

# TOTAL COMMITMENT

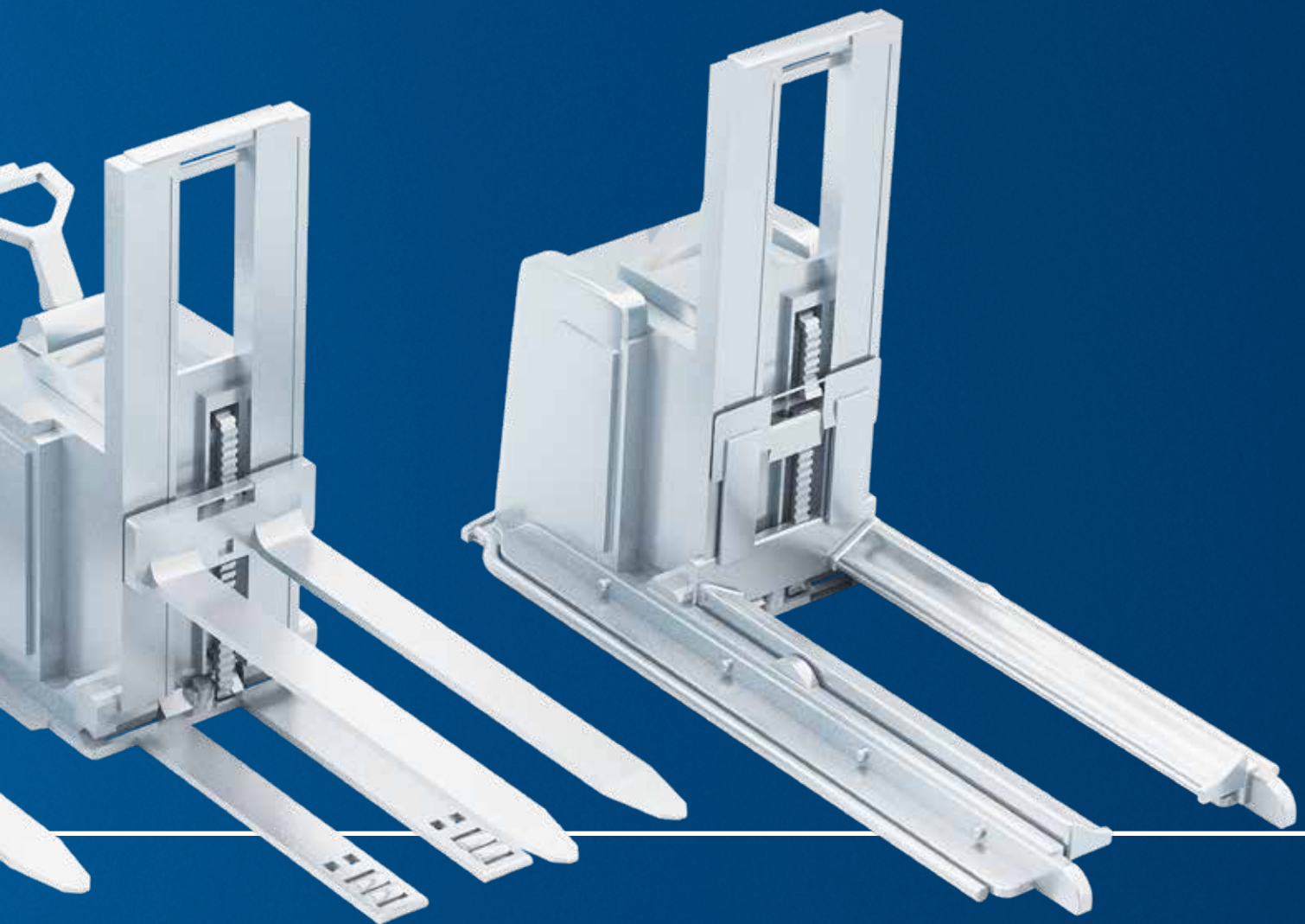
Vehicle Automation by Kollmorgen

# FOR LOWER TOTAL COSTS

# Bring out the best in your AGVs



Automated Guided Vehicles (AGVs) and mobile robots improve efficiency in manufacturing and warehousing without heavy investments. With our NDC Solutions automation kit consisting of hardware, software and navigation technologies you get a proven platform for boosting AGV performance in a broad range of industries worldwide. Turn to us for advice if you are buying or



# Why let us take care of the controls?

Because we're experts in vehicle control solutions. We have a long and successful history in this field and can provide you with everything you need for excellent vehicle control, whatever the application. The result is lower total costs—for everybody involved.

