**American Iron and Steel Institute**

# $CO_2$ Sequestration Program

## Solicitation for Research and Development Proposals

The North American Steel Industry proposes to perform research and development for significantly reducing the $CO_2$ emissions by sequestering the Greenhouse Gases (GHG). This will require development of radically new processes and/or adapting developed technologies to capture and sequester $CO_2$ emissions from the steel industry. This solicitation is continuation of $CO_2$ Breakthrough Program that was started in 2003.

Proposers are invited to submit proposals to this program in respect of technologies that might be used in the sequestration of $CO_2$ emitted from existing steelmaking processes. The generalized concept of such technologies is as follows—the capture of CO2 emissions from steelmaking processes is largely known and although such technologies need to be proven commercially, the technical risks are low compared to sequestration. Current thinking about sequestration in the USA involves compression and transport to underground storage facilities despite the fact there are unsolved infrastructure and liability issues with this approach.

We are specifically looking for different approaches to sequestration that are most easily described as technologies utilizing the captured CO2: 1) in the creation of a co-product with a beneficial use; 2) in the creation of a co-product that is environmentally inert. The following are some of the key issues for consideration.

- Description of the sequestration technology
- The environmental impact of the sequestered material
- Commercial usefulness if any of the sequestered material
- Commercial viability of the technology
- Adapting existing technologies from other industries such as in Electric Power Generation
- Understand and improve the kinetics of chemical reactions
- Cost/economics

Researchers wishing to respond to this solicitation are encouraged to submit their proposal/s electronically in .pdf form to manufacturingt@steel.org no later than September 10, 2010.

Proposals should be no more than 10 pages long and must describe in detail the proposed technology and how it might be applied to the steel industry processes. It should contain quantitative discussion of the $CO_2$, energy and environmental benefits. It must include a detailed statement of objectives and work, project management plan, how the proposals fit into steel industry requirements, budget and schedule. It must also describe the facilities as well as the capabilities of the researchers/team that can successfully complete the proposed work. Please follow the "Instructions for Submitting Proposals".

Proposing organizations may submit more than one proposal. However, each must be entirely separate submission and each will be reviewed independently.

Funding level is dependent on the evaluation of the proposed technology.

Questions about the solicitation should be directed to B.V. Lakshminarayana at Blakshminarayana@steel.org.

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## Instructions for Submitting R & D Proposals to AISI

- Proposals should be no more than 10 pages long, plus the Summary Page and Executive Summary.
- Proposals must contain the following sections:
  1. Proposal Summary Page including budget and schedule.
  2. Executive Summary, which clearly defines the proposed project and how it will sequester $CO_2$ in the steel industry.
  3. Detailed description of the technology and how and where it is to be applied in the steel industry.
  4. A description of technical hurdles to be overcome to provide significant $CO_2$ abatement through sequestration in the steel industry and the plan for overcoming them.
  5. Quantified discussion of the $CO_2$ sequestrations and energy impact. A thorough analysis of the impact that the technology will have on energy requirements (positive or negative) must be included.
  6. Explanation of expected other environmental impact of the new technology.
  7. Explanation of other benefits such as usefulness of the product (if any).
  8. Explanation of how the end results of the research will lead to commercialization of the technology.
  9. Description of the team that will perform the R&D and its capabilities. Proposers are encouraged to adopt a multi-partner approach and to include among their partners steel companies or experts with knowledge of steel industry.
  10. Project schedule including a list of anticipated project tasks and milestones for each project year.
  11. Estimated total project cost by year, broken down by labor and equipment for each participating organization. Indicate the percentage of total cost contributed by the proposer(s).

- Proposals must be submitted electronically in .pdf format to. manufacturingt@steel.org. Proposals are due by September 10, 2010.
- Do not include proprietary information in proposals, as they will be submitted to AISI members for evaluation and cost sharing. Proprietary information can be discussed later under a non-disclosure agreement.

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## R & D Proposal Summary Page

1. Name of Proposing Organization(s): _____

   _____

2. Date: _____

3. Descriptive Project Title: _____

4. Total Project Cost: _____. Duration: _____
   % of Total Cost Contributed by the Proposer(s): _____.

5. Objective and a brief description of the Project: _____

6. Description of potential to sequester $CO_2$ from the proposed technology: ___

7. Description of other benefits of using the proposed technology: _____

8. Contact Name: _____

9. Contact address: _____

10. Contact Phone and Email: _____

    _____

_____
Signature and Date

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## Proposal Review Criteria

It is the responsibility of the proposer(s) to assure that sufficient information is contained in the proposal for reviewers to evaluate the proposal according to the following criteria.

**Criterion 1 – Potential to sequester $CO_2$ and other environmental impacts (35 points)**
The potential of the proposed technology for $CO_2$ abatement through sequestration as well as other environmental impacts will be qualitatively evaluated for its content and for its widespread applicability in the steel industry.

**Criterion 2 – Technical Merit (30 points)**
The technical merit of the proposal will be evaluated to determine its responsiveness to the needs of the industry. The proposal will be evaluated based on its clarity, completeness, and adequacy of the statement of objectives including a review of supporting data and prior research; its technical merit, i.e. is it based on sound scientific/engineering principles; and its application to the steel industry.

**Criterion 3 – Schedule and Cost (15 points)**
The proposal will be evaluated based on the adequacy of statement of work, schedule including milestones, decision points and overall cost.

**Criterion 4 – Expertise of Researchers/Team (10 points)**
The expertise and the capabilities of the researchers/team to bring the project to a meaningful completion will be evaluated. Previous research experience and references will also be considered for evaluation.

**Criterion 5 – Technical Feasibility (10 points)**
The proposal will be evaluated for the probability of successful completion of the project with the possibility of commercialization.