



CEFAS Slide

September 2022

Changing the World's Energy Future

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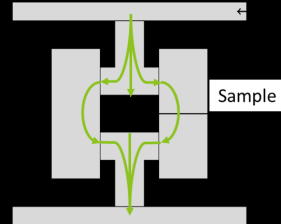
September 2022

**Idaho National Laboratory
Idaho Falls, Idaho 83415**

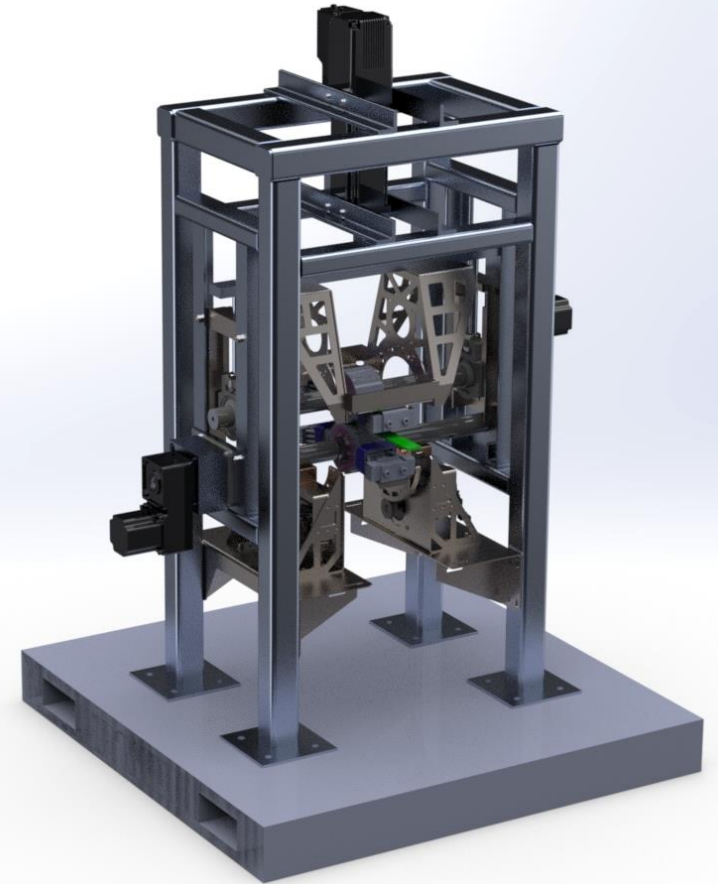
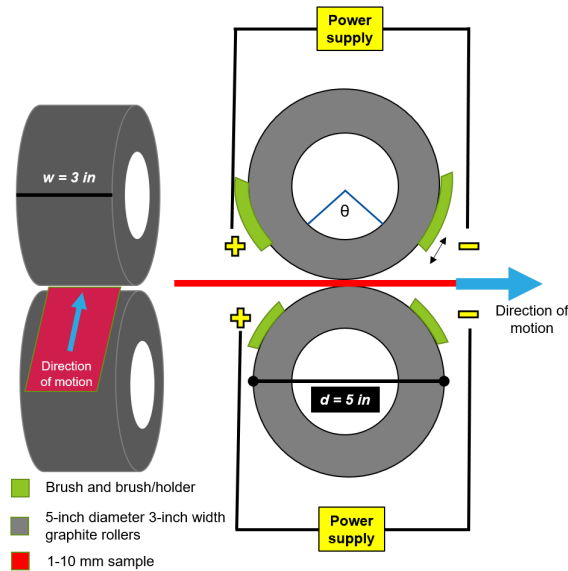
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**Prepared for the
U.S. Department of Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517**

Continuous Electric-Field Assisted Sintering (CEFAS)



Schematic of EFAS technique rams, tooling, and powder¹



- 4' x 4' x 7' footprint
- Sample width up to 3"
- Maximum current – 6000 A

EFAS

CEFAS

Batch production

Continuous production

Normal forces from rams

Normal and **shear** forces from roller

Temperatures up to 2500 °C

Goal temperature of 1650 °C

Heating rate hundreds °C/min

Heating rate of hundreds °C/min

Processing time

- 10 mm disc $\approx 79 \text{ mm}^2 \approx 30 \text{ min}$
- 500 mm disc $\approx 0.2 \text{ m}^2 \approx 2\text{-}4 \text{ hours}$

Processing time

- 10 mm strip $\approx 760 \text{ mm}^2 \approx \mathbf{15 \text{ seconds}}$
- 2.6 m disc $\approx 0.2 \text{ m}^2 \approx \mathbf{1 \text{ hour}}$