

A Study of Solutions to Ergonomic Challenges in Material Handling

Presented by:

Greg Doppler - Cornerstone Products

Jim Galante – Southworth Products

Dave Lippert - Hamilton Casters

Sponsored by:



www.MHI.org/EASE

Greg Doppler

Cornerstone Specialty Wood Products





EASE

Ergonomic Assist Systems & Equipment

Trade organization made up of 11 manufacturers and a consulting group.
There are over 30 different types of products and technologies that provide real solutions to manual material handling problems



GORBEL[®]
A CLASS ABOVE



SCHMALZ



100
Years
1910-2010



resinDEK[®]
the panel of expertsSM



Mezzanine Floors by **CORNERSTONE**
SPECIALTY WOOD PRODUCTS, LLC[™]



THE ERGONOMICS CENTER
OF NORTH CAROLINA



HAMILTON[®]
Casters ★ Trucks ★ PRONTO



DEMAG
A TEREX BRAND



R-W-M CASTERS

Dalmec, Inc.



UNEX[®]
THE TRACK TO BETTER PICKING



IR Ingersoll Rand



Positech[™]
CORPORATION
The Leader in Positioning Technology



SOUTHWORTH
making work faster, safer, and easier

GORBEL
A CLASS ABOVE

HAMILTON
Containers & Trucks in PYRAMID

 **EASE**

Positech
CORPORATION
The Leader in Trucking Technology

SOUTHWORTH
making work faster, safer, and easier

Ergonomic Assist Systems & Equipment

SCHMALZ
100
Years
1874-2014

R.W.M. CASTERS

DEMAG
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resinDEK
The Power of Resin
Member
fibre by
GIBBERSTONE

UNEX
THE TRACK TO BETTER PICKING

Dalmeida, Inc.

THE ERGONOMICS CENTER
OF PENNSYLVANIA STATE UNIVERSITY

Helping solve the ergonomic challenges in the workplace

EASE is the resource for:

- Equipment solutions – 12 companies – 40 technologies
- Case studies
- Work shops
- Equipment photos – huge library
- Ergonomic trends and news articles
- Information – check lists , white papers, technical reports
- Resources – private & governmental organizations
- Presentationsand speakers to present them
- Guidelines – ergonomic best practices
- Ergonomic & productivity enhancements
- Downloads – over 80 available – FREE
- Ergonomic and safety events



Products available - solutions to material handling problems

Ergonomic research services
 Engineered Wood Flooring
 Wheels
 Casters
 Jib Cranes
 Full power stackers
 Positioners (automatic and manual)
 Manipulators
 Balancers
 Work station cranes
 Pneumatic hoists
 Electric hoists
 Tilters (portable & fixed)
 Manual turntables
 Bridge cranes
 Stainless steel gondolas
 Work positioners
 Below hook slings

Vacuum lifts (portable & fixed)
 Vacuum positioners
 Pallet inverter/rotators
 Industrial platform trucks & carts
 Modular cranes
 Pillar & wall mounted cranes
 Carton flow rack
 Intelligent assist devices
 Conveyance systems
 Vertical reciprocating conveyors
 Manual stackers
 Transfer cars
 Portal cranes
 Personnel lifts
 Two wheel hand trucks
 Powered & manual hand pallet trucks
 Industrial magnets
 Scissors lifts

Engineered Flooring

Comparisons of tibial shock
when walking on different
mezzanine surfaces

Report Prepared by:

Steve Lavender, Ph.D., Jay Metha, M.S. & Gary Allread, Ph.D.

Institute for Ergonomics

The Ohio State University



Engineered Flooring

- Studies at two Different DC's, 500,000+ S.F
- Bar grate vs. Engineered Wood Decking Platforms



Engineered Flooring

Testing – Order pickers

- How Far Do Employees Walk normally ?
- 16 Volunteers fitted with Pedometers
- Using an average of 30” per pace, employees averaged 21,000 steps = 10 miles per day!



