



## Making Metal Matrix Composite Functionally Gradient

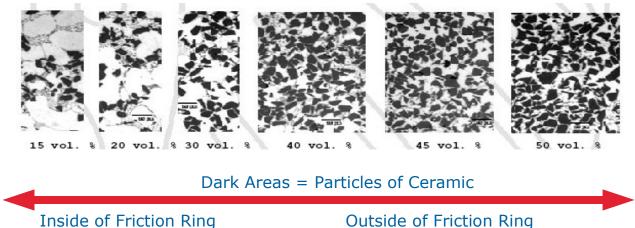
Metal Matrix Composite

(MMC) by definition is a type of material with at least two constituent parts, one being a metal. The other may be a different metal or another material such as ceramic or organic compound. In our case, Aluminum alloy and ceramic particles are used.

The MMC ingot is cast using the highly patented process developed by Swan Metal Composites, Inc... This unique casting process allows for very tight control over the ceramic particle dispursement throughout the entire bandwidth of the friction ring.

In other words, the disc is functionally gradient. Fifty percent of the ceramic by volume is concentrated in the outermost portion of the friction ring, where it will see the highest temperature. Fifteen percent of the ceramic by volume is concentrated in the innermost portion of the friction ring where it will see lower temperature.

This effectively balances the internal stresses caused by the difference in temperature between the inner and outer portions of the friction ring.



**Outside of Friction Ring** 



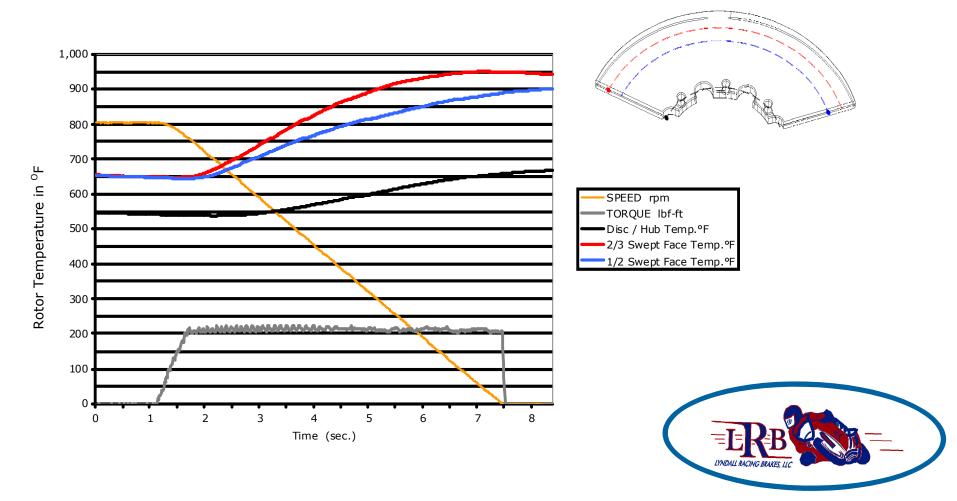


## Reduce Braking Time & Distance with APEX

A brake is a device for slowing or stopping the motion of a machine or vehicle. In the braking process, the kinetic energy lost by the moving part is usually translated to heat by friction. The rotor and brake pad must absorb this heat.

Note that kinetic energy increases with the square of the velocity ( $E=1/2 \text{ M V}^2$ ). If the speed of a vehicle doubles, it has four times as much energy. The braking system must dissipate four times as much energy to stop the vehicle. Consequently, the braking distance is four times as long.

Lyndall Racing Brakes does not claim to be able to change the laws of physics, but through careful consideration of the application, available materials, and proven manufacturing processes, we claim that our products can mitigate, to some degree, the negative effects the laws of physics may have on a fast moving motorcycle.





## **Custom Designing APEX for Your Own System** Carriers **Nickel** Chrome Black Lyndall Blue **Patriot Red** Silver Gold, Black & Gunmetal (not pictured) Our Red-Plus Brake Pad is **3rake Pads** specifically designed to complement the APEX Performance Rotors. It provides the highest coefficient of friction, Friction Rings the longest service life, and runs cleaner and quieter than any other composite specific pad available. Fits most calipers. Silver **Black**

WWW.LYNDALL RACING BRAKES.COM . 800.400.9490

