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Conceptual Design of the Target Systems for the Second Target Station (STS)

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The Second Target Station (STS) is a proposed major upgrade to the Spallation Neutron Source that will provide new cutting-edge neutron scattering capabilities enabling researchers to use the unique properties of neutrons to advance scientific discovery and to solve the most challenging technology problems.

STS Target Systems encompasses the technical components and support facilities necessary to convert the 0.7 MW 15 Hz proton beam into cold neutrons and direct the neutrons into the instrument guides. The Target Systems are optimized to produce the high brightness cold neutron beams that are the defining feature of the STS. This is accomplished by producing neutrons in as small a target volume as possible and by adopting compact moderator designs that are optimally coupled in location relative to this volume. The STS employs a solid rotating tungsten target, 2 coupled hydrogen moderators, and a beryllium reflector.

An overview of the Target Systems conceptual design is included, with focus on the most unique and challenging aspects of the design.

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