Engineered Flooring

Testing

- Same volunteers fitted with accelerometer
- Measurements recorded on Various Surfaces at Various Walking Speeds



Engineered Flooring

Summary Ergonomics Test Results:

- Walking on Concrete vs. Engineered Wood

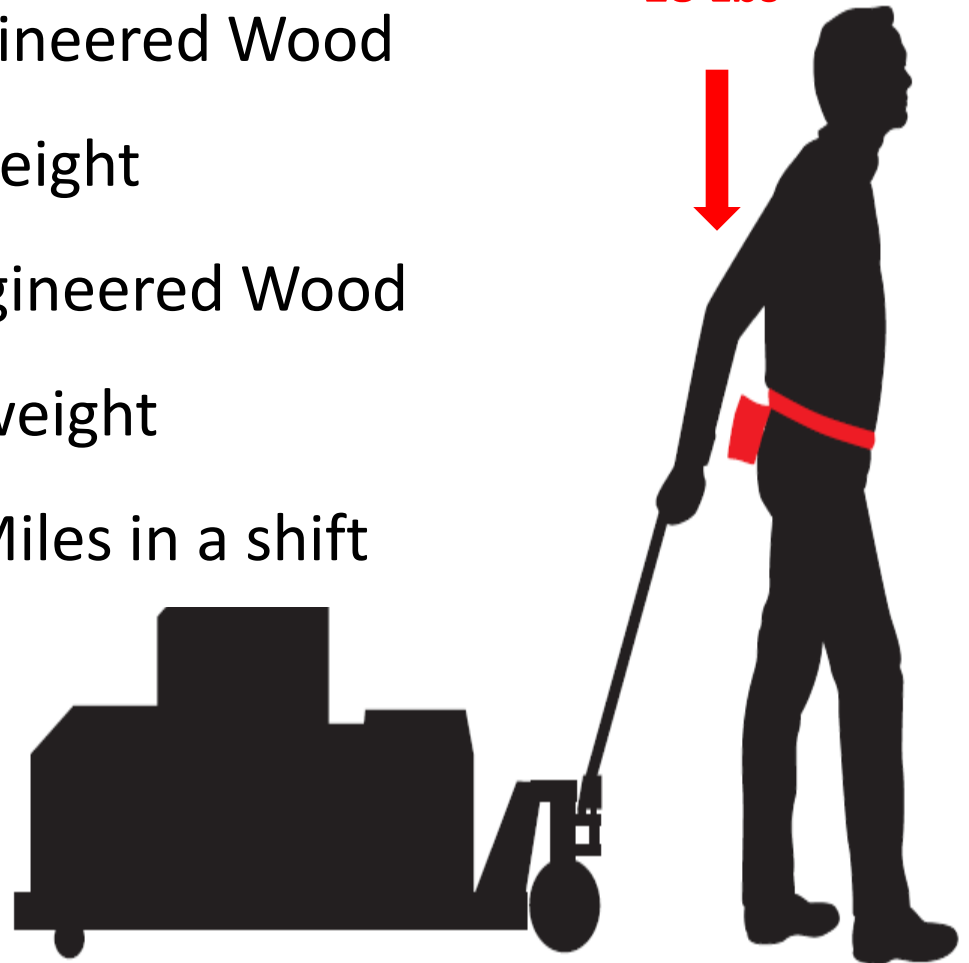
Decking adds 12 lbs of body weight

- Walking on Bar Grate vs. Engineered Wood

Decking adds 18 lbs. of body weight

- Avg. Order Picker walks 10 Miles in a shift

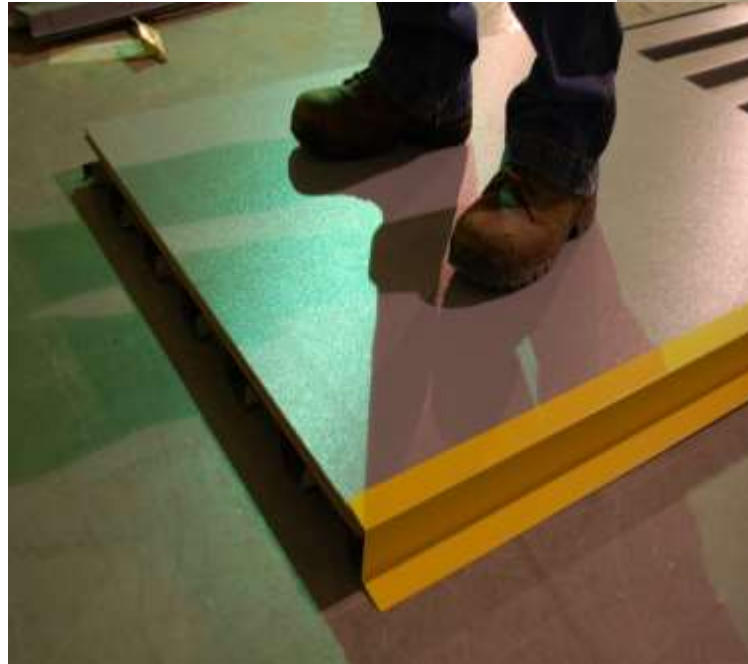
12 to
18 Lbs



Engineered Flooring

Research and data sharing leads to other new solutions

- Resilient work station surface
- Less expensive, lasts longer than a rubber mat
- Does this concept merit further development?



Ergo Riser

Freestanding workstation cranes



- Effortless and precise control
- Articulating hanger assemblies
- Enhanced structure stability – no cross bracing



Single & Double girder cranes



- Increased efficiency with handling heavy loads in tight work areas



Monorail Systems and Alumimun Modular cranes



Manipulator and Stacker cranes



■ Optimum ergonomic load handling

Pillar & Wall Mount Jib cranes



Jim Galante

Southworth Products

SOUTHWORTH

making work faster, safer, and easier



Understanding the issues



Vacuum Technology

Application

Maneuver and rotate
composite shrouds

Benefits

1 operator vs. 4 to 8 manually
Reduction in ergonomic risks



Vacuum Technology

Application:

Benefits

End of line box palletizing 55 lb. cases

Increased productivity & 30% less turnover



Vacuum Technology

Application:

Keg palletizing

Benefits:

50% productivity increase



Vacuum Technology

Application:

Palletizing & de-palletizing boxes

Benefits:

Reduction in ergonomic risks

Less worker turnover

Maintained productivity



Manipulator Technology

GLASS HANDLING – 30 to 130 lbs.



Manipulator Technology

PANEL HANDLING – 50 to 110 lbs



Manipulator Technology

MUFFLER HANDLING – 38 to 46 lbs



Manipulator Technology

LARGE CARDBOARD BOX HANDLING



Intelligent Assist Device (IAD)

precise
and
rapid
movement



Lifting & Positioning



Inexpensive stackers to transport pallet loads can also double as a positioner.

Lifting & Positioning



Positioner hold the top layer of goods in the ergonomic "magic Window" (30" to 40" from the floor)

Lifting & Positioning



Positioners respond
to the load.....

