering system uses a temperature measuring sensor that feeds back the heating element temperature (not the tip temperature) in many systems the temperature that is displayed is somewhere between the tip (working surface) and the heater , and then is fed back to the temperature control PCB. These temperature sensors can and do vary over time, this variance can cause the displayed temperature to be different from the measured tip temperature. If your conventional station fails the repeatability test, you would need to adjust the heater PCB controller to bring it back into the acceptable temperature repeatability range or to match the displayed temperature by turning some calibration screws usually located on the soldering system. This is a time consuming operation that is never required with a Smartheat soldering system.



My customers Specified soldering temperature is 750, but your STTC-137P is 725?
Usually the specification calls out a MAXIMUM soldering tip temperature, with a Smartheat system you can usually solder a given application with a cartridge that is a series below (100°F) then that of a conventional soldering systems tip temperature. This improves tip life and it is safer for the components and circuit board.

What is in these cartridges that make them so expensive?
Each cartridge is a precision manufactured assembly that includes the soldering tip, heater, sensor and coil, guaranteed against electrical failure for the life of the plating. Each time you replace a cartridge, it is like getting a new soldering iron, with no calibration required. With a conventional soldering system you need to factor the additional consumable items as well as the required spare parts to service the stations into your tip cost.

Is it true that your stations last a long time?
Our customers are actively using power supplies from as far back as 1986 and all of the MX series of consumables are backward retrofittable to all of those early stations.

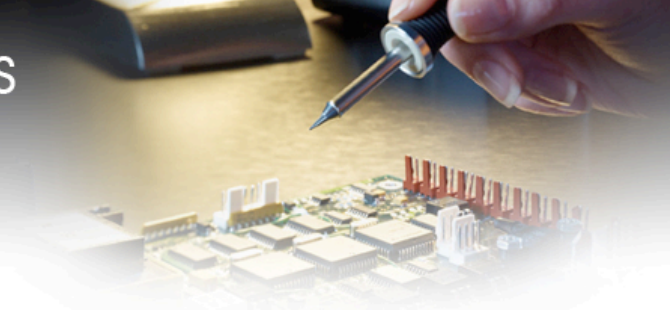
The Smartheat systems don't pass the MIL-STD requirements?
Smartheat systems are designed to meet all commercial, military and aerospace requirements for soldering tools for; temperature repeatability, AC Leakage and tip to ground resistance.

What is a Power Meter and why do I need one?
A Smartheat power meter connects between the power supply and the handpiece, it provides a visual indication of the exact power required to properly solder a connection on your PCB. In addition, it can be used to test soldering cartridges, power supply output and test handpieces. We feel it is such an important instrument; it is now built into our MX-5000 series soldering systems.

So what does Smartheat do for the operator?
It allows the operator to solder and rework at **lower**, **safer** temperatures and produce solder joints **faster without overheating the PCB or components.**

The wattage on the MX-500 is only 40 watts, my Weller is 60 watts, it must be better?
The power rating of all Smartheat systems is measured at the heater. The heater is pressed directly into the soldering tip and this creates a high efficiency cartridge assembly. Since the heater is constructed with a copper core and the tip is also copper, we have a direct copper to copper interface for the transmission of the heater energy. This assembly creates a near perfect conduit for carrying the heater wattage to the target with a minimum of losses. **As a result we can operate using much less power than a conventional soldering system.**
The Smartheat heater is pressed directly into the back of the soldering tip. This creates a fixed position for the heater assembly where maximum power can be transferred to the soldering load.

Conventional systems typically require higher wattage heaters due to the heater position and the construction of the hand piece assemblies. In addition, the ceramics used in the



construction of a conventional heater are actually a thermal insulator; this requires additional power from the system to overcome these substantial losses and still allow soldering to occur.

The heater and sensor location in a conventional soldering iron causes the heater to radiate a large portion of the heater wattage out to the ambient air; as a result the energy is lost as opposed to being directed to the soldering load.

In addition, the mechanical connection between the soldering tip and the heater assembly can vary; this can result in inconsistences from tip to tip as well as temperature variations that can only be corrected through calibration.

What are the components of a Smartheat soldering system?
The Smartheat system consists of a high frequency alternating current (AC) power supply and a self regulating heating element (the cartridge).

Why don't your tips last as long as those from other suppliers?
Our internal testing has repeatedly proved that the entire range of Smartheat tips and cartridges last longer than our competition. Of course, our testing is conducted under very strict laboratory conditions using robotic soldering equipment to ensure repeatable and traceable results. It needs to be understood that in real world soldering conditions that the individual operator has a large influence on the actual tip life that your facility will achieve. With **proper care, tip selection** and **temperature selection,** Smartheat cartridges should last as long as or longer than our competitors' tips. All Metcal and OK soldering systems, with the exception of the PS-900, are supplied with sleeper stands, and many of these systems also feature automatic shut down when left unattended. Make sure you select the proper geometry and you should always try to use a lower temperature series cartridge whenever possible

Why are your systems are so expensive compared to other systems?
This was somewhat true when we only offered the Metcal branded line. We introduced the OKi brand several years ago as a "mainstream" product compared to the premium or "specialty" offering with Metcal. Now, with Smartheat systems available in both brands, we have soldering stations starting as low as $199.00. In other words, we have a system that meets nearly every budget that outperforms our competition at every level.