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# Westinghouse Advanced Fuel

Zeses Karoutas, Nuclear Fuel Chief Engineer

UPRISE Meeting at LSU, Baton Rouge, LA

May 27-29, 2026



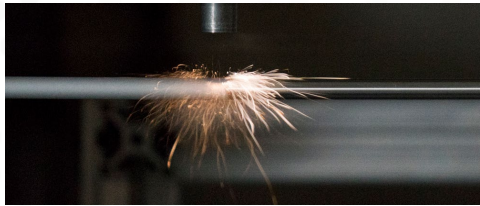
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# Encore<sup>®</sup> High Energy Fuel PWR Program



Utilities are striving for maximum electricity generation and reduced operating costs while enhancing safety with Accident Tolerant Fuel (ATF) technologies supporting extended cycles and near-term power uprates

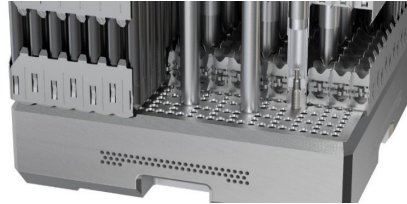
Region deployment of near-term technologies is now underway with coated cladding, LEU+ and high burnup advancements being available soon



**Chromium Coated  
Cladding**



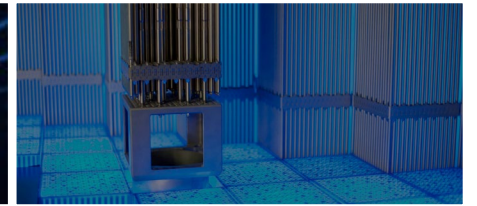
**ADOPT<sup>™</sup>  
Fuel Pellets**



**PRIME<sup>™</sup>  
Fuel Features**



**AXIOM<sup>®</sup>  
High Performance  
Cladding**



**LEU+ and Higher  
Burnup**  
( $>5$  w/o &  $> 62$   
GWd/MTU)

## Applications



Enhanced  
Safety



Optimization of  
Fuel Cycle Costs



24-Month Cycle  
Operations



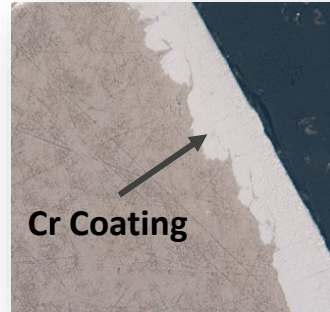
Power Upgrading

# High Energy Fuel Hardware Updates

## Supporting Power Upgrades and Economical 24-month Cycles

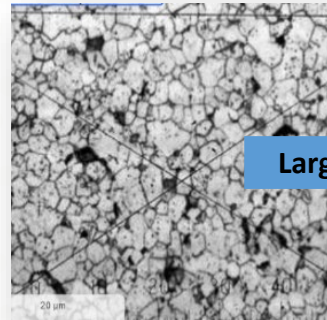
### ATF Cr Coated Cladding

- ✓ Reduced cladding oxidation & hydrogen pickup
- ✓ Improved LOCA Burst
- ✓ Reduced Cladding Wear
- ✓ Several LTA/LTR programs

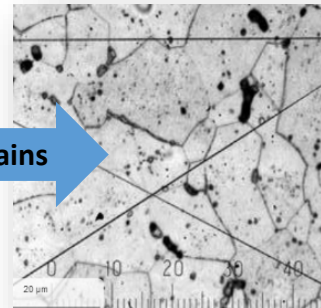


### ATF ADOPT Fuel Pellets

- ✓ Higher Uranium Density
- ✓ High Thermal Stability
- ✓ Oxidation Resistance
- ✓ 18- and 24-Month Cycle Deployment Underway



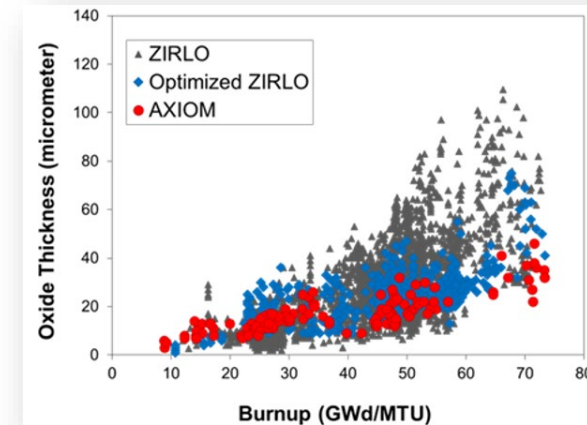
Standard UO<sub>2</sub>



ADOPT

### AXIOM Fuel Cladding

- ✓ Reduced Corrosion & Hydrogen Pickup
- ✓ Lower Creep & Growth
- ✓ 18- and 24-Month Cycle Deployment Underway