## Building AGVs

No need to develop your own controls

More time to focus on end-user application

Proven and flexible concept

Works for all applications in all segments

Support in the sales process

Access to value-adding services



Lowest total cost

## Buying AGVs

Customized application

Easy to integrate with other systems

Easy to operate, maintain and update

High availability—24/7 operation



Lowest total cost

## NDC Solutions

Services

Navigation technologies

Hardware & Software

# Benefits





# The heart of NDC Solutions

With NDC Solutions you have everything you need for excellent vehicle control whatever the application—navigation, hardware and software as well as design and service tools.

## NDC8

NDC8 is a generic, complete and scalable system that suits all types of automated guided vehicles (AGV) from small and simple to big and complex. The system consists of three parts: navigation, hardware and software.

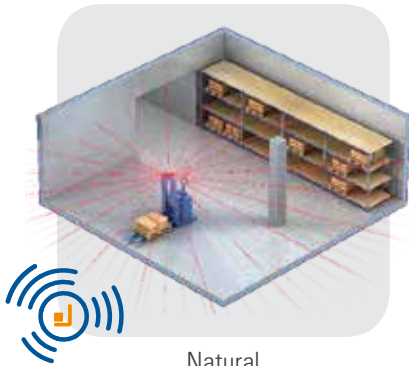
## NDC Concept

Innovation is fundamental to Kollmorgen, together with continuous improvements in quality, delivery and cost. NDC Concept is the umbrella term for Kollmorgen's research and development within vehicle automation kits for automated guided vehicles. The idea is to regularly come up with new ideas on navigation, hardware, software and services to integrate into the NDC8 platform.

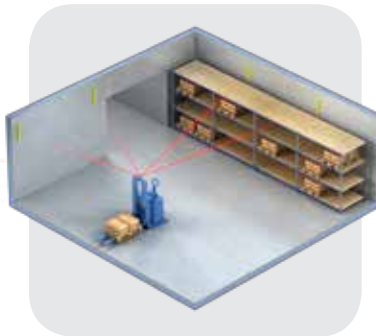


NDC8 works with all established navigation technologies. There is support for a combination of technologies, so-called multi-navigation, which is good if you want to serve a storage space using one type of navigation and a production area using another.

