

March. 2006

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 **Marubeni**  
CORPORATION

**KOBELCO**

Automated Guideway Transit System

2744

# **KOBELCO AGT System**

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**Yurikamome Tokyo**



**KOBE STEEL, LTD.**

Advanced Transit Systems Department

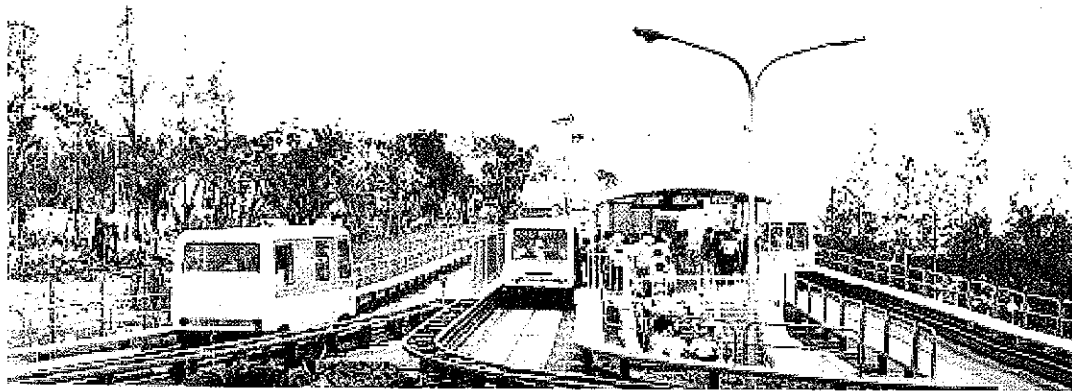
Machinery & Engineering Company

Tel. +81-3-5739-6551

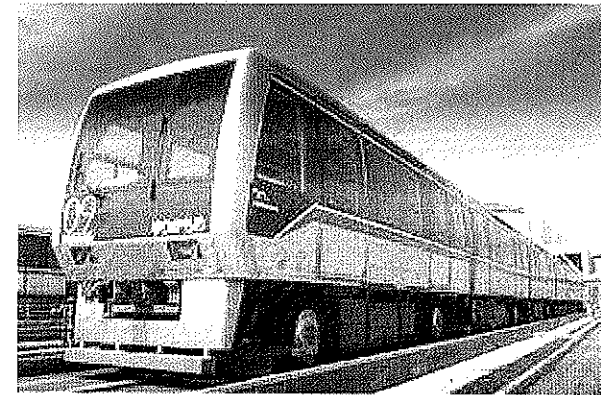
## *AGT System : In Brief*

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- A medium capacity, unmanned, guide-way transit, on rubber tires
- The first AGT system in Japan: EXPO'75 in Okinawa
- Current AGT projects in Japan: 'Yurikamome' extension in Tokyo, 'Toneri' line in Tokyo and 'Port liner' extension in Kobe

