

# Design Matters When Choosing a Heater for Super Plastic Forming Equipment

Even a relatively brief manufacturing delay on a superplastic forming (SPF) press can cost aircraft manufacturers tens of thousands of dollars in lost production. As worldwide demand for new aircraft continues to grow, the pressure to increase productivity and throughput of aircraft parts has never been greater.

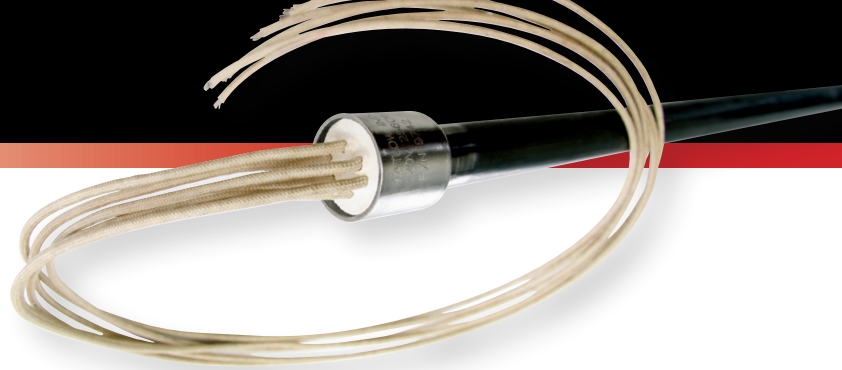
Watlow understands the needs of the SPF forming industry providing leading thermal products to many of the largest airframe manufacturers in the world. Our solutions provide value at all levels of the SPF delivery chain to ensure that your press equipment is ready to go when needed.

Watlow's MULTICELL™ heater, our signature SPF offer, is a high temperature, zoned heater that is ideal for SPF presses. That is because each MULTICELL is designed from the start with a system-based approach, which takes into consideration the unique attributes of each press. Understanding press variables such as platen size, duty cycles and controlling algorithms is critical in designing a high-performance heater that will last.

Let us show you how we have helped airframe manufacturers improve the performance of their SPF equipment.

## Watlow

partners with our customers to provide all the components of a thermal system to solve the most complex applications across the globe.

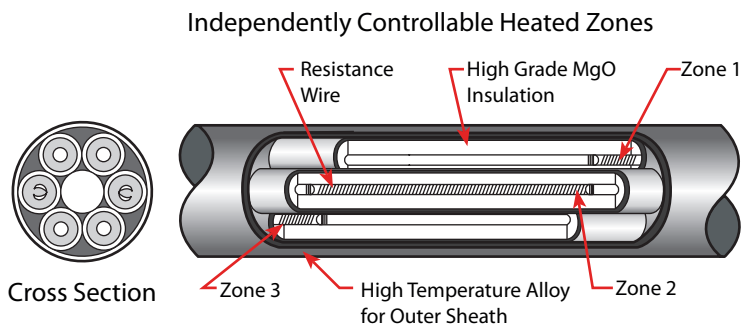


## Features and Benefits

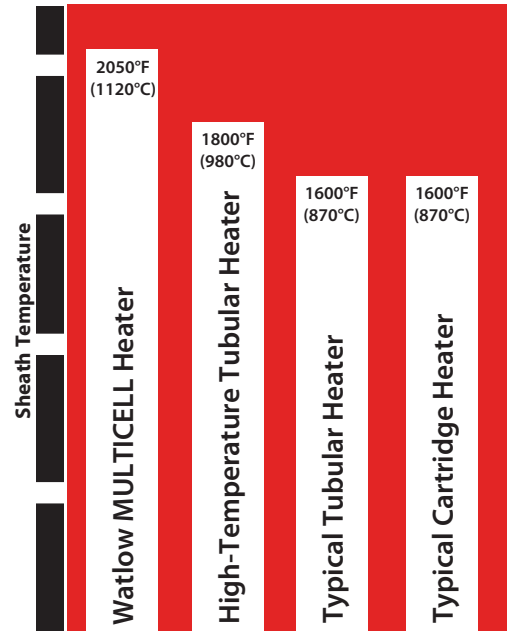
- > Radiant heater design
  - Allows for loose fit insertion
  - Permits easy removal and replacement with minimal downtime
- > Oxidized sheath
  - Provides more efficient radiative heat transfer ultimately improving heater performance as oxidation increases
- > Multiple, independently controllable zones
  - Allows process temperature uniformity across the entire platen
- > Alloy 800 and 600 outer sheath options
  - Provides maximum protection against element burnout through the outer sheath
- > Quick connect plug and socket options available
  - Permits fast replacement of individual elements while the press stays at operating temperature
- > Special bending capabilities
  - Solves unusual machinery needs and keeps leads away from heated zones
- > Flexible leads up to 842°F (450°C)
  - Protects termination from high-temperature environment

## Performance Capabilities

- Designed to achieve sheath temperatures up to 2050°F (1120°C)
- General watt density range of 3.1 to 3.9 W/cm<sup>2</sup> for SPF
- Up to six individual tubular elements compressed into a larger outer sheath
- Up to three independently controlled zones
- Two outside diameters available
  - 0.685 in. (17.4 mm)
  - 0.935 in. (23.75 mm)
- Long heater lengths available



## MULTICELL Heaters: The High Temperature Choice



Watlow makes it possible.



**1-800-WATLOW2 • www.watlow.com • inquiry@watlow.com**

**International Technical Sales Offices:** Australia, +61 3 9335 6449 • China, +86 21 3532 8532 • France, +33 (0) 1 41 32 79 70  
 Germany, +49 (0) 72 53 / 94 00-0 • India, +91 40 6661 2700 • Italy, +39 024588841 • Japan, +81 3 3518 6630  
 Korea, +82 2 2169 2600 • Mexico, +52 442 256 2200 • Singapore, +65 6773 9488 • Spain, +34 91 675 12 92  
 Taiwan, +886 7 288 5168 • United Kingdom, +44 (0) 115 964 0777