Leaving the operator to
concentrate on the task



Lifting & Positioning

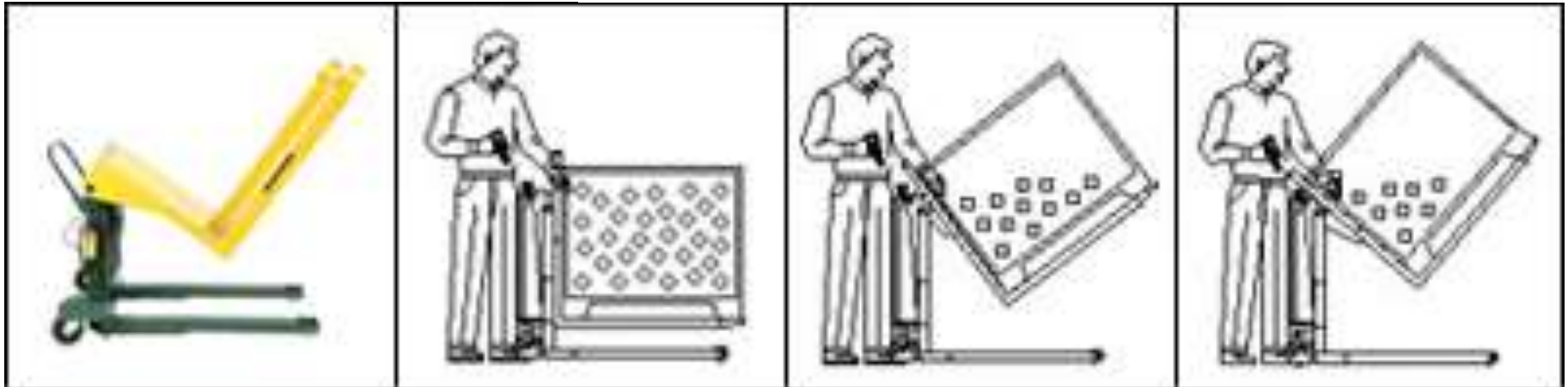


Gaining access to large assemblies both vertically and horizontally

Turntable

Lifting & Positioning

High hinge tilters are ideal for gaining access to the bottom and back of containers of containers



Lifting & Positioning



Battery powered scissors lift

Powered two wheeled truck



Solve the back problem, eliminates the wasted motion and increase productivity.

Dave Lippert

Hamilton Caster and Mfg. Co.



