

# Smart Handling Education

## AGV Training Classes

Learn how to operate, program, make path changes, and maintain your Automatic Guided Vehicle (AGV) Systems



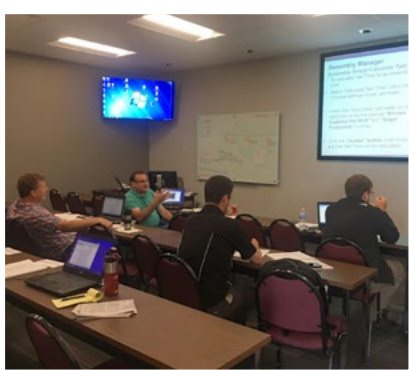
# DAIFUKU

# Smart Handling Education

Automatic Guided Vehicle (AGV) Training Classes allow users to take control and maintain their systems. Our hands-on classes will teach students about the features of each software tool available. Course exercises allow for practice programming, modifying paths, and monitoring system/vehicle performance.

Classes are available at our Daifuku Airport & AGV Innovation Center in Novi, Michigan. This modern facility has been specially designed for AGV training, with classroom and a variety of on-site AGVs for student hands-on exercises. Students run the equipment on test tracks and are instructed by experienced educators with in-depth knowledge of AGVs.

Selected courses are also offered at customer sites. See the course descriptions for availability.



# AGV Training Classes

The following classes enhance knowledge of the features and controls systems for the AGV product lines. Technicians, maintenance people, and engineers will be able to manage and maintain an AGV system after completing these classes.

| On-site Training Classes   | Length | Price         | Class Size Min/Max | Prerequisite            |
|--|--------|---------------|--------------------|-------------------------|
| • Basic Maintenance and Troubleshooting  | 2 days | \$8,000‡‡     | Up to 8            | None                    |
| • AGV Awareness Training Multiple Sessions per day   | 1 day  | \$5,400‡‡     | Up to 12           | None                    |
| • For additional days**  | 1 day  | \$1,800‡‡     |                    |                         |
| ‡ Travel expenses will be quoted for customer site training<br>‡ Price per class<br>** Additional days for customer site classes can only be added when a base class is ordered. Additional days must immediately follow the base day(s) with no gaps. |        |               |                    |                         |
| Daifuku Airport & AGV Innovation Center Classes - Novi, MI   | Length | Price Min/Max | Class Size         | Prerequisite            |
| • CartTools Programming  | 2 days | \$3,000†      | 3/6                | None                    |
| • Introduction to SAM Training (System Automation Manager)   | 2 days | \$3,000†      | 3/6                | None                    |
| • CartTools Programming & SAM Operators Training   | 3 days | \$4,000†      | 3/6                | None                    |
| • Advanced AGV Programming and System Configuration  | 5 days | \$7,200†      | 3/6                | Proficient with AutoCAD |
| † Price per person   |        |               |                    |                         |



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# Here's What Customers & Industry Experts are Saying about Daifuku's AGV Training Classes

“With little previous experience with the AGV system, I was very pleased with the information covered in this course. The 3 days I've spent here has saved me months of stumbling around trying to learn the system on my own and still would not have all the knowledge obtained. I feel better going back to my plant with being able to watch our system and mentally understand what is going on with the software in the background.

It is also very helpful to learn the terminology to be able to discuss the system intelligently with Tech Support if problems would arise.

*Just an excellent, must-have first class.*”

Carl G. Blaylock | Project Engineer | Southeastern Container



“The advantage of being able to just pick up the magnetic tape and change the layout in a matter of minutes allows us to change an entire line over a weekend. When you look at the bang for the buck, you can't beat these SmartCarts.”

Dave Werkheiser | Manufacturing Engineer | John Deere

“With the carts, all we have to do is prep the floor and put down some magnetic tape to reconfigure the path. We can do that over a weekend or a holiday shut down.”

Larry MacAdam | Materials Industrial Engineer | CAMI

“The carts are safe, simple and easy to set up. They have a lot of potential for almost every industry, and they're relatively inexpensive.”

