

# American Carbon & Graphite

- Carbon electrode quality and cost are major concerns of the industry
- Current economic conditions have greatly increased the concern over cost
- Reducing Greenhouse Gas (GHG) emissions is a very costly but essential expense
- Maintaining competitiveness worldwide requires new technology to make better quality electrodes at reduced cost and with fewer GHG emissions
- All electrically-powered process
- Uses a heated extruder to form and bake standard electrode paste under pressure in a continuous process
- Exit nozzle cross-section defines diameter of the electrode: the long baked carbon column can be sawn to standard lengths and ends threaded and faced
- Baking begins at ~500°C and terminates at 1500°C
- Allowed to cool slowly, the as-baked surface finish is ideal for arc furnace use, open or submerged
- Process can be shut down in 1 hour, re-started in 3 hours
- Lower GHG Emissions
  - Conventional Method - 729 lbs/Ton
  - PBE Method - 574 lbs/Ton
- No pitch volatiles loss
- No packing coke loss
- Extruder runs 24/7 and emits only hydrogen gas which burns at the exit nozzle to produce moisture
- No CO or CO<sub>2</sub> emissions
- Requires no natural gas or other fossil fuels
- Lower Cost
  - Raw Materials
    - Option of using low density coke at great savings
  - Labor
    - 5-6% fewer electrode changes due to higher carbon density
    - Use electrode paste directly from mixer
    - No green electrode forming or cooling step
    - Replaces the gas kiln
- Higher Density
  - Increase density by 20+%
  - PBE density potential to 2.00 g/cc demonstrated in small samples
- Higher Conductivity
  - Decrease resistivity by 30+%

*Pressure Baked Electrode Technology*