Wheel and Caster Technology



Pneumatic



Soft faced,
molded and
composition

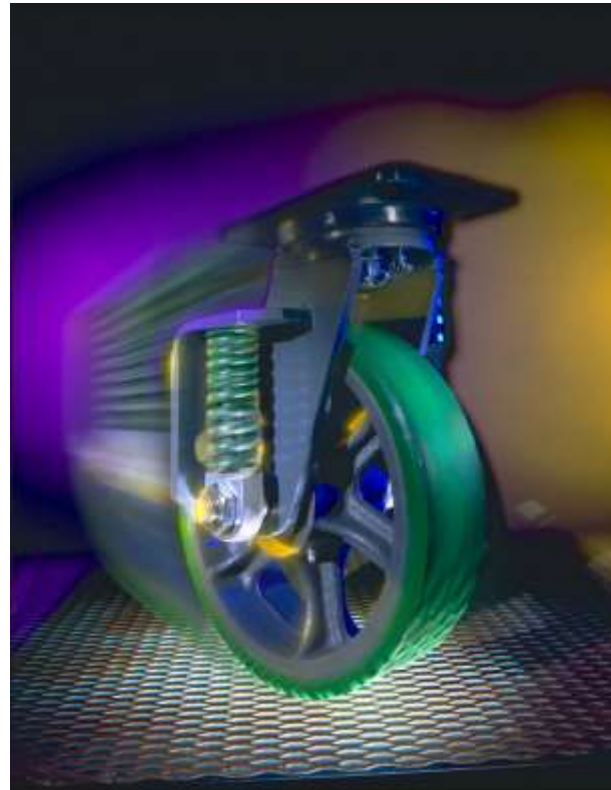


Metal

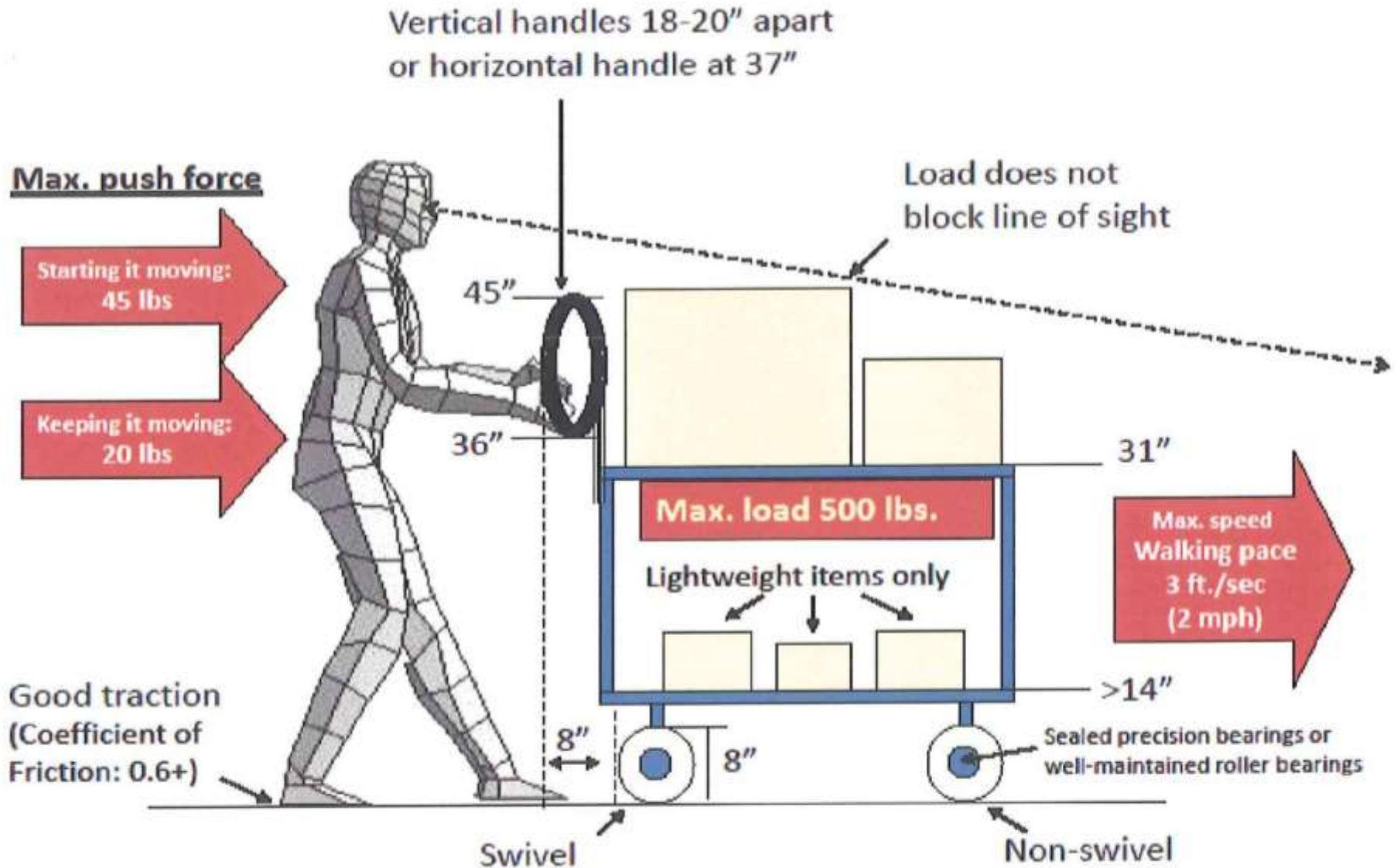
Wheel and Caster Technology



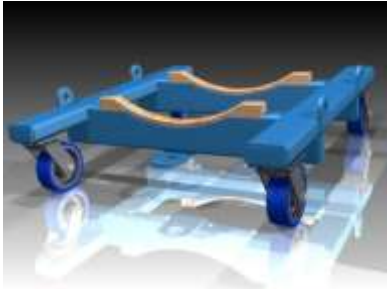
Caster styles



Wheel and Caster Technology



Wheel and Caster Technology



Light duty
specialty carts
and industrial
trucks



The right casters can:

- Reduce push-pull forces,
- Minimize rolling noise
- Protect floors
- Increase service life.