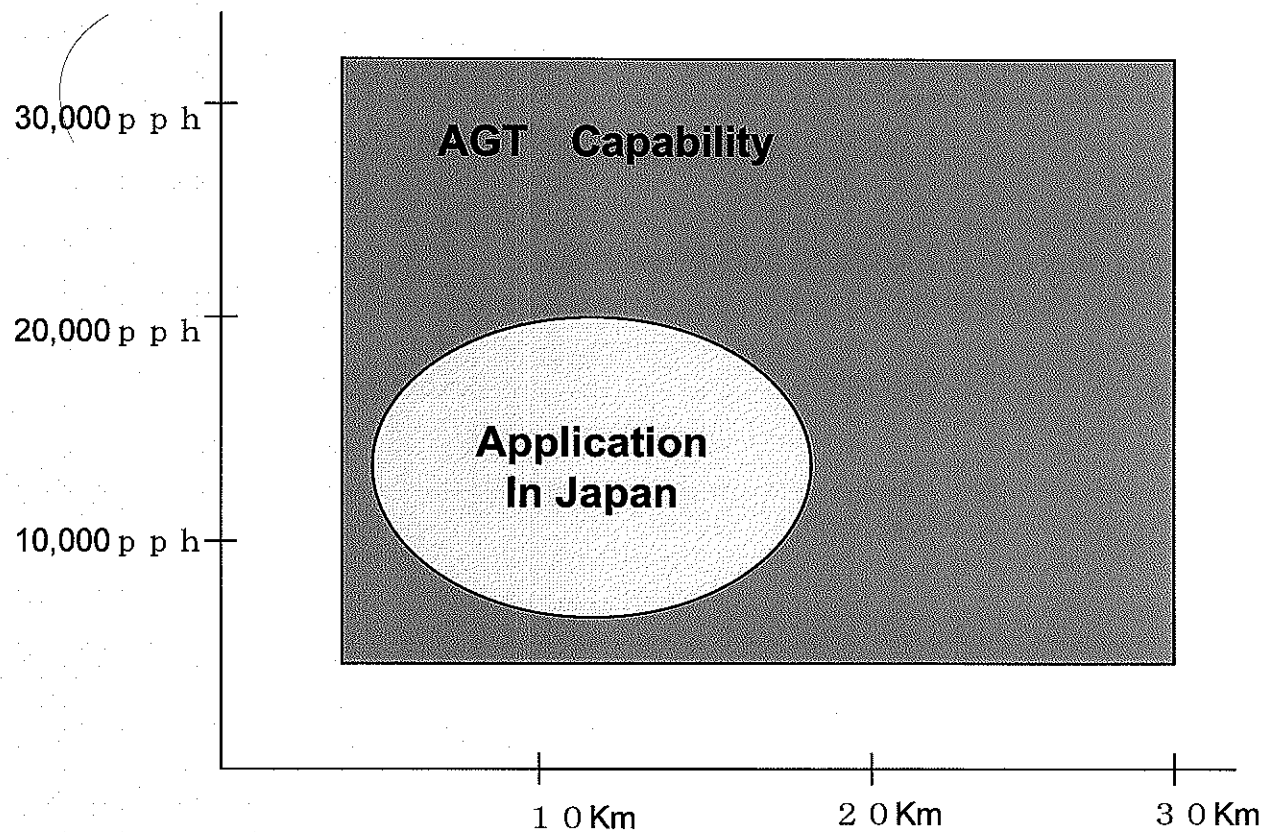


**KRT-100 EXPO'75 site in Okinawa**



**YURIKAMOME Tokyo**

## *AGT System: a Typical Application Range*



(Actual passenger capacity is subject to change according to the conditions of each projects)

## *Merits*

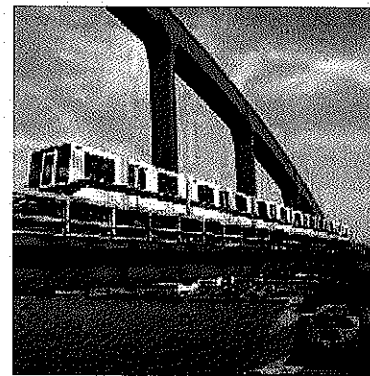
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Item	AGT	Heavy Rail
Initial Cost	Low	High
Carrying Capacity	<b>Less than Heavy Rail</b>	Large
Grade Ability	Steep	Gentle
Turning Radius	Small	Large
Vibration, Noise	Low	High

# KOBELCO AGT System

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## AGT System: Map in Japan



Kobe Rokko Liner

Kobe Port Liner

Hiroshima Astram Line



Saitama New shuttle  
Seibu Yamaguchi Line

□ : Kobelco  
projects

Tokyo Toneri Line (under construction)

