Scaglia Indeva SpA
Vision, industrial and social impact

SCAGLIA INDEVA SpA
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• We help to overcome the typical human limitations (strength, resistance, gripping capabilities...)
• We combine the advantages of a man (flexible intelligence, capability to adapt to unforeseen situations...) to the advantages of a robot (force, resistance, endurance, work capability,...)
• We can make your employees superhuman
Evidences of Achievement

To verify and demonstrate the achievements of our objectives, several studies have been performed. Lifting devices and technologies available on the market have been compared using different methodologies, tools and with emphasis on various aspects.

Here we mention 2 studies:

1. University of Brescia, Dipartimento Ingegneria Meccanica e Industriale

2. EPM – Ergonomia della Postura e del Movimento (research unit activated by: Università degli Studi di Milano, Ospedale Policlinico Milano, Fondazione Don Gnocchi Milano)
INDEVA Liftronic Easy is the best alternative in case of handling a 20-kg box........even in case of 5-kg box is still preferable for the satisfaction of company objectives........the use of the IAD may permit handling in a greater percentile range of the worker population as well as for operators with physical limitations; in addition, the levelling of the handling frequency allows for a more constant production rate and additional benefits from the ergonomic point of view.

A multi-criteria ergonomic and performance methodology for evaluating alternatives in “manuable” material handling

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Abstract

The objectives of this study were: 1) to develop an efficient multi-criteria approach for choosing the optimal alternative for “manuable” material handling, and 2) to apply the multi-criteria approach to a case study. In this paper, the authors use the single-word term “manuable” to refer to the definition “can be performed manually”. The case study results indicated that the use of the manipulator tested in this work may be preferable to manual material handling in situations in which the lifted weight is large (61% vs. 39%) as well as those situations in which the weight of the load could not apparently justify the investment necessary for a manipulator (53% vs. 47%). The case study also validated the selected approach. Furthermore, the applicability of the methodology was confirmed by the CEO of an Italian logistics and supply chain management company (Blu Pegaso S.r.l.).

Relevance to industry: This paper provides to the decision manager a structured approach regardless of industry and country for selection of the best alternative for manuable material handling that is able to satisfy the company objectives related to ergonomic criteria and production performance measures. The methodology also supports manufacturers of material handling devices in the optimisation of their products.
2. EPM
Experimental setting

Loading and unloading of 16kg boxes on a floor pallet from one side only. 
Work cycle: 1 shift 8 hours/day

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2. EPM
Problems and issues

Compatible index NIOSH
Situation non acceptable because of the distance away the person is more than 63 cm (See norm ISO EN 1005-4)

Other related problems
Elbow: many bends and extensions
Wrist: forced deviation
Hand: forced deviation
Posture of the upper limb: wrist, elbow, hand for evaluation purposes according to the norms EN 1005-4

Decrease of productivity during the day

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### 2. EPM

**Use of lifting devices: comparison**

<table>
<thead>
<tr>
<th>Lifting Device</th>
<th>Cycle Time</th>
<th>Productivity</th>
<th>Technical Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional rope lifting device</td>
<td>82 sec</td>
<td>-36%</td>
<td>8</td>
</tr>
<tr>
<td>Traditional rigid pneumatic manipulator</td>
<td>76 sec</td>
<td>-36%</td>
<td>8</td>
</tr>
<tr>
<td>INDEVA Liftronic Easy</td>
<td>48 sec</td>
<td>&lt;---&gt;</td>
<td>6</td>
</tr>
<tr>
<td>Manual (NIOSH=3,83)</td>
<td></td>
<td></td>
<td>Not allowed</td>
</tr>
</tbody>
</table>

**INDEVA Liftronic Easy is the best alternative for manual load handling**

*By EPM – Università degli Studi di Milano*