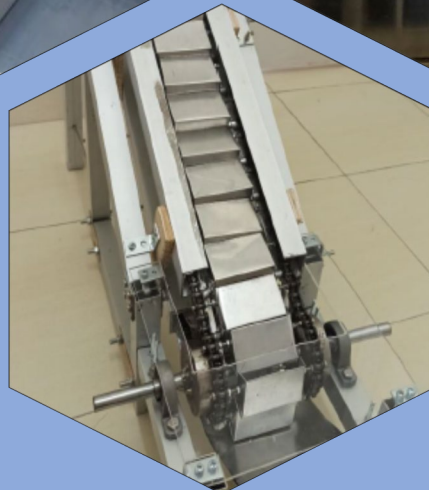
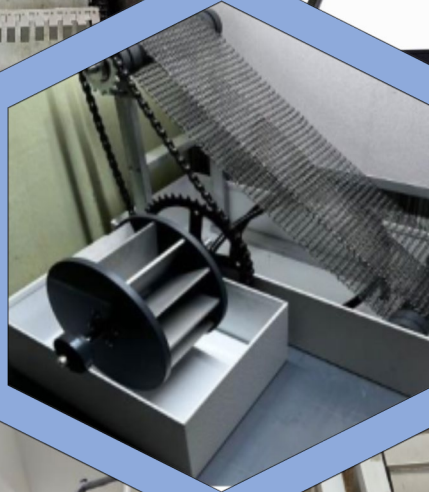


# PROTOTYPE DESIGN COLLECTION

## SERIES 1



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**e-ISBN: 978-967-0033-07-5**

First published, 30 September 2022

**EDITORS:**

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**PUBLISHED BY:**

Pusat Pengajian Kejuruteraan Mekanikal,  
Universiti Teknologi MARA Cawangan Johor,  
Kampus Pasir Gudang,  
Jalan Purnama, Bandar Seri Alam,  
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## CHAPTER 10

### Multifunctional Pickup Tool

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#### PROJECT DESCRIPTION

The pickup tools available in the market lack in terms of comfortness where the handle is difficult to operate. Other than that, it lacks in terms of its function where the tools are too large to be used in confined spaces, lack strength in gripping, and have no built-in light function. Therefore, the objective of this study is to design the multifunctional pickup tool and, to fabricate and test the multifunctional pickup tool. Morphological approach was used to determine the appropriate design. Meanwhile, Hooke's Law was used to determine the optimal number and size of springs to accommodate a load of garbage weighing 0.6kg. SOLIDWORK software was used to analyse the spring and handle. The results of the calculations using Hooke's Law shows that spring with a constant  $K$  (spring constant) value of  $168.171 \text{ N/m}$  is the optimal size for this pickup tool. Meanwhile, the analysis using SOLIDWORK software also shows positive results where no failure indicator appears in the analysis (stress and deformation analysis). To conclude, this multifunctional pickup tool was successfully fabricated and works perfectly. This product has been tested where it can pick up garbage, and can fit in confined and darker spaces.

**Keywords:** *Pickup Tool, Multifunctional, Hooke's Law, SOLIDWORK*

#### PROTOTYPE



**DESIGN PARAMETER**