Yukarigaoka Koara

Tokyo Yurikamome



Yokohama Seaside Line

Tokadai Peach Liner

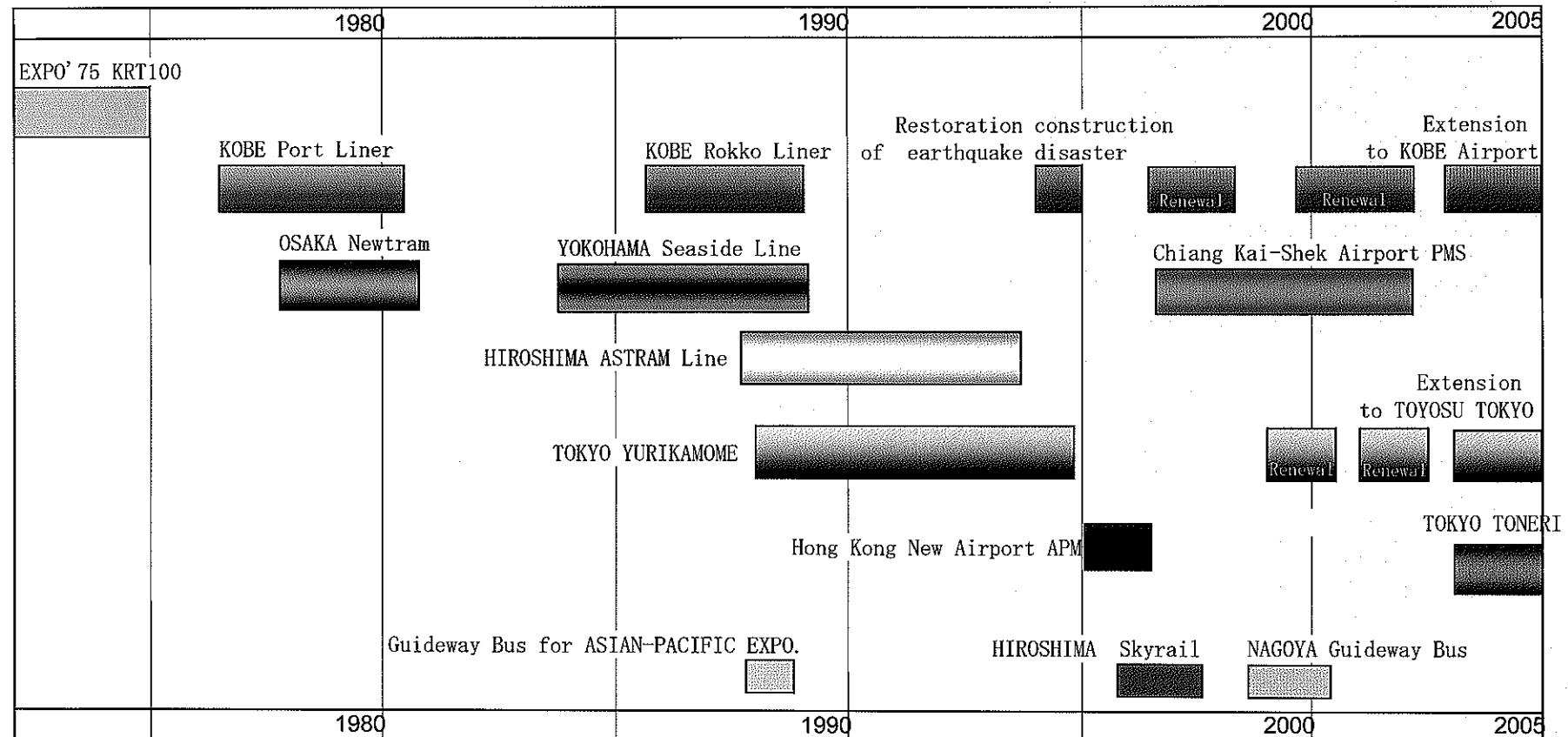
Osaka Newtram



Kansai Airport Wing Shuttle



## AGT System: Kobelco Projects History



## AGT System: Kobelco Projects Outline

Line	PORT LINER	SEASIDE LINE	ROKKO LINER	ASTRAM	YURIKAMOME	CKS SKY TRAIN
Site	KOBE	YOKOHAMA	KOBE	HIROSHIMA	TOKYO	TAIWAN
Length	6.4km	10.6km	4.5km	18.4km	12.0km	1.3km
Station	9	14	6	21	12	4
Train Composition	6	5	4	6	6	1(North) 2(South)
Train Operation	Automatic	Automatic	Automatic	Manual	Automatic	Automatic
Marshalling	Automatic	Manual	Automatic	Manual	Manual	Manual
Time required	18'00	25'10	10'00	LOCAL 35'00 RAPID 25'00	24'30	1'30
Minimum Headway	2'30	4'00	2'30	2'30	2'00	2'00
Capacity	75	75/74/66	60/54	50/44/40	55~60	69
Open Date	Feb.1981	Jun.1989	Feb.1990	Aug.1994	Nov.1995	Jan.2003