### PRIME Fuel Features

- ✓ Reduced Growth
- ✓ Enhanced Debris Management
- ✓ Improved Stiffness
- ✓ 18- and 24-Month Cycle Deployment Underway

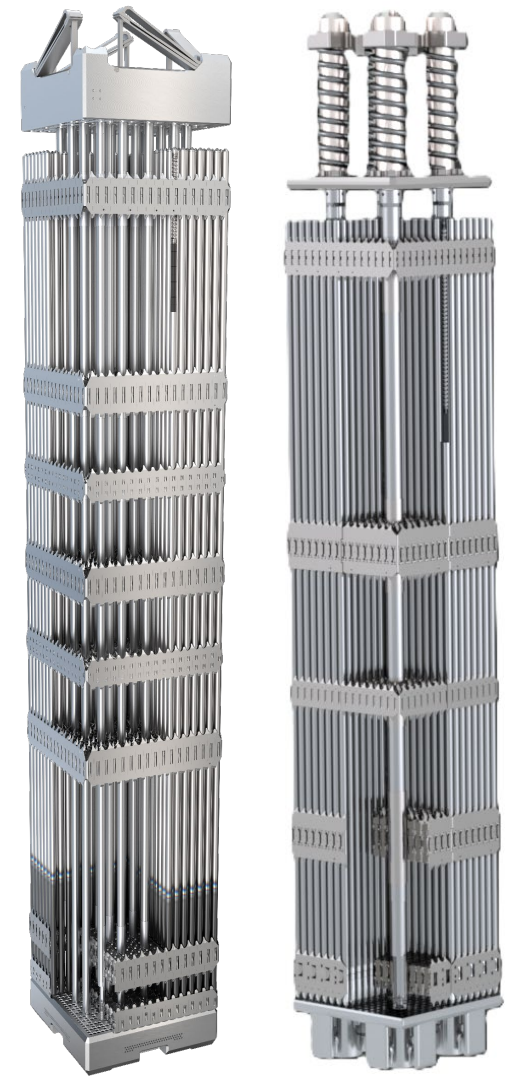
# ATF Licensing & LEU+ Fuel Manufacturing Updates

## Licensing Update

- Incremental Burnup Topical – NRC final approval received
- Higher Enrichment Topical – NRC final approval received
- High Burnup Cladding Rupture Topical - NRC final approval received
- Coated Cladding Topical – Responses provided to RAIs
- **FSLOCA™** Supplement – Under NRC Review
- **PAD5™** Supplement – Under NRC Review
- High Burnup Topical - Submitting soon
  - Leveraging EPRI ALS SERs

## LEU+ Fuel Manufacturing Update

- Construction activities ongoing with commitments for reload deliveries
- Dry conversion process with 8% enriched UF<sub>6</sub>

