

Sole Source
Hydrogen Steelmaking Pilot Reactor
Missouri S&T

In accordance with the Collected Rules and Regulations 80.010, Missouri University of Science and Technology (Missouri S&T) requests approval for the sole source purchase of a hydrogen steelmaking pilot reactor from Hazen Research Inc. (Hazen), Golden, Colorado, for an estimated total cost of \$1,435,000 for a three-year term.

Under a vendor agreement with Missouri S&T that is part of a three-year Department of Energy (DOE) award, “Grid-Interactive Steelmaking with Hydrogen (GISH)”, Hazen will construct a pilot reactor and operate the reactor at its research facilities in Golden, Colorado under the direction of Missouri S&T and a team of co-principal investigator’s (PI’s), including University of Arizona, National Renewable Energy Laboratory (NREL), Danieli, and the following industrial producers and suppliers: Voestalpine Texas, Steel Dynamics, Gerdau, Nucor Praxair Inc. and Air Liquide. The pilot reactor design will be provided by co-PI Danieli, who produces commercial direct reduced iron (DRI) reactors and has a working relationship with Hazen Research Inc.

The work to be conducted at Hazen is an integral part of the larger \$5.5M DOE GISH program that will examine strategies for combining grid renewable hydrogen and natural gas to produce steel, using a solid-state reactor to produce iron from ore combined with an electric furnace melting to produce steel.

At present, no other company can fulfill the unique combination of design, construction and operating experience provided by Hazen. Their expertise has been gained through prior experience in pilot scale direct reduction reactor construction and operation, their facilities experience in the safe handling of hydrogen and natural gas, and their relationship with our co-PI’s Danieli and NREL.

The total estimated expenditure of \$1,435,000 for the three-year term will be fully funded through the DOE contract award DE-EE0009250, Grid-Interactive Steelmaking with Hydrogen (GISH), with pilot reactor construction in year 1 at a cost of \$935,000 and pilot reactor operation in years 2 and 3 at a cost of \$500,000. At the end of the three-year term, the University will own the pilot reactor and have the option of moving it to Missouri S&T.

February 4, 2021

No. 9

Recommended Action – Sole Source, Hydrogen Steelmaking Pilot Reactor,
Missouri S&T

It was recommended by Chancellor Dehghani, endorsed by President Choi,
recommended by the Finance Committee, moved by Curator _____ and
seconded by Curator _____, that the following action be approved:

that Missouri S&T be authorized to purchase a Hydrogen Steelmaking Pilot
Reactor from Hazen Research Inc., Golden, Colorado, at a total estimated cost of
\$1,435,000 for a three-year term.

Funding is as follows:

Missouri S&T Grant Fund w/funds for the full expense coming from the
DOE contract award MoCode TBD

Roll call vote Finance Committee YES NO

Curator Hoberock
Curator Steelman
Curator Wenneker
Curator Williams

The motion _____.

Roll call vote Full Board: YES NO

Curator Brncic
Curator Chatman
Curator Graham
Curator Hoberock
Curator Layman
Curator Snowden
Curator Steelman
Curator Wenneker
Curator Williams

The motion _____.

February 4, 2021