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Design challenges of a 20kW liquid hydrogen cooling system for The European Spallation Source cold moderators.

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A key feature of the target system at ESS will be the cold moderators. With the use of supercritical hydrogen at 17 K and1.5 MPa, the energy of the neutrons is reduced before they reach the instrument lines. The neutrons will deposit significant amounts of energy into the hydrogen that must be removed to maintain the hydrogen at its nominal operating temperature. The cooling for the hydrogen will be provided by the target moderator cryoplant (TMCP). This is the story behind the development of the world's largest LH2 cooling for a neutron source.

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