## *AGT System: Configuration*

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Rolling Stock: Rubber tire, Air Suspension

Track : Concrete running surface, Guide rail, Switch

Power Supply: Substation, Traction, Electric room, Power rail

Signal, Communication : ATP, ATO, ATS, Telecommunication system

Station : Ticketing System, Platform Screen Doors

Depots: Detention, Inspection lines, Maintenance facilities

ATP: Automatic Train Protection

ATO: Automatic Train Operation

ATS: Automatic Train Supervision



## *AGT : specification I*

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Vehicle :	Car Width	2.5 m
	Car Length	8-10 m
	Passenger capacity	45-100 passengers
	Train	1-9cars

Minimum Headway	3.0 minutes-1.5minutes
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## *AGT : Specification II*

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Maximum Speed : 70 km/h

Acceleration, deceleration : 3.5 km/h/s

Emergency deceleration: 4.5 km/h/s

Train stop accuracy:  $\pm 30$  cm

Min. turning radius: 100m (main track), 30m (side track)

Max. grade : 6% (main track), 9% (side track)

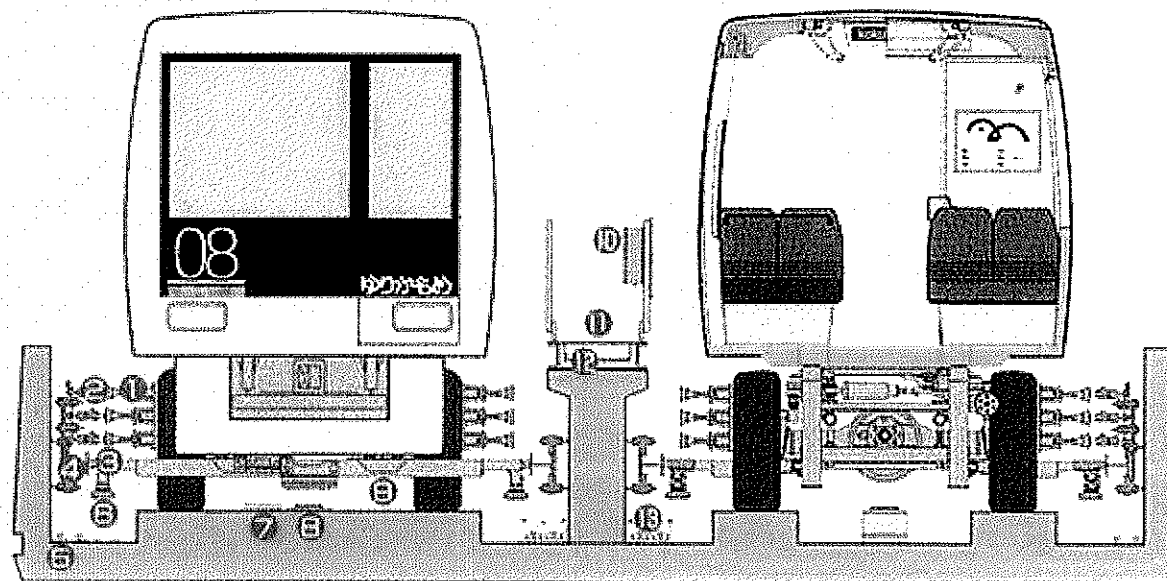
Max. Cant : 10%

# KOBELCO AGT System

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*Example: a typical configuration*

