

## Example MAT™ Kilns

Lab Scale MAT™ Electric  
box kiln  
1700 °C  
1 ft<sup>3</sup> capacity (0.023m<sup>3</sup>)



Pilot Scale MAT™ Gas  
batch furnace  
1600 °C  
35 ft<sup>3</sup> capacity (1m<sup>3</sup>)



MAT™ Gas tunnel  
kiln  
1600 °C  
48 ft Long (14.5 m)  
4.6 ton capacity



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## Microwave Assist Technology™



### Advantages

- **Cost Savings**
  - Cycle Time Reduction
  - Energy Usage Reduction
- **Property Improvements**
  - Nano Ceramics
  - Grain boundary engineering
- **Fast Uniform**
  - Sintering
  - Binder removal



For More Information 518-283-7733

## \* Microwave Assist Technology™

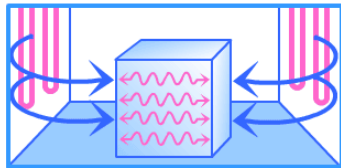
Available exclusively from Ceralink Inc  
for kiln building and sub-licensing in North America.

### Microwave Assist Technology (MAT)™

Better materials processing is achieved using MAT™, through efficient uniform heating, energy savings, and property improvements.

MAT™ is a patented technology that combines microwave and conventional energy (gas or electric) simultaneously, to heat ceramic products.

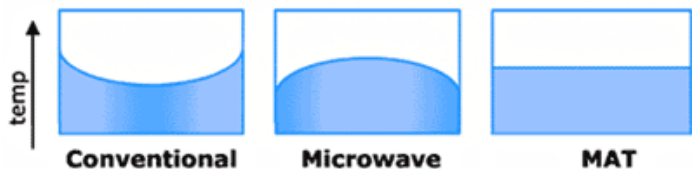
Ceralink Inc. has the exclusive license in North America to use, build and sublicense this breakthrough technology.



Schematic of inside of MAT™ electric kiln

### Microwave Heating

Microwave energy heats ceramics and polymers directly and volumetrically. Heat is generated equally at the center and surface of a product. Volumetric heating minimizes thermal stresses, allowing for rapid, uniform heating. MAT™ utilizes radiant heat (gas or electric) to prevent cooling at the surface (inverse temperature profile), a problem with microwave only systems. This technology is available for lab-scale to industrial batch and tunnel kilns.



Temperature profile across part thickness, showing MAT has best uniformity.

## Faster Firing and Calcining, Reduced Energy Costs, New Materials, Property Improvements

**Structural Ceramics** alumina, zirconia, ZTA, silicon nitride, boron carbide, magnesium oxide, aluminum nitride, tungsten carbide cobalt, armor, wear parts, bio-ceramics, cutting tools, sputtering targets, metal filters, honeycombs, nano materials, transparent ceramics

**Electrical Ceramics** PZT, PMN, barium titanate, sensors, actuators, relaxors, accelerometers, insulators, dopants, fuel cells electrodes, MEMS

**Bricks and Clay** high alumina, sanitary ware, plates, tiles, recycled products



### Gas or Electric

MAT™ is compatible with conventional gas or electric kilns. Microwave energy targets and heats the product directly, decreasing the total energy usage. The combination of microwave and radiant energy reduces capital equipment costs.

### Cost Saving

MAT™ has been proven in industrial firing trials to reduce cycle time and energy usage by up to 50%. This means lower manufacturing costs and faster product turn-around. MAT™ system return on investment is typically 1 to 3 years.