Nidamaluri Nagesh | Advanced Manufacturing Engineer | General Motors

“I like the flexibility of the presentation format where you had short content but repeated over multiple opportunities to pick up the content. This was in regard to the Operator Training that you performed on-site. The test track that you set up at your facility was definitely what I would call a “secret weapon”. The test track was outstanding.”

Matthew Ryan | Engine Test Senior Manufacturing Engineer | Cummins Inc.

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# Basic Maintenance and Troubleshooting

## Course Description

This course teaches preventative maintenance procedures to enhance the performance and longevity of AGV systems and vehicles. Included in this training are: basic mechanical / electrical functions, component review and configuration, vehicle manuals, and troubleshooting techniques.

## Overview

- AGV Introduction
  - Automatic/manual movement
- Operator Controls
  - Safety components
- Component Overview
  - Vehicle power controls and safety mechanisms
  - CCU/VCC4 board
  - Radio
  - Drive motor controller
  - Sensors
  - Steering components
  - Speed control components
- Electrical Prints
  - Review the user friendly AGV electrical schematics
- Recommended Preventative Maintenance Schedules
  - Weekly, monthly, and annual procedures
- Basic Troubleshooting and Error Recovery Techniques
  - Input/output sensor and switch issues
  - System and AGV communication problems
  - Guidance errors

## Who Should Attend

Mechanical/Electrical Technicians/  
Engineers and Maintenance  
Personnel

## Prerequisites

None

## AGV Guidance Types

All Types

## Location

Customer Site



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# AGV Awareness Training

## Course Description

This course is for employees who work near or interact with your AGVs. This training includes safety and basic operations. If needed, we encourage you to hold multiple sessions to cover all shifts. Many customers purchase this class with Basic Maintenance and Troubleshooting Training.

## Overview

- Introduction to AGV Technology
- General overview of all safety components and safe operating practices
- Automatic/Manual operation
- Operator Controls
- HMI (Human Machine Interface) Screen

## Who Should Attend

Personnel who work near or interact with the AGVs

## Prerequisites

None

## AGV Guidance Types

All Types

## Location

Customer Site





# CartTools Programming

## Course Description

This course teaches you to use Daifuku's CartTools software, which directs the movement of your AGVs. This class covers functionality and best practices to help achieve a safe and automated environment. Students will be given hands-on exercises, which allow them to create, change and troubleshoot CartTools commands.

## Overview

- How each command works, and best practices
- Program commands and test on onsite AGVs that have the same navigation type as your system
- Exercises - how to program:
  - o A pick or a drop station
  - o A charging station
  - o Turns/ Forks in the path
  - o Special Options
  - o Destinations
- Files generated by CartTools
- Troubleshooting

## Who Should Attend

Personnel who make simple changes to an AGV system

## Prerequisites

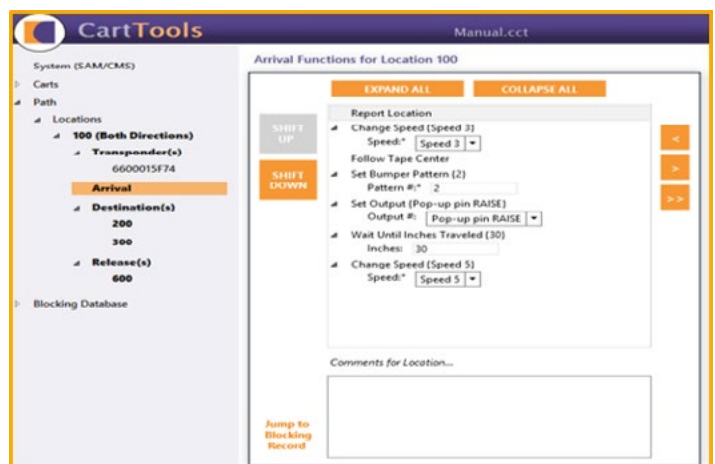
None

## AGV Guidance Types

Magnetic Tape Guidance

## Location

Daifuku Airport & AGV Innovation Center – Novi, Michigan



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# Introduction to System Automation Manager (SAM) Training

## Course Description

This course introduces SAM, a robust traffic control system that manages the AGV's movement. Students will learn about the basic architecture, as well as file management and SAM system types. Students will review SmartView, which is SAM's graphical user interface, allowing user to interact with both vehicles and the entire system. Students gain a deep understanding of the reporting feature, to both identify trends and issues that may affect the efficiency of the system. In addition, students will learn how to personalize their dashboards, from Zoom Views to Key Points of Interest (KPIs).

