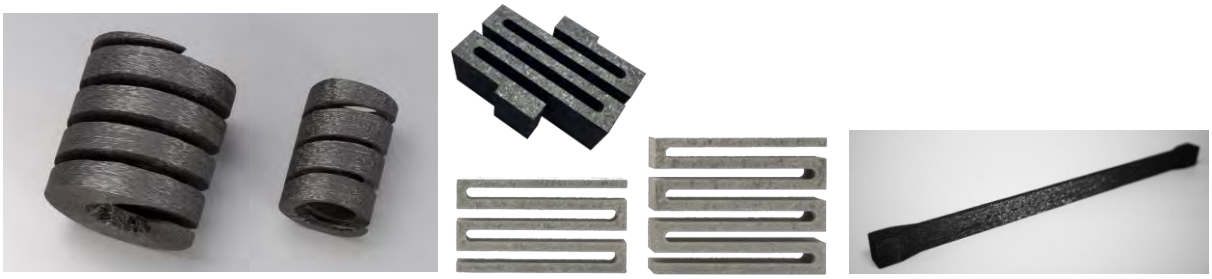
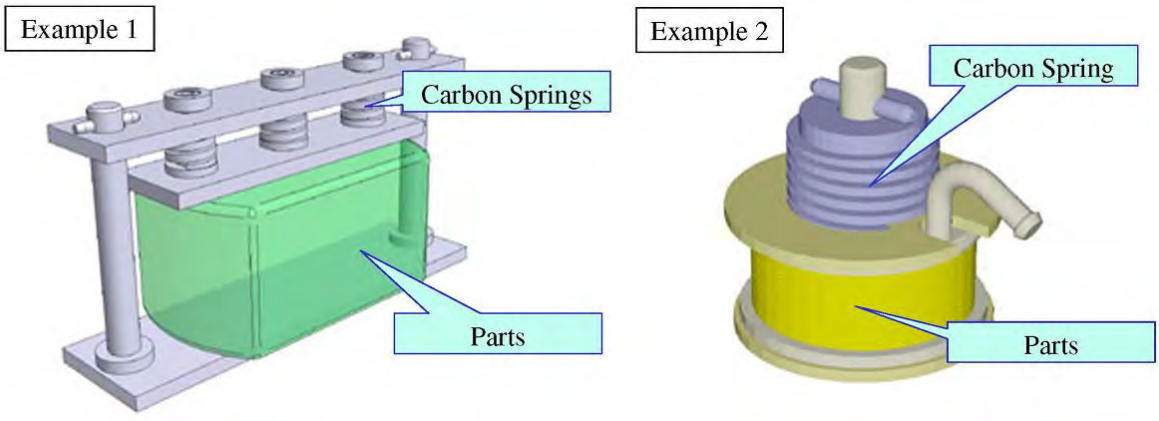
Carbon-Carbon Spring Fixture Design Benefits

- The Carbon-Carbon (C/C) spring fixture has been extremely successful due to its lightweight, high compression force, and unique spring design, which allow you to customize the fixture to match your needs.
- Drastic cost reduction of energy expense
- Spring made of C/C composites (Carbon Fiber Reinforced Carbon)

How to Use Carbon Springs for Fixturing

C/C springs function as weights to apply constant force to parts as temperature is increased and processing begins.





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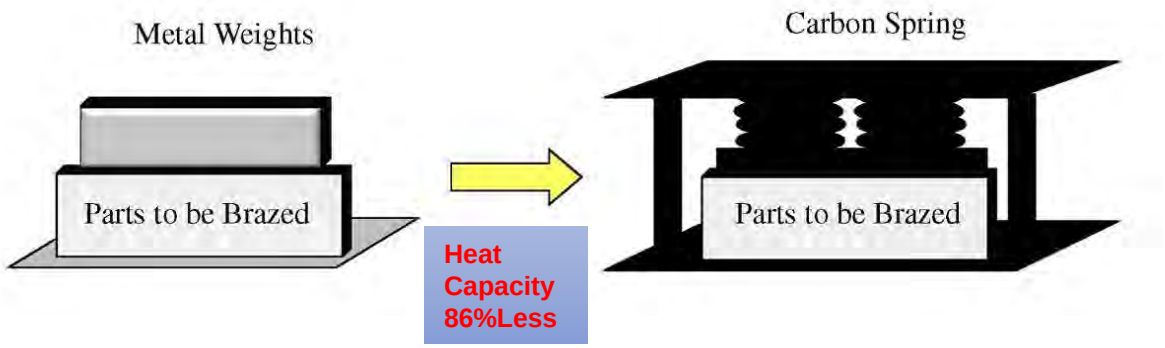
Simulation of Energy Reduction

Conditions

- Furnace brazing 20 sheets of SUS304 (200 x 150 x 0.5mmT)
- Inconel Weight and Bottom Plate
- Force 20kg (using Type-A 2 CFC C/C Springs)



	Parts Weight	Jig Weight	Total Weight	Total Heat Capacity J/K	Ratio of Parts Heat Capacity
Metal Weights	2.38kg	31.58kg	33.96kg	15425	9%
Carbon Spring Jig	2.38kg	0.96kg	3.34kg	2128	67%
Effect	-	97% Less	90% Less	**86% Less**	

Benefit of Carbon-Carbon Springs

1. Drastic Reduction of Cost of Energy

- C/C springs can generate forces up to 24.5kg each, but weighs only 26~84 grams.
- Achieves equivalent heating effect with much smaller heat capacity.

2. Processing Speed

- Decreased heat capacity make for faster heating time possible.

3. Less Need of Replacement by Fatigue

- C/C springs are not damaged in vacuum and inert gases atmosphere.

4. Less Need of Maintenance

- Carbon does not deform by repeated heat cycle.
- Maintains spring constant during many heat cycles.

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