CTI in the Aviation Industry

Engine Handling Systems

▼ in Maintenance Centers

▼ in Engine Test Centers
CTI - Gantry systems in maintenance centers

CTI engine handling installations in maintenance centers comprise:

- Entry stations
- Hospital bays
- Disassembly lines
- Reassembly lines
- Hoist carriers
- Transfer bridges
- Lift stations

CTI - Carrier and monorail systems in engine test centers

CTI engine handling installations in test centers comprise:

- CTI-patented monorail tracks
- Hoist carriers
- Engine carriers
- Slewing cranes
- Turntables
- Parking lanes
- Preparation work stands
- Work platforms for test runs
**Engine handling**

CTI installations for engine handling comprise:

- Transport and handling systems for engines
- Work platforms for engine test runs
- PLC-operated engine orientation and alignments
- Handling devices and jigs for engine work stations

**Engine carrier details**

- Carrier heads type WDT
- CTI-patented track (heavy duty monorail)
- Auto - Grab
- Track suspensions
- Twin hoist carrier
- Engine adapter
**Work stations**

CTI work stations are equipped with:

- Height adjustment for ergonomic work performance
- 2 hoist carriers for material lifts

**Parking lanes**

Parking lanes are installed in the preparation area for engine test runs.

**Slewing cranes**

The slewing crane provides interconnection between:

- Monorail at test cell entry
- Individual park spurs of the preparation hall
Stationary turntables

Work platforms inside test cells

Work platforms grant access to engines between running periods.

- Lifting capacity: 3 tons - 16 tons
- can be carried in lowered position
- Platform dimensions: 14m x 8m

Platform flushes with floor surface during engine test runs
CTI-Move engine carrier - with omnidirectional mobility

Positioning jig with 16 axis:

- liftable, tiltable, rotatable, etc.
- carrier capacity: 12 tons

Designed for:
GEnx-series (B787 Dreamliner)

For inhouse transport, positioning and final assembly

Positioning table on top
(X-/Y- adjustments +/- 250mm - 1mm steps)

- carrier capacity: 12 tons
- engine adapter interchangeable

Designed for:
TRENT 500/700/900/1000 series

For inhouse transport and positioning
Recent references

2009/2010
Air France PIM 2
Paris/France

CTI bi-rail gantry system comprising:

- Entry station
- Hospital bays
- Disassembly work stations
- Reassembly work stations
- Hoist carriers
- Transfer bridges
- Lift stations

Engines served:
CFM56 series/CF6/GE90

2009
Turkish Engine Center - TEC
Turk. Technics-Pratt&Whitney JV
Istanbul/Turkey

CTI bi-rail gantry system comprising:

- Entry station
- Hospital bays
- Disassembly line
- Reassembly line
- Hoist carriers
- Transfer bridges

Engines served:
CFM56 series/V2500
2008
MTU Engine Maintenance GmbH
Hanover/Germany

CTI-patented monorail carrier system comprising:

- Patented monorail tracks
- Twin hoist carriers
- Transfer stations
- Crane bridges
- Slewing crane
- Swivel beam

Engines served:
CF6series/CFM56 series
PW2000/PW6000/V2500 series

2007
N3-EOS Engine Overhaul Services
(Lufthansa/RollsRoyce JV)
Arnstadt-Erfurt/Germany

CTI-patented monorail carrier system comprising:

- Patented monorail tracks
- Twin hoist carriers
- Transfer stations
- Crane bridges
- Slewing crane
- Swivel beam

Engines served:
TRENT 500/700/900 series
## References

<table>
<thead>
<tr>
<th>Company</th>
<th>City, Country</th>
<th>Facility Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air France PIM2</td>
<td>Paris, France</td>
<td>Maintenance Center</td>
<td>Bi-rail gantry system with engine carriers and transfer bridges constituting entry station, hospital bay, disassembly and reassembly line, lift stations</td>
</tr>
<tr>
<td>Turkish Engine Center - TEC</td>
<td>Istanbul, Turkey</td>
<td>Maintenance Center</td>
<td>Bi-rail gantry system with engine carriers and transfer bridges constituting entry station, hospital bay, disassembly and reassembly line</td>
</tr>
<tr>
<td>MTU Engine Maintenance GmbH</td>
<td>Hanover, Germany</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slewing cranes for orientation changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Swivel beam</td>
</tr>
<tr>
<td>N3-EOS Lufthansa - RollsRoyce JV</td>
<td>Arnstadt, Germany</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slewing cranes for orientation changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Swivel beam</td>
</tr>
<tr>
<td>SNECMA Villaroche, France</td>
<td></td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>Thai Airways</td>
<td>Bangkok, Thailand</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>GE Aircraft Engine Services</td>
<td>Nantgarrow, UK</td>
<td>Test Center</td>
<td>CTI-patented monorail track and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slewing cranes for orientation changes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Swivel beam</td>
</tr>
<tr>
<td>Egypt Air</td>
<td>Cairo, Egypt</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>Jordan Airmotive</td>
<td>Amman, Jordan</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>Jordan Airmotive</td>
<td>Amman, Jordan</td>
<td>Maintenance Center</td>
<td>Monorail crane system with engine carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Work stations with hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer bridges</td>
</tr>
<tr>
<td>Ethiopian Airlines</td>
<td>Addis Ababa, Ethiopia</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td>Garuda</td>
<td>Jakarta, Indonesia</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>Finnair</td>
<td>Helsinki, Finland</td>
<td>Test Center</td>
<td>CTI-patented monorail tracks and twin hoist carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
<tr>
<td>Sabena</td>
<td>Brussels, Belgium</td>
<td>Test Center</td>
<td>CTI-patented monorail carrier systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer stations with crane bridges</td>
</tr>
</tbody>
</table>