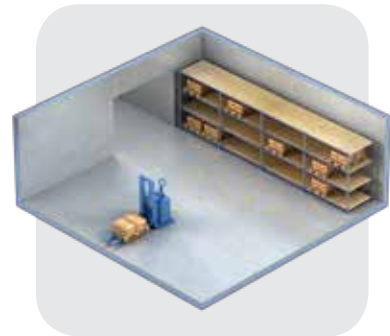
# Navigation technologies



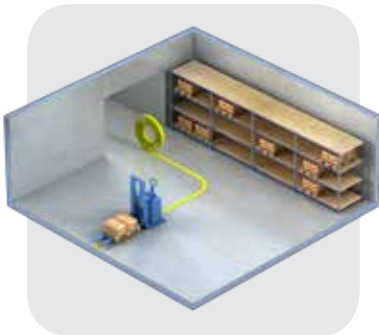
Natural



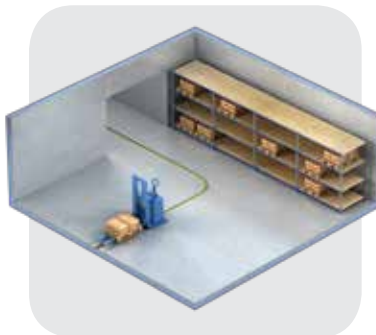
Laser



Spot



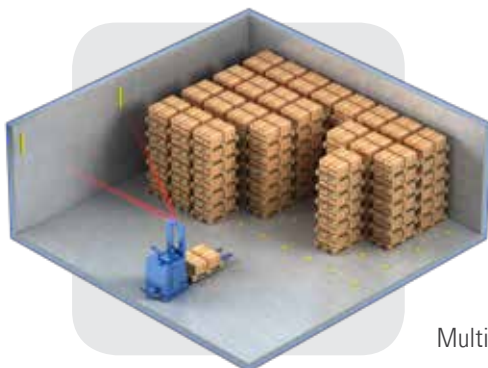
Magnetic tape



Inductive wire



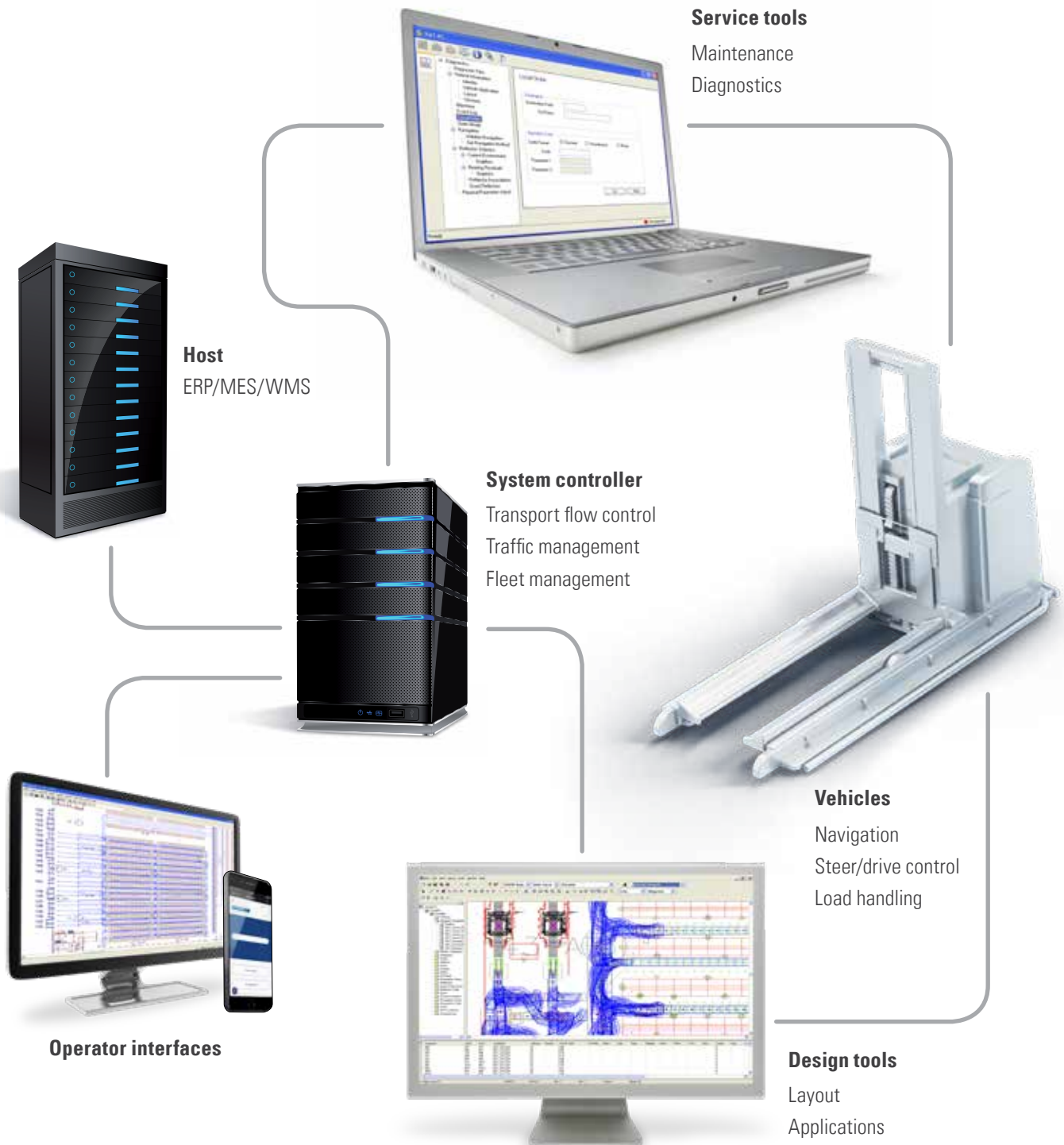
Barcode



Multi-navigation

NDC8 gives you access to a set of efficient design and service tools. The design tools help you outline all kinds of layouts as well as system and vehicle applications. You also have access to service tools for diagnostics and maintenance.

