



Mattress Pocket Coil Component Separation and Recycling

Request for Proposals



Issue Date:

January 23, 2019

Pre-Application Submission Deadline:

February 22, 2019

Mattress Recycling Council

Attn: Michael Gallagher

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www.mattressrecyclingcouncil.org

BACKGROUND

The Mattress Recycling Council (MRC) is a 501(c)(3) formed by the mattress industry to operate recycling programs (known as Bye Bye Mattress) in states which have enacted mattress recycling laws –

California, Connecticut and Rhode Island. MRC educates the mattress industry and consumers about these mattress recycling laws and works closely with local governments, waste management professionals, recyclers and others to create accessible and efficient mattress collection and recycling programs.

The [Mattress Recycling Council](#) (MRC) has established a Research program to increase the productivity and throughput of our contracted mattress recycling contractors. One of the most challenging components to recycle in a discarded mattress are pocket coils: metal spring coils that are encased in fabric sleeves. MRC seeks an innovative process to effectively and economically separate the fabric from the metal, ideally without sacrificing the revenue potential of each component.

Pocket coils (also known as [Marshall Coils](#)) are a common construction type for inner spring mattresses because they isolate the transfer of movement to individual coils. About 20% of all discarded mattresses contain pocket coils which contain between 250 and 1,000 individual spring coils. These metal coils are individually encapsulated in either polypropylene or woven cotton fabric. The coil jackets may be bound together using stitching or hot melt adhesives. In some constructions, the coil jackets are not connected, resting freely inside the mattress walls.

When a mattress is deconstructed, the pocket coil layer is easily separated from other components. However, it is impractical to manually separate the individual coils from their sleeves. Since most metal recyclers will not tolerate fabric contamination, the pocket coil units are often sent to landfills. Successful implementation of an alternative solution for separating pocket coil metal from fabric would improve overall mattress recycling rates and create added revenue for mattress recyclers.

Additional information regarding this RFP and other general information is be posted on the [MRC Research Program](#) website. This research project must be completed by December 31, 2019.

ELIGIBLE APPLICANTS

- Public and private businesses
- Universities and research institutes
- Nonprofit entities

EXAMPLES OF ELIGIBLE PROJECTS

- Equipment
 - Personal robotic aids and/or fully autonomous systems
 - In-process retrofits or standalone systems
- Processes
 - Novel means to separate mixed products are in scope
 - Approaches to further refine end products for transportation and end use

PROJECT REQUIREMENTS

- Research Projects must show potential to automate the separation of steel coils from fabric without significant manual labor and indicate the processing speed per pocket coil unit. Preferable designs will allow for a clean separation of each commodity so both can be sold in secondary markets.
- Proposals must demonstrate that the equipment can be developed and sold commercially for under \$100,000 USD.
- Only one application per eligible applicant will be accepted.
- Applicants are encouraged, but not required, to provide matching funds to the project.

TIMELINE

Interested parties can email questions to Mike Gallagher at mgallagher@mattressrecyclingcouncil.org until February 18, 2019. The deadline for pre-proposal applications is February 22, 2019. The deadline for full proposals is April 1, 2019 if the project is selected to move beyond the pre-proposal phase. All projects must be completed by December 31, 2019.

Key Date	Actions Taken
January 23, 2019	RFP Release. Question period opens
February 15, 2019	Question and answer period closes
February 22, 2019	Pre-application due date
March 8, 2019	Pre-proposal evaluations completed, invitations for Phase 1 proposals sent
April 1, 2019	Phase 1 proposals due
April 15, 2019	Notice of Phase 1 awards and contract execution begins
April – December 2019	Phase 2 program begins

PRE-APPLICATION SUBMISSION

A three-stage process will be used to identify projects for award. First, interested parties will submit a non-confidential pre-application for internal review by MRC. The pre-application template is included in this RFP as Attachment A and can be also be found in the [MRC Research Program](#) website.

Pre-applications must be emailed by 5:00 PM PST on February 22nd to Mike Gallagher at: mgallagher@mattressrecyclingcouncil.org.

Based on merit and alignment to our research strategy, the proposers of selected concept papers will be contacted for further discussion. Based on the outcome of these discussions, the submitter may be invited to submit a full proposal (Phase 1) for further review by MRC.

PHASE I

Phase 1 awards in this program will have a maximum award sizes of \$70,000. The objective is to evaluate the technical merit and feasibility of ideas that appear to have industrial application potential to effectively separate the metal coils from the fabric sleeves. The application should concentrate on research that will contribute to proving the technical feasibility of the approach or concept.

The application should detail the steps necessary to develop a proof of principle solution. The Phase 1 final report must contain an economic analysis and a preliminary business case to justify either: further prototype development, or process modification and a potential field study with selected recyclers. Success in Phase I is a prerequisite to further support in Phase II.

PHASE I FUNDING

- Estimated total funding: \$210,000
- Anticipated number of awards: no more than 3
- Maximum individual award: \$70,000

PHASE 1: FULL PROPOSAL GUIDELINES AND FEEDBACK

Proposers that are invited to submit a full proposal will provide:

1. Applicant name
2. Applicant contact information — at least 2 contacts
3. A description of the applicant's industry history and experience with similar projects
4. A project description that clearly outlines the impact on program research objective
5. A project work plan and milestone plan
6. A project budget, which includes any matching funds from the applicant, and a clear request for a specific amount of funding
7. Acknowledgement of any potential conflicts of interest with MRC leadership or former employment in the mattress industry.

Applicants invited to Phase 1 will submit this information in PDF format that will not exceed 10 pages in length. Phase I award recipients must agree to MRC's Project Terms as well as complete regular reporting requirements that include progress photo documentation. MRC will use research project documentation for California state reporting requirements and communication purposes.

PHASE II

Based on the results achieved, MRC may invite one or more Phase I awardees to submit a Phase II proposal. In Phase II, further prototype development and/or process modification would continue toward conducting a field study with selected recyclers. Phase II will be a performance driven agreement with payments distributed upon successful completion of project milestones. To facilitate scale up of promising innovations in this phase, awardees may, with MRC's prior approval, contract with additional parties to achieve the objectives set forth.

Attachment A

Pre-Application Concept Paper Submission Form

(Please submit Non-Confidential Information only)

Proposer name and title	
Institution, street address	
Phone	
Email	
Technical challenge being addressed <i>(number or title from challenge index page)</i>	
Proposed project title:	
Background/State of the art:	
Graphical abstract <i>(A figure or diagram illustrating the concept)</i>	
Project description <i>(Brief description of the concept and objectives of the proposal, including technical requirements, hypothesis, and novelty with respect to the state of the art in the field. ~500 words or less)</i>	
Proposer team, capabilities, and resources <i>(personnel, equipment, and demonstrated experience in the field including publications and intellectual property)</i>	
Technology Readiness Level (TRL) <i>(1-9, using TRL definition by DOE, http://en.wikipedia.org/wiki/Technology_readiness_level#Other_definitions_and_uses)</i>	
References cited:	