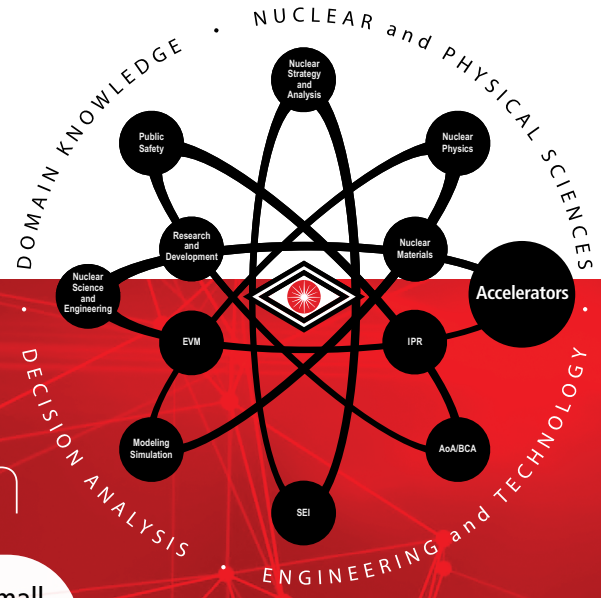
TECHSOURCE

A Salas O'Brien Company



Particle Accelerator Design & Modernization

The application of accelerators spans a broad range of applications – from small-scale, modest-cost medical and homeland security systems, to very large-scale, high-power accelerators used for basic science and accelerator-driven reactors. The design and optimization of these accelerator systems requires specialized technical expertise to successfully design, build, and modernize these systems.

Unparalleled Domain Expertise

TechSource personnel have spent decades gaining expertise from working in the Nuclear Security Enterprise (NSE), Universities, Industry, and the Commercial sector to create an unparalleled accelerator domain knowledge resource. Our experts' hands-on experience is expansive, covering all aspects related to accelerators from design, development, to build and installation.

Customers who engage TechSource in the design process experience huge benefits ranging from improving project outcomes to focusing scope to achieve mission. Our experts offer direct and efficient means of applying decades of relevant experience to get the job done.

Physics Design and Simulation

TechSource experts are proficient in all aspects of the simulation and analysis of beam generation, propagation, and acceleration in structures, using well-benchmarked simulation and design codes such as PARMILA, TStep, Microwave Studio, PARMTEQ, TRACE- 3D, and TRANSPORT. This expertise includes modeling of space-charge and other higher-order effects, beam-loss analysis, error analysis, beam shaping, and transport to target.

Accelerator Technologies and Engineering

TechSource broad-based mechanical and electrical engineers bring to bear their unique expertise to design modern and effective systems including: design of magnet systems using POISSON/Superfish and PSPICE, vacuum system design, cryogenic system design, metrology, rf (high and low) power, and control system design.

Targetry

TechSource offers extensive expertise in dealing with the problems of high-power and specialty accelerator targets such as thermal hydraulics, neutronics and secondary particles production, neutron transport, radiation shielding design, activity and waste management issues, and other concerns. We can examine neutron transport and activation using LAHET and MCNP codes.

Game Changing Expertise

TechSource experts possess 35+ years of experience directly related to accelerator design including:

- Physics simulation of beam formation, transport, and target interactions
- Accelerator design and simulation code development and application for beam extraction and transport; thermal and resonance control and precision offset and alignment
- System layout of complete accelerator facilities
- Beam diagnostic device design, use, and data analysis
- Coordination of beam commissioning to understand and optimize performance

TechSource experts have also been instrumental in all stages of Accelerator System Design:

- Assisting from conception through implementation of full-scale projects
- Handling the permitting process
- Establishing operations and maintenance procedures and protocols
- Training and qualifying operators

We have direct access to the latest neutron cross-section libraries at the Brookhaven National Laboratory Cross-Section Center.

Accelerator Commissioning and Operation

TechSource's commissioning expertise spans planning, installation, and startup. Operations expertise includes: establishing round-the-clock operations and strategic maintenance planning, including preventive maintenance and repairs, plus overseeing the spares inventory.

Research and Development

A fully realized R&D strategy creates the blueprint your organization needs to meet its ever-evolving mission. Successful organizations depend on R&D to leverage limited resources and maximize productivity by prioritizing those R&D activities that are the most promising while discarding those less achievable.

Project Management

Our demonstrated ability to understand the unique relationships between subsystems and hands-on experience integrating these subsystems into a successfully functioning accelerator system is routinely utilized. Our personnel's recent and distant experience with successful project management ensures our continued success in this important management area.

Our internationally recognized experts are adept in all aspects of Particle Accelerator Design, having built and demonstrated multiple implementations of the radio frequency quadrupole that revolutionized high-current, low-energy ion accelerators, as well as contributing across the complex to many other projects of national and international importance including:

- *Ion Sources & ion extractors*
- *Accelerating Structures*
- *RF power Systems*
- *Cryogenics*
- *Superconducting Systems*
- *Vacuum and Cooling Systems*
- *Diagnostic Devices*
- *Integrating Controls and Instrumentation*
- *Storage Rings/Fast Focused/ Cyclotrons*

We're the Go-To Experts for Experts

Science & Engineering Expertise

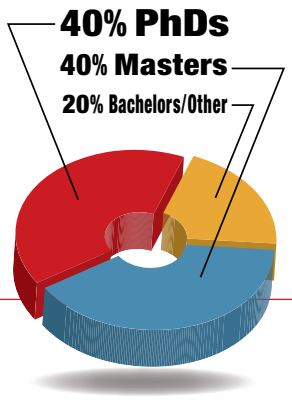
TechSource is a leading high-technology science and engineering small business offering recognized expertise in nuclear and physical sciences, engineering and technology, domain knowledge, and decision analysis.

Unparalleled Expertise

TechSource's talented and innovative 500-plus cohort is composed of experts, most with 35 years or more of hands-on experience.

Complex Management Solutions

TechSource offers policy to test bench technical and management services in coordination with point-of-interest expertise to organizations responsible for developing, implementing, operating, and managing high-technology programs nationwide.



The World's Smartest Organizations Use TechSource

For over 20 years, TechSource has successfully supported a diverse and expanding client base, including U.S. federal agencies, the national laboratories, the Navajo Nation, universities, and commercial entities focused on solving some of the most complex issues facing the United States today.

Recognized Qualified Expert

TechSource is recognized as an independent, qualified expert whose advice and products uniquely and effectively bridge technical and programmatic requirements.

A Major TechSource Strength is the Depth and Breadth of our Experts

Engaging TechSource expertise ensures our clients have access to the hard-to-find expertise they need to successfully conceptualize and build some of the world's most advanced Particle Accelerators. This expertise encompasses conceptualization, design, fabrication, assembly, testing, characterization, and analyses.

Our Bench

Our accelerator science and engineering SMEs have years of experience leading, conducting, and reviewing research and development projects in the critical areas of accelerator design and engineering, and accelerator project management. Our experts are always ready to engage at any phase of a project to address issues and help lead the way to success.

Contact

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