Tokyo Yurikamome



①Power Collector

②Power Rail

③Guide Roller

④Guide Rail

⑤Feeder Cable

⑥Switch Guide Roller

⑦ATO Transponder

⑧Data Communication Loop

⑨Running Surface

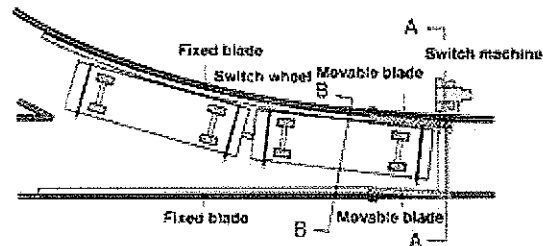
⑩Telephone

⑪Maintenance Walkway

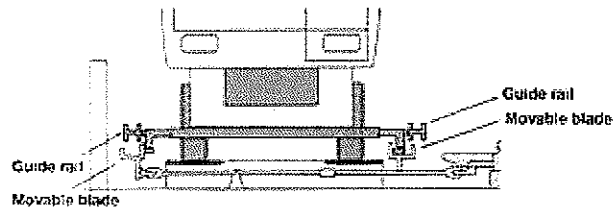
⑫Signal and Communication Cable

⑬Power Distribution Cable

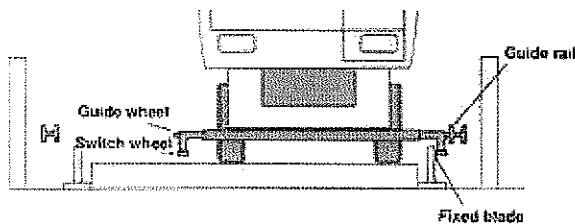
## *Example: Track and Switch*



Cross-section AA



Cross Section BB



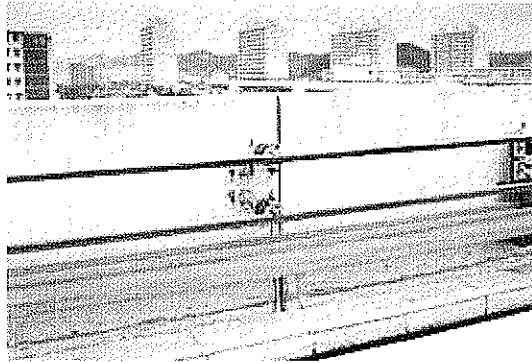
- A track of flat concrete running surface for comfort ride
- H shaped guide-rail to minimize lateral vibration
- An automatic switch with fixed and movable blades

# KOBELCO AGT System

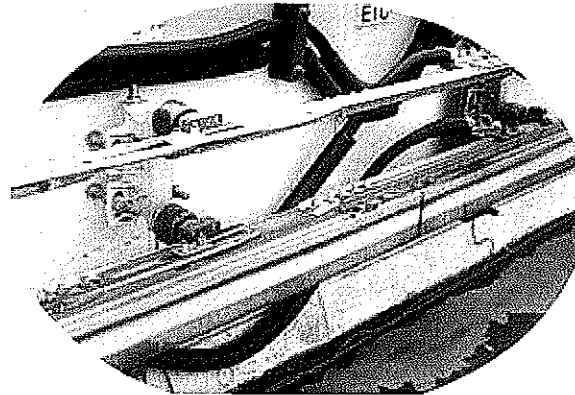
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*Example: Traction and other power collection*

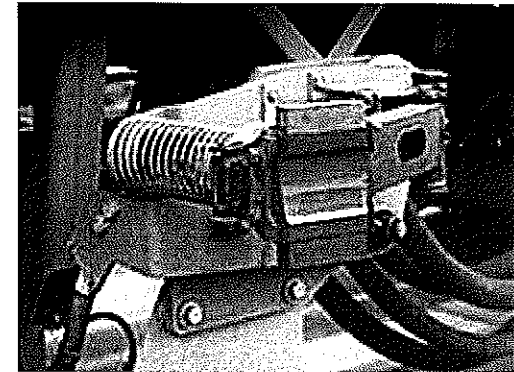
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Power Rail