Wheel and Caster Technology



Platform elevated

Examples
of good
applications



Correct push bar height



Larger wheels



Platform too low

Examples
of poor
applications



No push bar



Wheels too small

Carton Flow / Liquor Application

Benefits

- SKU density reduces walking
- Reduces reaching and bending.
- Ergonomic presentation angle



Carton Flow / Liquor Application

Benefits

- increased density reduces walking
- Assisted pick reduces overexertion
- Improved organization for a safer workplace



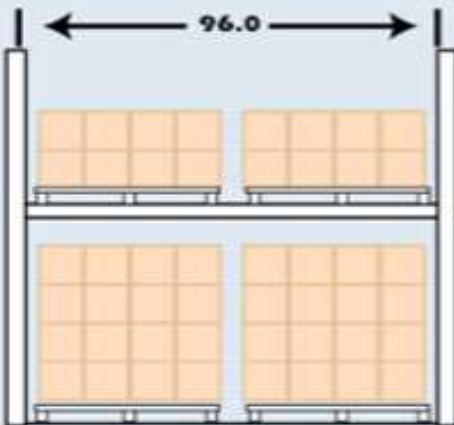
Carton Flow / Retrofit Application

ROI

Convert From Pallet Rack to Carton Flow

TYPICAL BAY

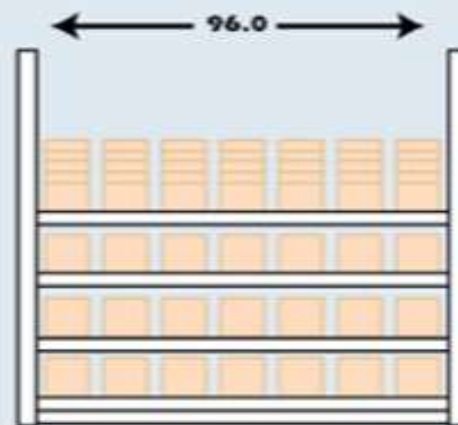
