Rejuvenate Nuclear Technology Infrastructure and Facilities

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About Westinghouse

WESTINGHOUSE GLOBAL HEADQUARTERS
Cranberry Township, Pennsylvania, U.S.

Approximately 9,300 Employees
Located in 19 Countries
Serving Customers in 26 Countries

Comprised of 4 Business Units

- AMERICAS OPERATING PLANT SERVICES
- ASIA OPERATING PLANT SERVICES
- EMEA OPERATING PLANT SERVICES
- PLANT SOLUTIONS
# Global Portfolio of Products & Services

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<th>Nuclear Fuel</th>
<th>Instrumentation and Control</th>
<th>Staffing Services</th>
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<td><img src="Nuclear_Fuel.png" alt="Image" /></td>
<td><img src="Instrumentation.png" alt="Image" /></td>
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<tr>
<td>Components and Manufacturing</td>
<td>Field Services and Plant Modifications</td>
<td>New Plants</td>
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<td>Engineering Services</td>
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Nuclear Industry Partnership

USS Nautilus

Quarterman Group

World's first commercial PWR

NAYGN

World's first commercial PWR

U.S. Women in Nuclear

Westinghouse

Xcel Energy

ANS
Apply New Plant Technology to Operating Plants
(Industry is moving to Digitalization)

Advance Training & Learning
(Mind, Brain & Education)

Develop and Implement New Reactor Technology
(Increase the technology portfolio, scalable Energy Solutions)
MCR Evolution & Advances
30 Year Evolutionary Change

Conventional
Hardware Control

Hybrid
Hard + Soft control

AP1000®
Software Control
Minimum Safety
Hardware
Digitalization and the Nuclear Workforce

Digital Solutions within Nuclear

- Data Science & Artificial Intelligence
- Internet of Things
- Augmented Reality & Virtual Reality
- Predictive Maintenance
- Electronic Work Procedures
- Smart Worker
- Automation & Robotics
- Digital Twins

Workforce Benefit

- Top talent is drawn to solving unique digital challenges within the nuclear industry and developing innovative solutions
- Digital solutions lead to improved user experience, job satisfaction, and talent retention
Digitalization Business Case
Nuclear Industry Operations Cost ($B)

Total Opex $17B (61% of total spend)

Support services - Includes information technology, business services, human resources and executive offices.

Work management - Includes planning and scheduling, preventive and corrective maintenance and tool calibration

Operations - Includes operations, environmental, chemistry and radiation protection.

Loss prevention

Engineering

Training

Materials and services - Materials management and warehousing, contracts and purchasing and material disposal.

Fuel Management

Digitalization can decrease primary operating costs and attract top talent to address staff attrition

2012-2018 Average US Plant Cost Reductions

Operations: -14.0%
Fuels: -25.0%
Capital: -46.5%

Note: * Percentages reflect spend of category compared to total opex spend
Source: (1) Data from ‘NEI Nuclear Costs in Context, Oct. 2018’
(2) Definitions as defined EUCG, the Institute for Nuclear Power Operations, the Electric Power Research Institute, and the Nuclear Energy Institute (NEI)

10 of 14 U.S. announced shutdowns caused by market conditions
New Methods & Technology for Learning
MBE – Mind Brain & Education

Creative Instruction = Creative Thinking

Arts-Integration

Emotional Engagement

Significance Learning

Learning Outcomes

How TO LEARN FASTER
New Reactor Technology
Westinghouse eVinci™ Micro Reactor

- Combined heat & power: 0.2-5 MWe, > 600°C
- Transportable energy generator
- Fully factory built, fueled and assembled
- Up to 10-year fuel life
- < 1 month onsite installation
- Inherent safety
- Near Zero EPZ

- Physics-based with no operator action or mechanical actuations
- Autonomous load-follow capability
- Heat pipe technology
- Solid monolithic core block
- Greenfield decommissioning
- Small footprint
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