



FACTS

Flexible AC Transmission Systems

Flexible AC Transmission Systems (FACTS) have been deployed to solve a diverse set of challenges in power transmission systems for more than 30 years. In the past 10 years, utility planners have utilized FACTS equipment for applications to manage power flow in transmission systems to mitigate risks when thermal power plants retire. As new challenges face the transmission grid, FACTS devices will continue to be an integral part of the planner's tool kit for addressing voltage, capacity, and system reliability. Experts from Quanta Technology work in all phases of the FACTS project lifecycle, not only planning studies, specification development, vendor selection, and project implementation, but also lifecycle services to maximize the total value of the system for the owner.

Service Offerings

FACTS Planning Studies

- Technical and economic analysis of FACTS devices as non-wires alternatives (NWA) to new transmission lines
- Voltage and stability performance
- Integration of renewable generation
- Sizing and optimization with other reactive devices
- Inertia and angular stability
- Thermal power plant retirements

Specialized Application Studies

- Harmonic studies
- Sub-synchronous phenomena (SSR, SSI, SSTI, SSCI)
- Insulation coordination and transient voltage
- Active controller device interactions
- Flicker and power quality assessment

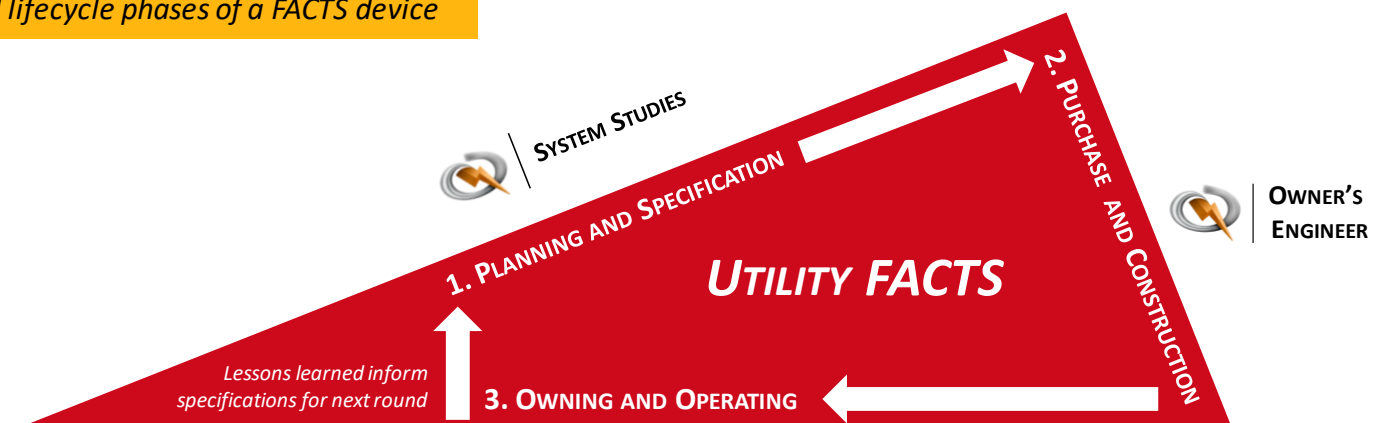
Procurement and Project Services

- Specification development and updates
- Vendor qualification
- Procurement strategy
- Owner's engineer services
- Real Time Digital Simulator (RTDS) testing
- Hardware-in-the-loop simulations

Asset Management and Renewal Planning

- Performance warranty assessments
- Post-warranty support
- Aging asset assessments and life-extension strategy
- Optimization of existing FACTS assets
- Knowledge transfer
- Communication and security infrastructure

Quanta Technology has expertise in all lifecycle phases of a FACTS device





FACTS Applications

- Thermal power plant retirements
- Voltage collapse risk mitigation
- Integration of renewable generation
- Interconnection of offshore wind
- Increase power transfer between regions
- Electric arc furnace interconnection and optimization

Why Quanta Technology?

Quanta Technology has the expertise and experience to optimize the value of a FACTS asset for the entire lifecycle of the device, from system planning to project deployment to asset management, including the ownership and operation of the asset. Our experts bring a range of experience and perspective, including utility transmission planning, FACTS device OEM, construction services, and utility asset management. This approach is not only comprehensive in terms of capabilities but also considers the complete picture of value and costs for a new application or existing installation.

Long-Term Asset Strategy

Quanta Technology can provide services to address the complex challenges that can arise during the lifetime of a FACTS device. The surrounding transmission system can be expected to change in many ways. New lines may be built and thermal generation may be retired and displaced by renewable sources. Complementary technology such as PMU data and high-speed communication may be widely deployed. Other challenges can include obsolescence in control systems, cyber security, and knowledge transfer. Quanta Technology services to address these challenges include asset assessments and life-extension strategy, confirmation of system needs and opportunities for control and operational enhancements, and coordination of best practices across suppliers and equipment generations:

- Confirmation of current system need
- Integration with complementary new technology
- Controls and security
- Knowledge transfer

Emerging Needs and Applications

Quanta Technology experts can also evaluate emerging FACTS concepts and provide assessments of innovative FACTS applications. Examples include coordinating the rating and controls of SVC/STATCOM with synchronous condensers for enhanced power system performance, the use of thyristor-controlled series capacitors (TCSC) to mitigate sub-synchronous interactions, and the application of D-FACTS as a method of power flow control.

About Quanta Technology

Quanta Technology is an independent technology, consulting, and testing company providing business and technical expertise, along with advanced methodologies and processes, to utilities and others in the power and energy industries. Our mission is to provide unparalleled value to our clients in every engagement across the value chain by using advanced software and hardware, laboratories, and custom tools for a holistic approach to practical service and the most insightful thought leadership in the industry.

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