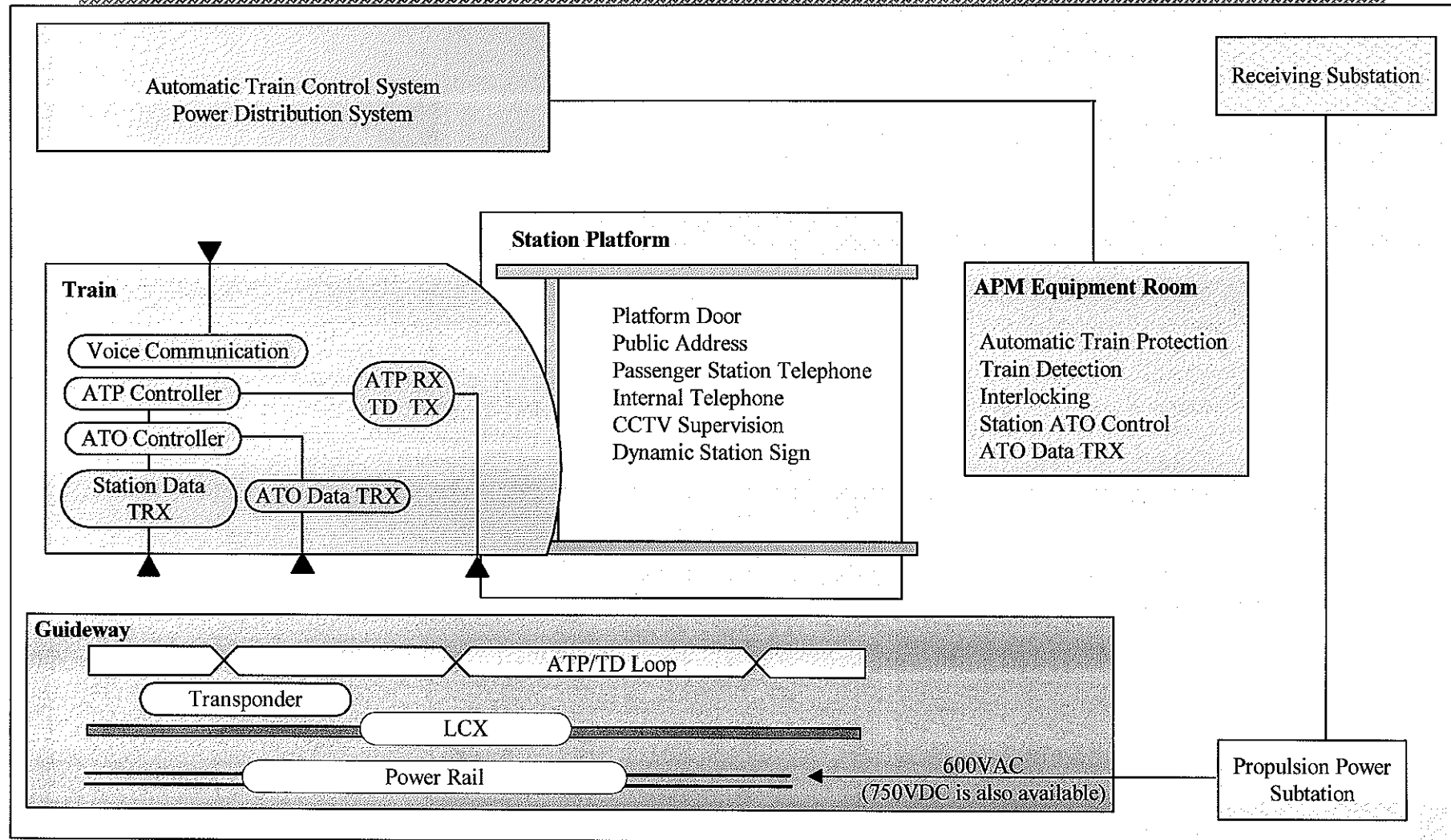
DC 750V Connection  
(AC600V available)