Pallet Rack Pick



4 SKU's per Bay
96 Bays
384 SKU's



Carton Flow

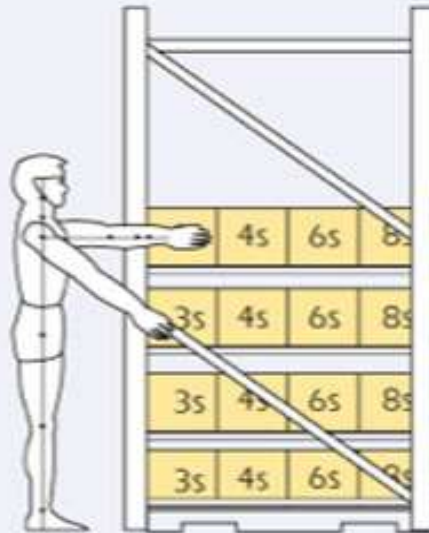


28 SKU's per Bay
14 Bays
384 SKU's

Carton Flow - Retrofit Application

Pick Rates

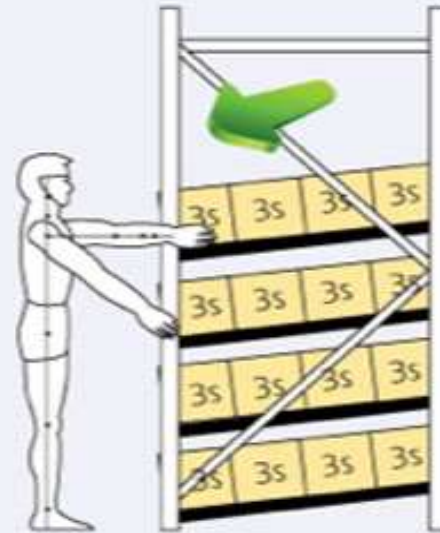
Pallet Rack
Static Storage



Average Pick

5.2 Sec

Carton Flow
Dynamic Storage



3.0 Sec

Free copy

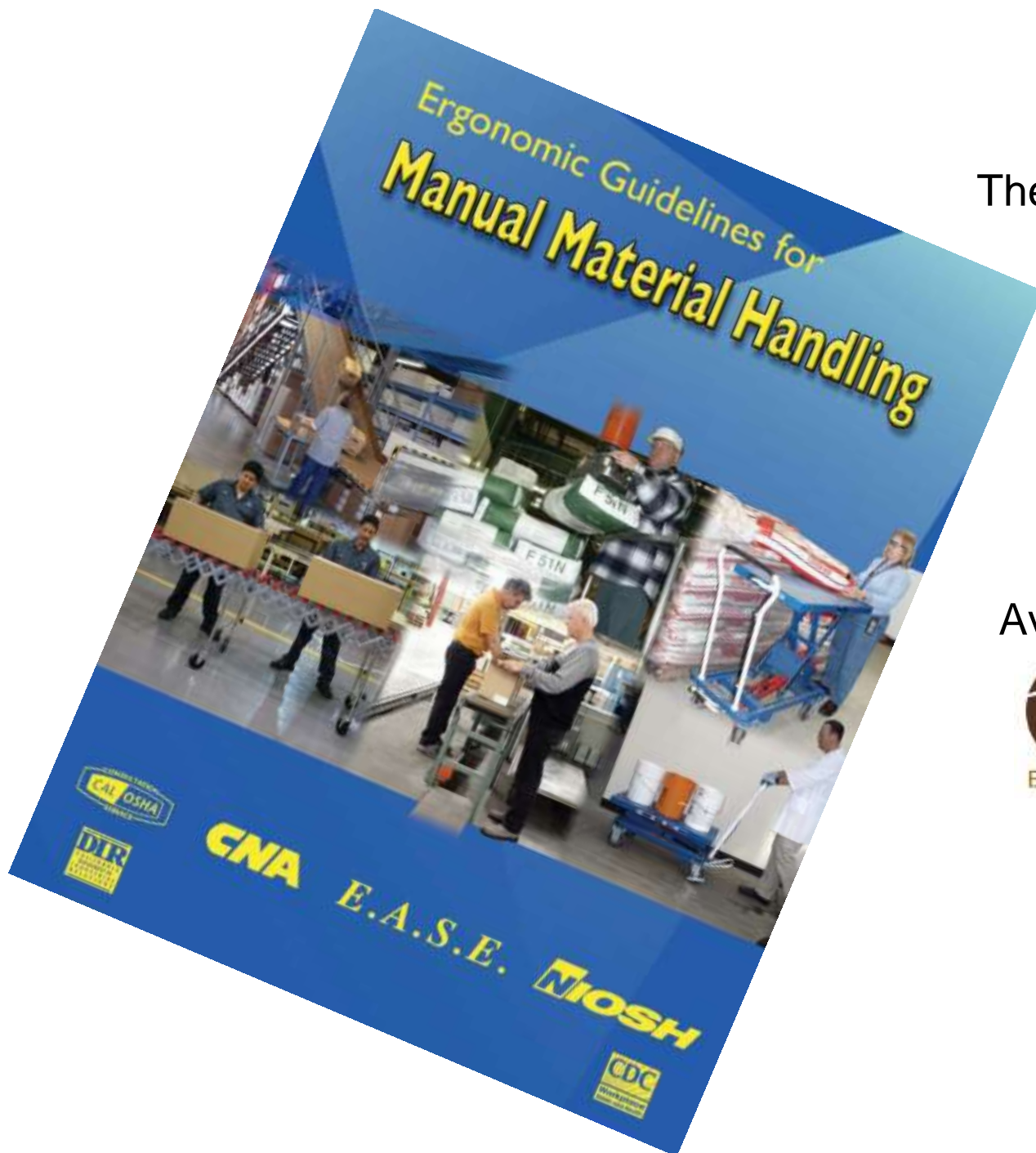
The Ergonomic Guidelines

68 pages, full process
color, cover-to-cover

Available on the website



www.MHI.org/EASE



A Study of Solutions to Ergonomic Challenges in Material Handling

Questions?

More information



Ergonomic Assist Systems & Equipment

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