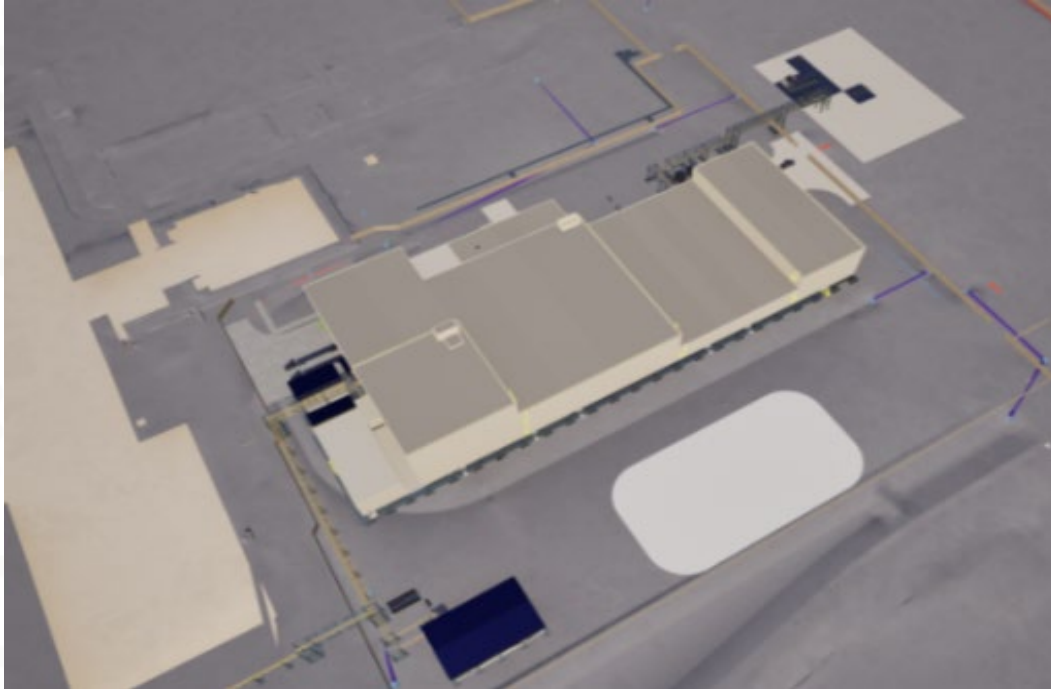


W-PWR

CE-PWR

ATF products are enabling near-term power uprates and cycle extensions. NGF products could support super uprates (EPU+).

# Overview of High Energy Fuel LEU+ Manufacturing



**LEU+ Fuel Fabrication Facility (CFFF Building 1) in Hopkins, SC, USA to support US Market PWR and BWR fuel production**

BWR: Boiling Water Reactor  
LEU+: Low Enriched Uranium (>5%)  
PWR: Pressurized Water Reactor

## Conversion

- Ammonia-free dry conversion process 8% enriched UF<sub>6</sub>
- Lower emissions with use of dry process
- Automated conversion lines and enclosed processes

## Pelleting

- Advanced Doped Pellet Technology (ADOPT) blending
- Automated pelleting lines and enclosed processes

## Burnable Absorbers /Rods

- Integrated Fuel Burnable Absorber (IFBA) dry room
- Gad Rod production
- Automatic rod loading and welding

## Uranium Recovery

- Uranium recovery process for 8% enriched U<sub>235</sub>
- Gad Separation process

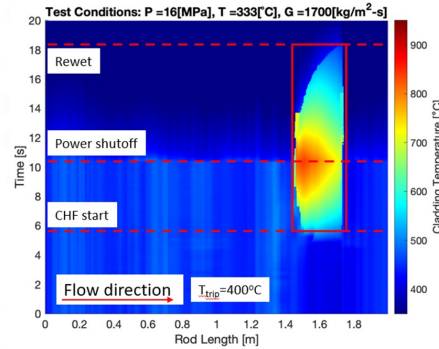
## Mechanical

- Lubricated rod loading
- Single control access point
- Ship to customers in Traveller package

# What is Next to Support Super Upgrades (EPU+)

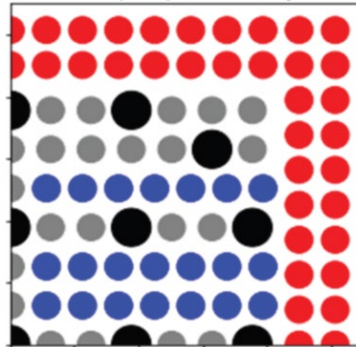
## Time at Temperature

- Short Time in DNB or Dryout for selected transients PWR/BWRs provide more power margin



## Advanced Fuel Assembly

- Adding more IFMs provides more power margin
- Increase heat transfer area with larger array size for same fuel assembly envelope: 17x to 19x, 15x to 17x, 14x to 16x will provide more power margin
- More advanced structural materials to reduce growth at higher power



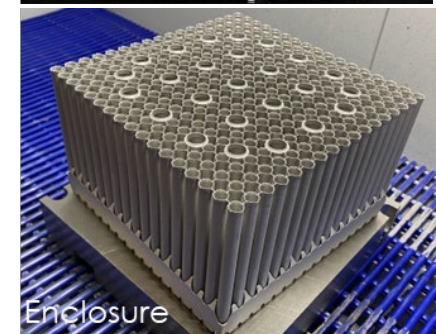
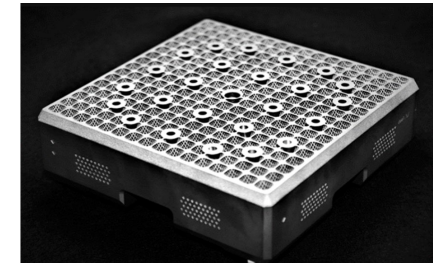
## Advanced Fuel Rods

- Optimize fuel rod design with annular pellets increases margins and fuel economics
- Full benefits of coated clad
- Novel burnable absorbers
- UN fuel / SiC cladding



## Additive Manufacturing (3D Printed)

- Advanced fuel filters already implemented
- Advanced spacer grids
- Fuel rods with Metal Fuel provides significant benefits





# Questions?

*Zeses Karoutas*  
*karoutze@westinghouse.com*