AGVs systems (Automatic Guided Vehicles)  
To automate the internal logistics
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<th>ASTI</th>
<th>AGV system</th>
<th>AGV range</th>
<th>AGV system in study</th>
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</table>

![Image of AGV systems](image1.jpg)

- **ASTI**: Automatismos y Sistemas de Transporte Interno S.A.U.
- **AGV system**: Advanced Guided Vehicle systems
- **AGV range**: Range of AGV systems
- **AGV system in study**: Current AGV system under study

www.asti.es/blog
The company
STUDY, ENGINEERING AND MANUFACTURE OF MADE-TO-MEASURE SOLUTIONS. IMPLEMENTATION OF TURNKEY PROJECTS. corrective, preventive and remote MAINTENANCE SERVICES.

• Company established in Burgos in November 1982.

• Different kind of solutions from Burgos to the South of Europe and South America.

• All kind of sectors (automotive, aeronautics, alimentary, cosmetics, pharmaceutics,…)
### ASTI

<table>
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MADE TO MEASURE SOLUTIONS FOR INTERNAL LOGISTICS

“CUSTOMER SATISFACTION IS OUR DRIVING FORCE”
• Distinguished as “Company of the year” by Metal federation of Burgos, in December 2000.

• “Innovative product 2008” award, by EXCyL foundation at the II regional meeting of innovation in Castilla y Leon.

• “Excellence in logistics” award from ICIL Foundation 2009.

• “Company from Burgos Socially involved” award by Burgos Chamber of Commerce, 2010.
What is an AGV system?
“Better than words… an image….”
AGVs system diagram:

- ERP, MES, WMS, etc…
- HOST
- Order manager
- Traffic control
- Data collecting on plant
AGVs system architecture sample:

**RED DE DATOS CAMPOFRIO**

- **AGV 1**, **AGV 2**, **AGV 3**, **AGV 4**
- **PLC SIEMENS S7-300**
  - Línea de enlazado
  - Línea de paletizado 11
  - Línea de paletizado 3
  - Línea de paletizado 1

**Cuadro de captura de datos**
- Estación de platos de palets vacíos
- Estación de palets sotos de la zona anexa
- Correos vacíos procedentes de la máquina de hipervelocidad
- Carros llenos procedentes de la zona anexa

**Cuadro de captura de datos**
- Estaciones de las líneas de paletizado 8 y 6
- Estaciones de entrada y salida de la máquina de hipervelocidad

**ARQUITECTURA GENERAL DEL SISTEMA**
Wide range of possibilities
MULTIPLE PRODUCTS DIVIDED INTO:

- **Vehicle:**
  - Standard
  - Light
  - Special loads

- Optional

**Vehicle:**

- Standard
- Light
- Special loads
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 2,400 Kg.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 2,400 Kg.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 2,000 Kg.
Maximum height: 5.4 m.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 1,200 Kg.

Maximum height: 4.5 m.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 1,000 Kg.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 2,500 Kg.
Maximum height: 10 m.
STANDARD VEHICLE:

- Tow AGV
- Pallet AGV
- Stacker AGV
- Counterbalanced AGV
- Order pickers AGV
- Reach AGV
- Very narrow aisle AGV

Maximum weight: 2,500 Kg.
Maximum height: 11.5 m.
## LIGHT VEHICLE:

- Tow
- Integrated tow
- Carrying

### Gama de AGVs

<table>
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<tr>
<th>Standard</th>
<th>Light</th>
<th>Special loads</th>
</tr>
</thead>
</table>

[www.asti.es/blog](http://www.asti.es/blog)
LIGHT VEHICLE:

- Tow
- Integrated tow
- Carrying

Maximum weight: 250 Kg.
LIGHT VEHICLE:

- Tow
- Integrated tow
- Carrying

Maximum weight: 250 Kg.
LIGHT VEHICLE:

- Tow
- Integrated tow
- Carrying

Maximum weight: 150 Kg.
SPECIAL LOADS:

- Made to measure

Standard | Light | Special loads
SPECIAL LOADS:

- Made to measure

Maximum weight: 20 Tons.
MULTIPLE PRODUCTS DIVIDED INTO:

- Vehicle

- Optional
  - Navigation systems
  - Charging systems
  - Safety systems
  - Other complements

- Specific solutions

OPTIONALS:

- Navigation
- Charging
- Safety
- Others
Multiple guiding systems:

- Wired.
- Magnetic.
- Optic.
- Shapes.
- Laser.
- Dual (laser/ magnetic); (laser / shapes).
OPTIONALS

- Navigation systems
- Charging systems
- Safety systems
- Other complements

All kind of batteries.

Recharging:

- Hot recharging.
- Manual interchange.
- Automatic interchange.
OPTIONALS

- Navigation systems
- Charging systems
- Safety systems
- Other complements

Multiple safety systems:

- Security laser.
- Photocells.
- Bumpers.
- Acoustic and light signals.
- Emergency stop.
OPTIONALS

- Navigation systems
- Charging systems
- Safety systems
- Other complements

All kind of forks:
- Double.
- Triple.
- Clamps for reels.
- Special length.

Different height masts.

Stabilizing load.

Other complements to enable the load convey.
MULTIPLE PRODUCTS DIVIDED INTO:

- Vehicle
- Optionals
- Uses
  - Piece transport
  - Pallet transport
  - Reel transport
  - Great weight transport
  - Trolleys
- ......

USES:

- Pieces
- Pallets
- Reels
- Great weight
- Trolleys
USES:

- Piece transport
- Pallet transport
- Reel transport
- Great weight transport
- Trolleys
- ....
USES:

• Piece transport
• Pallet transport
• Reel transport
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- ......
USES:

- Piece transport
- Pallet transport
- Reel transport
- Great weight transport
- Trolleys
- ……
USES:

- Piece transport
- Pallet transport
- Reel transport
- Great weight transport
- Trolleys
- ......

**TO AUTOMATE ALL KIND OF INTERNAL LOGISTIC FLOWS.**

- **Material transportation** between production line and warehousing area. *(raw material supply, finished products and semi finished products)*
- Different productive areas **linkage** *(finished products and semi finished products)*.
- Pallet transportation among **end of lines**. *(palletizers robots and film wrapping)*.
- **Picking** support.
- Automatic **truck** loading.

For all kind of SECTORS, INDUSTRIAL ONES *(food, automotive, pharmacy, hygiene, etc.)* as well as SERVICES *(banks, hospitals, etc.)*
What do I need?
1. To have defined, the **flow to automate**. The less manual vehicles working with AGVs, the better.

2. **Load** description:
   a. Pallet measures/ handling tools
   b. Load measures (interior, out limits)
   c. Weight

3. **Journey frequency** description.

4. **Duties** to carry out definition:
   a. Put/ pick up in/from stackers (conventional, narrow aisle, etc…)
   b. Work with robots, transport lines...
5. **How the instructions are generated?**:
   a. Communication with data collecting system
   b. Communication with external computing system (SAP, JD Edwards, Navision, …)

6. **After sales services** definition (maintenance, future needs to cover adaptation)

7. Consultancy service to better define the requirements of the AGV system, to fulfill all the needs.
Thanks for your attention