What is an **Intelligent Assist Device**

An **Intelligent Assist Device** is an **intelligent industrial manipulator** that allows the operator to handle any load with almost no effort, within the work cycle area.

Intelligent Assist Devices are based on a mechatronic technology that, thanks to sensors, controls and servoassisted motors, endows the system of great responsiveness, providing important advantages: **IADs,** in fact, allow operators to handle and position any load with much more precision, speed and ease, thus increasing productivity significantly .

They contain the controls and the technology required to assist the worker in a way that the device operates as **an extension of the worker's arm**

As specified by the **Robotics Industry Association** (USA), an **Intelligent Assist Device** or **IAD** is a "single or multiple axis device that employs a hybrid programmable computer-human control system to provide human strenght amplification, guiding surfaces or both".

IADs vs. traditional handling devices

Compared to the traditional handling devices, such as hoists or pneumatic manipualtors, IADs offer the following advantages:

- **Precise positioning** of the load as they allow for accurate and rapid movements, while traditional handling devices overtravel, bounce and require lots of little corrective movements that, added to cycle time, reduce productivity.

- **Improved ergonomics** by requiring almost no effort from the operator. Thanks to the microprocessor based control, the system recognizes the operator's intentions and supplies energy to win inertia both during acceleration and braking. IADs react to every minimum impulse by the operator much more quickly than the traditional pneumatic manipulators.

- **Speed:** IADs respond swiftly, yet smoothly to human touch, winning inertia both during acceleration and braking, amplifying operator movements. The operator notices no time lapse between the machine's sensing and its response.. IADs are not affected by the technological limitations of the traditional air manipulators and hoists, thanks to modern digital drives and servomotors.

Continuue…Intelligent Assist Devices vs. traditional handling devices

- **Intuitive control. IAD** systems compared to the conventional balancers which are preset for one or two weights, get automatically and instantly adjusted to the weight of the load, thus allowing to handle loads of varying weights without having the operator to reset the system each time.Moreover, thanks to digital technology, IADs can save the value of the load weight in order to allow direct handling **("float mode**" or "hands on the load" control) with no need to use handles or to press buttons.

- **Handiness:** traditional handling devices require unwieldy and heavy lifting tools (end effectors) while **IADs** allow for **light and compact lifting tools** which ensure **greater visibility** during handling operations and and greater ease in moving and positioning loads.

COMPARED STUDY

A study by the **Rochester Institute of Technology Center for Integrated Manufacturing Sudies** (November 20, 2002) proved that the traditional lift devices attain significantly fewer lifts per time unit than IADs both during palletizing (36,2% less) and when precision placement of the load is required.

The above mentioned study also proved that traditional lift devices, which lack of intuitive and responsive control, are associated with peak impact forces 18% to 45% larger than the average of an **IAD,** thus increasing the risk of damage to delicate products or supports during positioning.

Continuue…Intelligent Assist Devices vs. traditional handling devices

As a conclusion IADs, thanks to the above mentioned features (positioning precision, greater ergonomics, working speed, handiness and intuitive use), require far less forces by the operator than traditional handling devices (air balancers, hoists, electric or pneumatic fixed speed lift devices) and are the only material handling solution to meet today's urgent needs for increased productivity, safety, ergonomics.

Intelligent Assist Devices of the **Liftronic series** by **Scaglia S.p.A.**

1. Thanks to its feature of **automatic** and immediate **compensation of the load weight** a **Liftronic series IAD** allows the operator to handle loads with different weights or loads that vary their weight during handling (eg. emptying out containers/drums) with **no stop times** at all for turning selector or resetting the system

2. **The Liftronic series IADs** furthemore feature the "**float mode** control which allows **hands on manipulation** of the load, without actuating the control handle, **saving valuable time**. It makes the most of the natural human ability to coordinate and control motion, thus allowing for a more intuitive control and consequently for a more precise and quicker positioning of the load, especially when this has to be placed in a narrow target as gently as possible.

Continue… **Intelligent Assist Devices** of the **Liftronic series** by **Scaglia S.p.A**

The INDEVA are equipped with a special fingertip control which is an **in-line force sensing handle** providing extremely fine control of up/down speed and immediate response to the operator forces upward/downward, thus drastically reducing inertia. This means **operations are smoother, quicker and easier**.

The INDEVA feature quick coupling device for quickly interchanging end effectors and lifting different types of loads with no downtimes at all.

CONCLUSION:

SCAGLIA INDEVA has been designing and producing a wide range of electronic as well pneumatic industrial manipulators since 1975 and in 1994 introduced a series of ***Intelligent Assist Devices*** *based on programmable logic and endowed with "****float mode*** *" control and* ***sensitive handle .***

Scaglia Indeva boasts the greatest expertise worldwide in designing zero gravity systems for materials handling