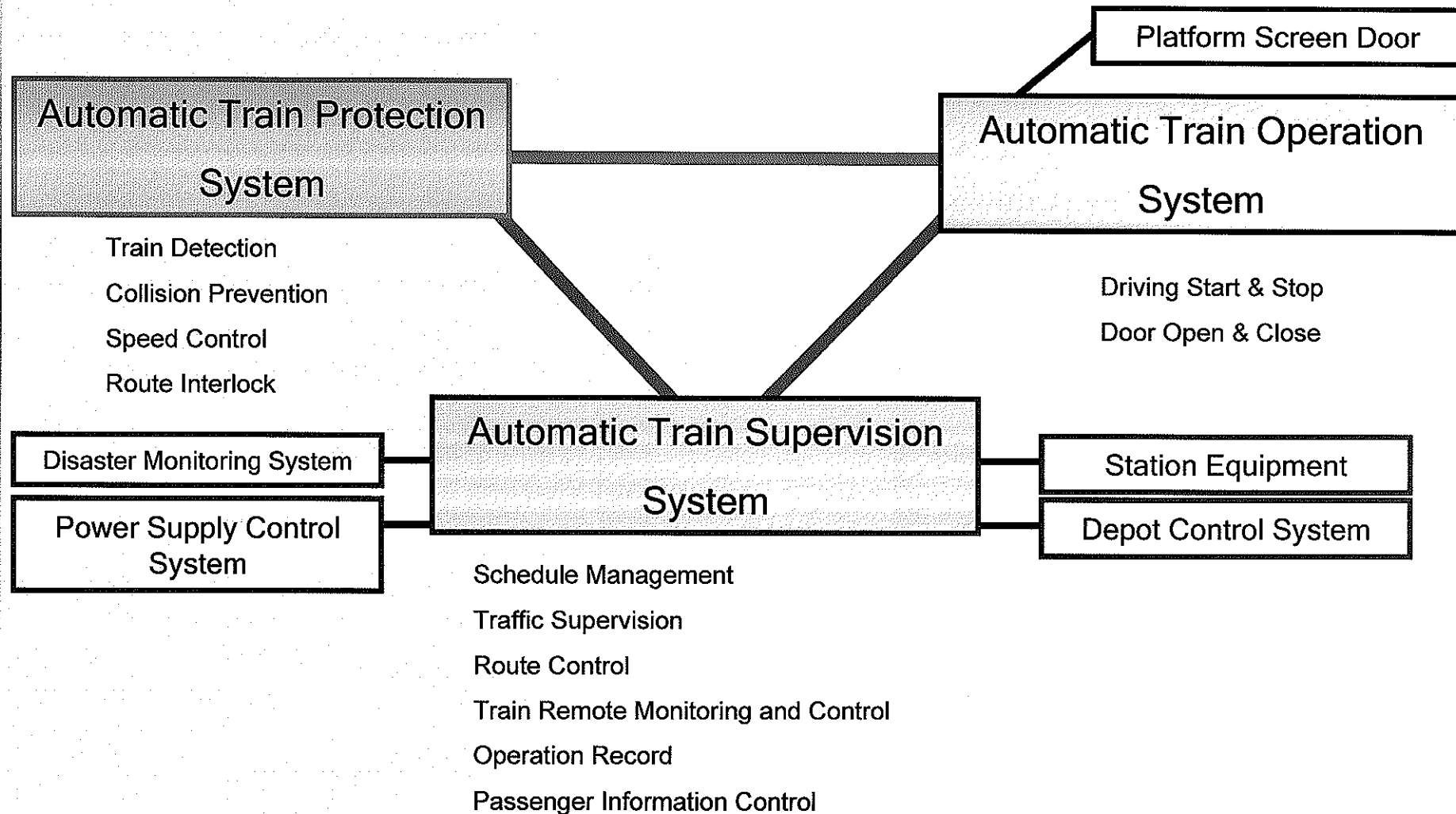
Vehicle Power Collectors

Vehicle propulsion and auxiliary power go entire length of guideway.

