



Nail Coil Rewinder

Automated device restores damaged nail coils for reuse, cutting construction waste and costs.

Alumni from the Purdue College of Engineering have developed an innovative machine designed to reduce waste in construction industries. The Nail Coil Rewinder is a machine designed to automatically unwind, untangle, and rewind nail coils, restoring functionality to construction materials that would otherwise be discarded. Roofing nails are typically wound in a coil for easy and fast application in a nail gun. Tailored to the roofing industry, which relies on nail coils for installing shingles, this product addresses common coil damage issues caused by handling problems such as bending/breaking or soiling in construction environments. The Nail Coil Rewinder fixes these damaged coils, minimizing waste and saving money. Utilizing a custom roller and gear mechanism, the system straightens and aligns the nails before re-coiling the nails into a coil suitable for use in nail guns. With this invention, industries that utilize pneumatic or electric coil nail guns will be able to effortlessly recycle damaged coils on-site, saving cost, frustration, and increasing operational efficiency while also reducing waste.

Technology Validation:

A prototype was created and tested for the Purdue Mechanical Engineering senior design competition in 2023. Validation test results measured a 90% success rate. Angular nail tolerance was found to be within 1 degree with a cycle time of less than 8 seconds.

Advantages:

- Restores damaged nail coils for reuse, reducing waste
- Saves material costs for roofing and construction projects
- Prevents unnecessary landfill waste
- Simple and user-friendly operation
- Enhanced workplace efficiency

Technology ID

2024-HOPF-70543

Category

GreenTech/Circular Economy &
Waste Reduction

Further information

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-Designed for convenient on-site use

Applications:

-For use in pneumatic coil nail guns in industries like roofing and general construction.

TRL: 4

Intellectual Property:

Provisional-Patent, 2024-12-07, United States

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