# Software







**Vehicle controllers**



**Safety sensors\***



**Touch Displays**



**Encoders\***



**Drives**



**Manual control device**



**Navigation sensors**



**Vehicle I/O\***

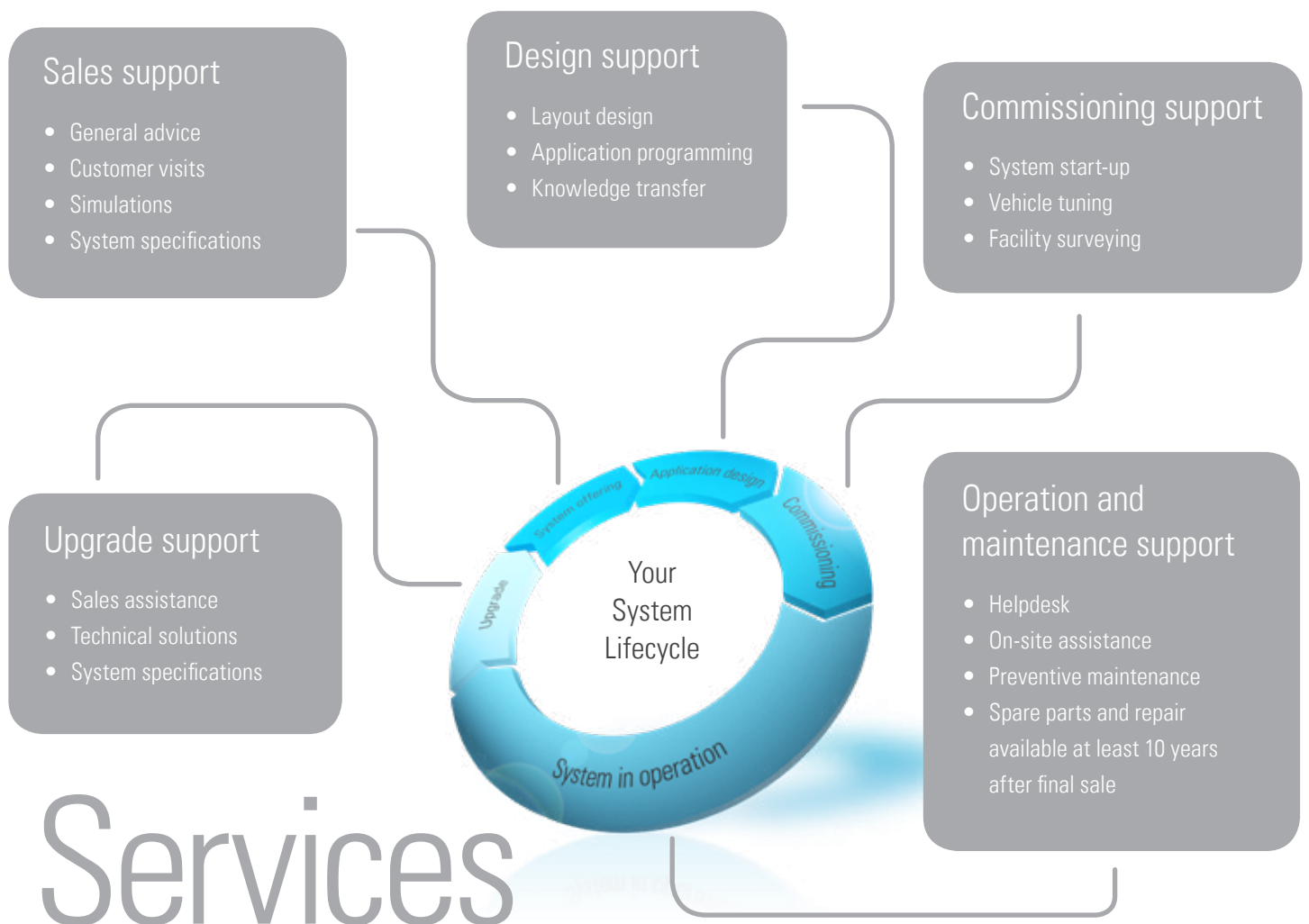
NDC8 hardware consists of powerful and reliable components in a number of areas. All components are designed for tough environments where vibrations, dust, moisture and temperature variations are all part of daily life.

# Hardware

# Services that last a lifetime

End-users require high uptime, efficient daily operations and applications that are easy to change. We help you meet these demands with NDC Services. Our service portfolio consists of training service, support service and consulting service.

- **Training services**—basic, advanced and tailor-made courses; at our training facilities, your site or via the internet
- **Support services**—we give answers and solutions to your requests
- **Consulting services**—our senior consultants help you with sales and design



# Common areas of use



Automotive



Ceramics & Tiles



Container Transportation



Food & Beverage



Distribution Centers



Flat Panel Display & Electronics



Hospital



Paper & Printing



Steel & Heavy Goods

## Partner you can trust

With an installed base of 20,000 vehicles, Kollmorgen is the number one provider of vehicle automation kits.



World's first automobile production plant with driverless vehicles, Volvo, Sweden, 1972.



World's first laser-guided vehicle, Tetra Pak, Singapore, 1990.



World's first Pick-n-Go system, Marktkauf, Germany, 2007.



World's first driverless vehicle with 16 controlled wheels, Posco Steel, South Korea, 2009.



**KOLLMORGEN**

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[www.kollmorgen.com/agv](http://www.kollmorgen.com/agv)