



Supplier Opportunities: Traveling Wave Reactor Program

The following announcement provides a summary of some select supplier opportunities related to development and commercial production of core structural materials (i.e. stainless steels) and components to support TerraPower's Traveling Wave Reactor (TWR) Program. This is an initial list of opportunities related to these components, and will be updated periodically. Multiple/separate supplier awards may form the supply chain of core materials and components. However, it is also possible that a single supplier may be able to provide a solution in multiple areas.

Quality requirements for the development of these materials and components will be appropriate to the phase of work being conducted. However, final commercial production will invoke quality requirements applicable to the safety classification of the product; as such, work will need to be performed under a quality program consistent with nuclear reactor application.

To be considered as a potential supplier for any opportunities listed below:

Please complete the registration form at <http://www.terrapower.com/suppliers> to share information about your company's capabilities with us.

HT9 Material

TerraPower is seeking expressions of interest from potential suppliers for the development and commercial supply of HT9 material. TerraPower has created an optimized version of HT9 meeting grade UNS42100 ferritic-martensitic stainless steel, to support its Traveling Wave Reactor. Product forms for the optimized UNS42100 will include round bloom/billet, bar, rod, and wire, as well as cold rolled plate. For reference, approximately 500 tons of material are required for manufacture of the first core load of core assembly ducts in addition to approximately 200 tons for fuel cladding. Delivery for the initial supply will start within 4 to 6 years from the present date. Subsequent annual reloads will require approximately 200 tons.

The proprietary specification for the optimized UNS42100 will be provided by TerraPower, based on supplier-specific non-disclosure agreements. Qualification and demonstration of commercial readiness of the material supply will be necessary and, thus, pre-commercial work is expected.

Cladding Tube

TerraPower is seeking expressions of interest from potential suppliers for the development and commercial supply of cladding tube to support its Travelling Wave Reactor. Approximately 40,000 cladding tubes are required for the initial supply, with delivery starting within 4 to 6 years from the present date. Annual reload quantities of approximately 12,000 tubes will be required after the initial supply. Qualification and demonstration of commercial readiness of the cladding tube supply will be necessary and, thus, pre-commercial work is expected.

The cladding tubes are to be seamless and made from an optimized version of UNS 42100 ferritic-martensitic stainless steel material. The starting material will be required to meet a proprietary specification provided by TerraPower and is envisioned to be provided by a separate supplier, though possibilities exist for a single supplier to deliver a comprehensive solution. Regardless, the cladding tube supplier will have the ability to drive requirements for the starting material dimensions and form.

The following is a representative image of TerraPower HT9 cladding tube:



Strict dimensional and tolerance requirements for the tube diameter, wall thickness, and straightness will be imposed by the product drawing. Multiple cladding tube sizes are needed for the various core components. The principal quantity of tubes has an outer diameter of approximately 8 millimeters and a length of approximately 3.5 meters. The other cladding tube



sizes, while being needed in much smaller quantities, have larger diameter and wall thickness dimensions.

A normalization and temper heat treatment process is required for the final product. To accomplish this heat treatment, equipment for bright hydrogen and vacuum furnace annealing is necessary that is capable of handling the product size and quantities. Furthermore, the finished tubes are required to be examined for defects by ultrasonic testing (UT) in accordance with ASTM Practice E213.

Duct Tube

TerraPower is seeking expressions of interest from potential suppliers for the development and commercial supply of duct tube to support its Travelling Wave Reactor. Approximately 450 duct tubes are required for the initial supply, with delivery starting within 4 to 6 years from the present date. Annual reload quantities of approximately 60 tubes will be required after the initial supply. Qualification and demonstration of commercial readiness of the duct tube supply will be necessary and, thus, pre-commercial work is expected.

The duct tubes are to be seamless, hexagonal in cross section, and made from an optimized version of UNS 42100 ferritic-martensitic stainless steel material. The starting material will be required to meet a proprietary specification provided by TerraPower and is envisioned to be provided by a separate supplier, though possibilities exist for a single supplier to deliver a comprehensive solution. Regardless, the duct tube supplier will have the ability to drive requirements for the starting material dimensions and form.



The following is a representative image of TerraPower HT9 duct tube:



Strict dimensional and tolerance requirements for the tube hexagonal profile, wall thickness, and straightness will be imposed by the product drawing. The duct tube has an outer dimension of approximately 140 millimeters and a length of approximately 4 meters.

A normalization and temper heat treatment process is required for the final product. To accomplish this heat treatment, equipment for vacuum furnace annealing is necessary that is capable of handling the product size and quantities.