

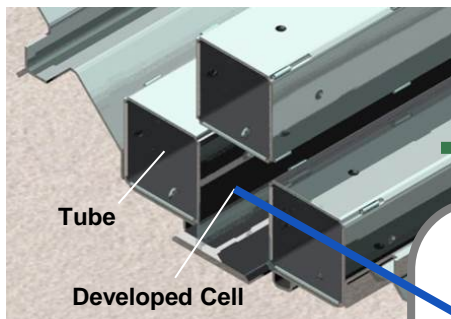


# The MAGNASTOR™ System

(Modular, Advanced Generation, Nuclear All-purpose Storage System)

## Design Innovation

- Mechanical Assembly
- Lower Weight Per Assembly
- Higher Thermal Output
- Higher Strength
- Compact Storage Array



Tube  
Developed Cell

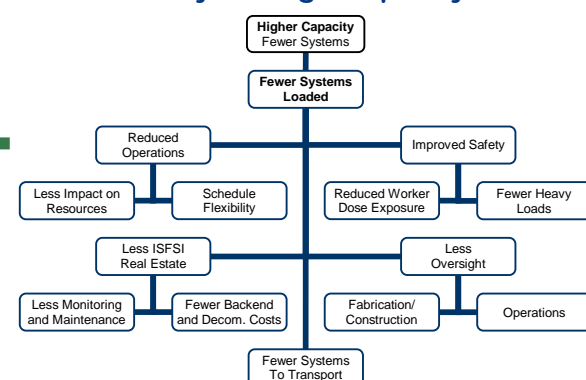
Patent No. US 8,630,384B2

## Storing the Fuel of the Future

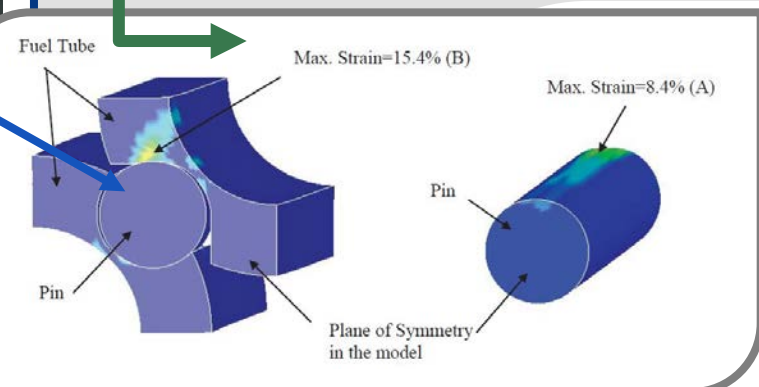
Fuel Specific Data	PWR / BWR
Maximum Assembly Capacity	37 / 87
Thermal Capacity (Storage)	35.5 kW / 33 kW (Design 40 kW)
(Transport)	24 kW initial license
Fuel Cool Time (Storage)	4 years minimum
(Transport)	To meet heat load limits
Fuel Initial Enrichment	5.0 w/o / 4.5 w/o, U <sup>235</sup> max.
Fuel Burnup - (Assembly Avg.)	60 GWD/ MTU max.

- Shorter Cooling Time, Higher Heat Loads
- Higher Burn-ups and Enrichments
- Diversity of Fuel Designs

## Life Cycle Benefits of Higher Dry Storage Capacity



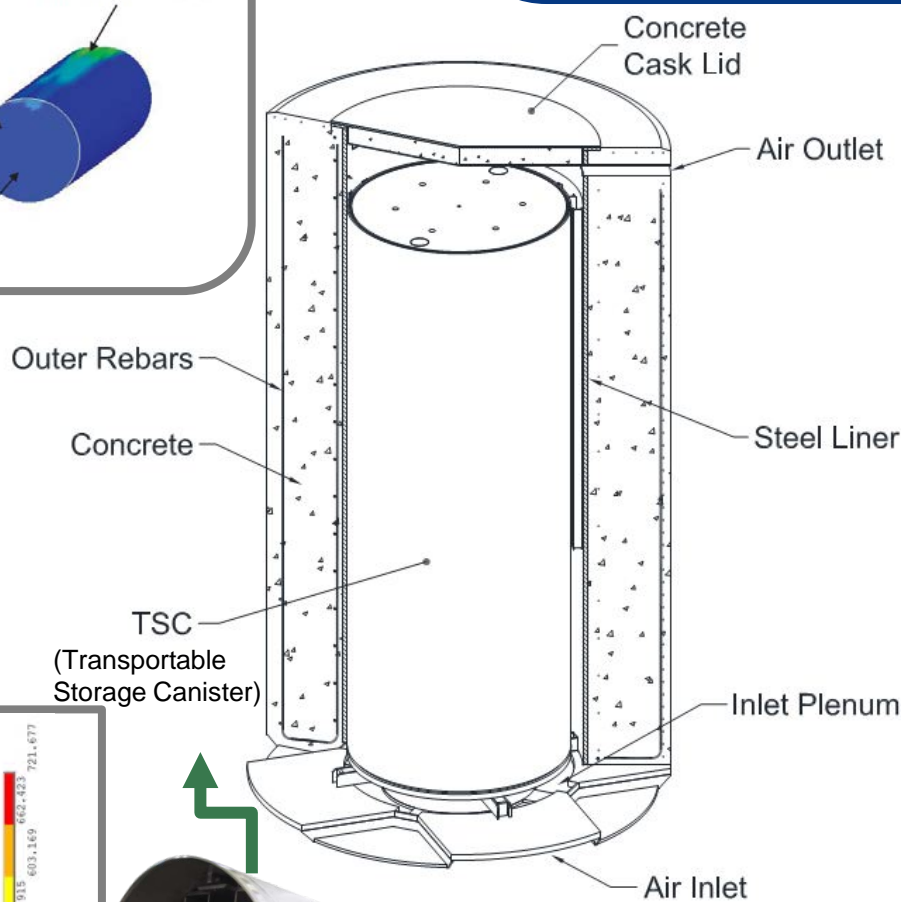
Up to 20% spent fuel storage life cycle cost as compared to previous generations