## System Engineering : System Chart



## System Engineering: ATC (Automatic Train Control)



## *Example: Station equipment & communication*

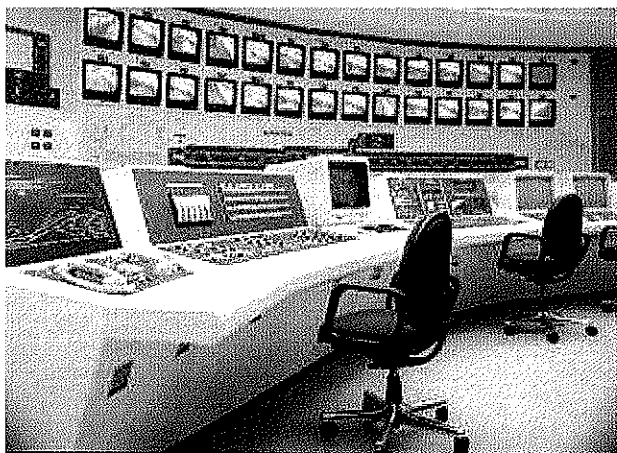
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### **Automatic platform screen doors**

The automatic platform screen doors open automatically in harmony with train doors, to allow passengers to get on board/ off board.

The platform screen doors are higher than the train doors and open wider to absorb train stop margin.



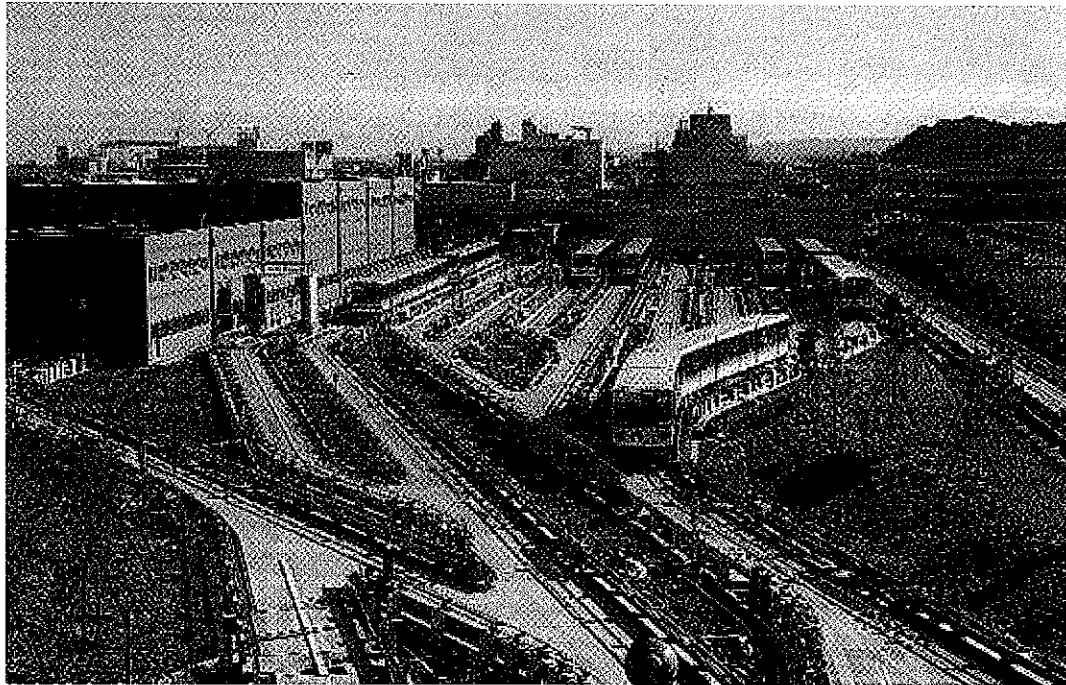
### **Door monitoring**

The video surveillance system with a closed-circuit television (CCTV) and central control monitors cover all station platform doors areas.



## *Example :Maintenance and storage*

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### **Functions are:**

Departure test,

Cleaning, washing and routine maintenance of the vehicles, such as

- Body and interior parts
- Propulsion equipment
- ATP and ATO equipment
- Air conditioning equipment
- Brake system

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*Rokko-Liner*



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END

Thank you for your attention!