## Who Should Attend

Personnel who work directly with SAM, monitoring the AGVs and system, pulling reports, analyzing trends, seeking inefficiencies in the system.

## Prerequisites

None

## AGV Guidance Types

All Types

## Location

Daifuku Airport & AGV Innovation Center – Novi, Michigan





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# CartTools Programming and System Automation Manager (SAM) Operators Training

## Course Description

This course combines CartTools Programming and SAM (System Automation Manager). CartTools software is used to program the AGV's commands and operations. SAM is a robust traffic-control system that manages AGV movement and operation. Hands-on exercises allow students to create, change, test and troubleshoot a system.

## CartTools Programming Functions

- How each command works and best practices
- Blocking/traffic management concepts
- SAM controlled release types

## SAM System Review

- System architecture
- Hot Backup
- Continuous communication
- System startup/shutdown
- Graphical User Interface - Smart-View
  - o Monitoring system & vehicle status
  - o Operator interaction with vehicle fleet
- Alarms and Reports
- File Management – CartTools and SAM
- Introduction to SAM System Applications
  - o Transport management
  - o Assembly management

## Program a System

- Students will program a system using both CartTools and SAM. They will test their program on on-site AGVs that have the same navigation type as their system.
- Exercises include how to program:
  - o A pick or a drop station
  - o A charging station
  - o Turns/ Forks in the path
  - o Special options
  - o Destinations
  - o Blocking
  - o Releases
  - o Troubleshooting

## Who Should Attend

Personnel who make simple changes to an AGV system. System Designers / Maintainers of AGV systems.

## Prerequisites

None

## AGV Guidance Types

Magnetic Tape Guidance

## Location

Daifuku Airport & AGV Innovation Center – Novi, Michigan



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# Advanced AGV Programming and System Configuration Training

## Course Description

This course combines CartTools programming, AGVTools programming, Vehicle Configuration, Path Design utilizing AutoCAD and SAM (System Automation Manager). CartTools and AGVTools software is used to program the AGV's commands and operations. SAM is a robust traffic control system that manages AGV's movement. Hands-on exercises will allow students to create, change, test, and troubleshoot their path design and system.

## Overview

- Programming and Operations
  - o CartTools programming best practices
  - o Traffic management techniques
  - o SAM SmartView operations
- Path Design
  - o Utilizing AutoCAD and AGV tools software
  - o Create and modify AGV paths
  - o Review tracking and generate database tool
- File Management
  - o File Management including vehicle setup utility and downloading files

## Who Should Attend

Personnel who make simple changes to an AGV system. System Designers/ Maintainers of AGV systems.

## Prerequisites

Proficiency in AutoCAD

## AGV Guidance Types

Inertial, Laser, and Natural Feature Navigation

## Location

Daifuku Airport & AGV Innovation Center – Novi, Michigan





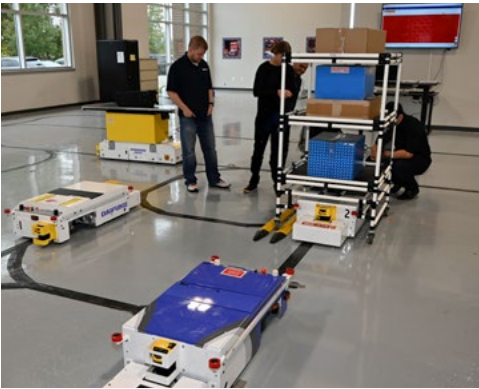


## TO SCHEDULE CLASSES

Contact Customer Service for more information or to schedule a class.

Phone: 1-877-529-3221

Email: [training@daifukuna.com](mailto:training@daifukuna.com)



# DAIFUKU

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