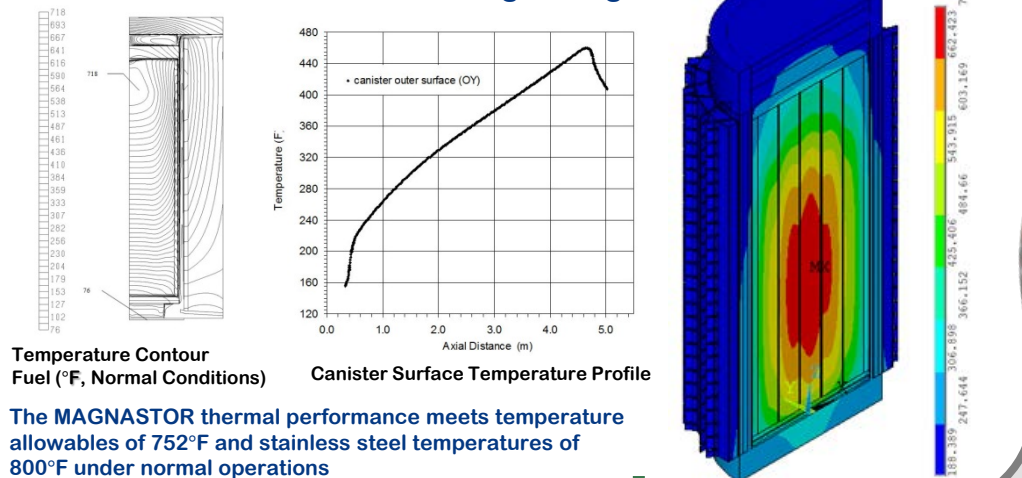
## Efficient Use of Basket Materials

	Thermal Conductivity at 70 °F [BTU/(hr -in-F)]	Tensile Strength at 500 °F (ksi)	Design Stress Intensity at 500 °F (ksi)
ASME A537 Class 1	2.290	68.4	22.9
SS - 304L	0.725	63.4	17.5

Material selection ASME A537 Class 1 with electroless nickel plating to meet thermal and structural performance requirements

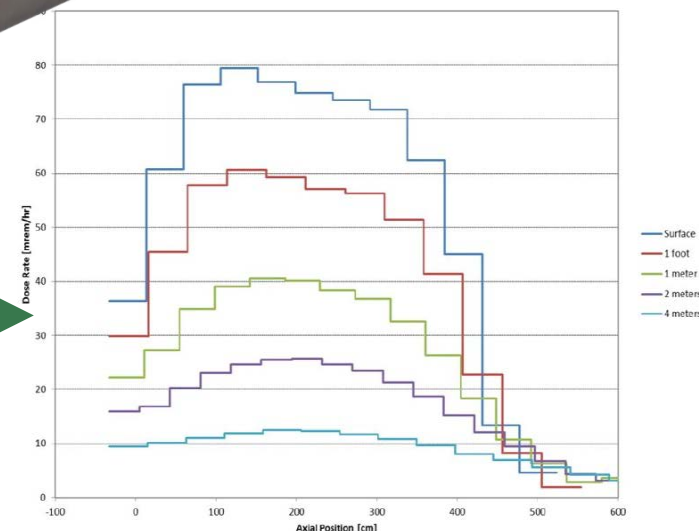


## Thermal Performance During Storage

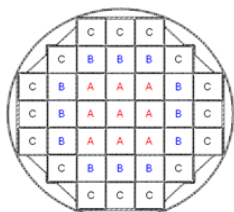


## Bounding Concrete Cask Side Dose Rate Profile

- High Density Compact Fuel Spacing
- High Assembly Self Shielding
- High Gamma Attenuation



## Optimize Spent Fuel Loading Patterns



Loading Region	Heat Load
A	0.92 kW
B	1.2 kW
C	0.8 kW

Hotter more reactive fuel can be stored away from the basket periphery resulting in low doses



Our MAGNASTOR System is raising the bar in multi-purpose canister spent fuel storage for commercial nuclear power plants.

- This poster exhibits the key design features of MAGNASTOR and how our patented developed cell technology enables compact ultra-high capacity storage to achieve more than 20% improvement in spent fuel storage life cycle costs, compared to earlier generation systems.
- Thermal, structural and dose performance of the system is now proven – three customers are currently loading MAGNASTOR systems.
- The next evolution of dry storage and cask technology can benefit from NAC / HZC R&D contribution in the areas of materials, testing and analysis to address future requirements of the nuclear industry.