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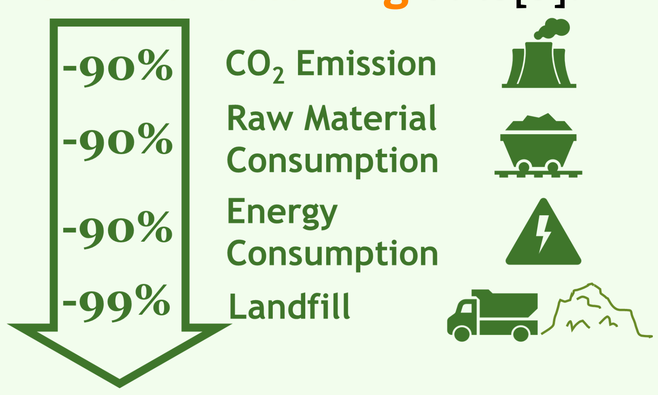
Publication

Remanufacturing: Pathway to Sustaina-bee-lity

1. Background

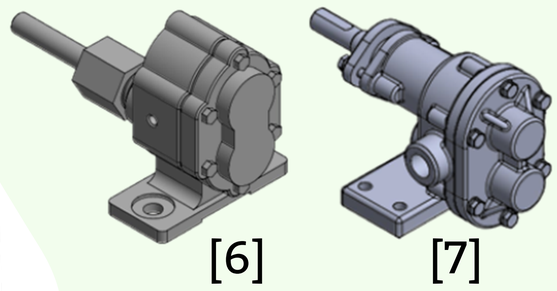
- **Remanufacturing** is the process of restoring a product to its original condition or better [1] as part of a **circular economy** [2].
- **Remanufacturing** cuts[3]:



- **Disassembly** is the first activity in remanufacturing [4].

- **Robotic Disassembly** is a key enabler of **autonomous remanufacturing** [3].
- This study proposes a **sustainability**-based model and uses the **Bees Algorithm** [5] to optimise **robotic disassembly sequence planning.**

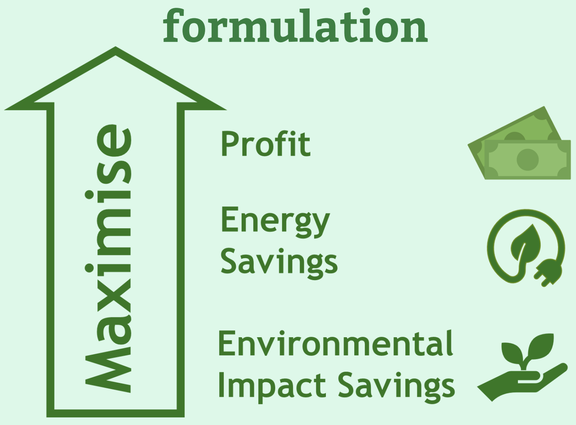
Case Study (disassembly of gear pumps):



[6] [7]

2. Methods

Sustainability model formulation



Sustainable Strategies:

Recycle Remanufacture Reuse

3. Experiments and results

- The **Bees Algorithm** is a nature-inspired computational tool for solving complex problems such as disassembly planning.
- Experiments using **MATLAB 2020a**.
- The **output**: disassembly sequence, direction, tools, and sustainable strategies for each part.

4. Conclusion

- The model powered by the **Bees Algorithm** provides the **best solution** (Robotic Disassembly Sequence) in **remanufacturing** faster.
- The findings help **industry** to manage **end-of-life** products, optimise the **disassembly** process, and achieve **sustainability** goals.

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