

OMNIA<sup>®</sup>

**THE FUTURE IS NOW**



associazione  
cooperativa  
muratori & affini  
ravenna

**SATFERR S.r.l.**

European Railway Service

**OMNIA®**

GRUPPO



**BONOMI**

# The Cantilever System

## Old European System





## New Standard Omnia



# Why the Omnia System?

Omnia is the result of 40 years of observation, understanding and practical experience on the field railway infrastructure and its problems.

Omnia is designed to to simplify the labour force work and make it easier, focusing on safety and efficiency.

Omnia is designed to comply to all the main European Rail operators requirements, also in terms of safety, environmental friendliness, customer care.

The Omnia System provides for all of this, but what the Omnia System is and what are the advantages of its use?

# Highlights of the Omnia System Cantilever

Capitalising 40 years of experience brings to a new high standard focused on eight key points:

Quality

Simplicity

Safety

Research & Development

Cost Savings

Energy Savings

Environmental Compliance

Reliability



## Design Conditions

### Compliance for STI rules and EUROPEAN INTEROPERABILITY

#### Catenary System

**540 mmq.**  
2 x 120 mmq  
2 x 150 mmq

**320 mmq.**  
2 x 120 mmq  
2 x 100 mmq

**270 mmq.**  
1 x 120 mmq  
1 x 150 mmq

**220 mmq.**  
1 x 120 mmq  
1 x 100 mmq

**165 mmq.**  
1 x 65 mmq  
1 x 100 mmq

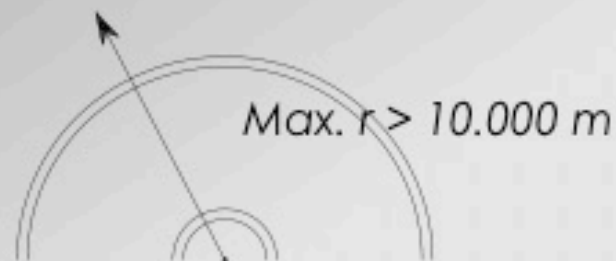
#### Maximum Speed

From 100 km/h



To **250** km/h

#### Anchorage post



Min.  $r = 200$  m

# Design & Concept







**Milano - Bologna  
renewal of 55 miles of double track  
traditional line 3kV dc. - from 100 km/h  
to 250 km/h**



**Milano - Bologna  
renewal of 55 miles of double track  
traditional line 3kV dc. - from 100 km/h  
to 250 km/h**

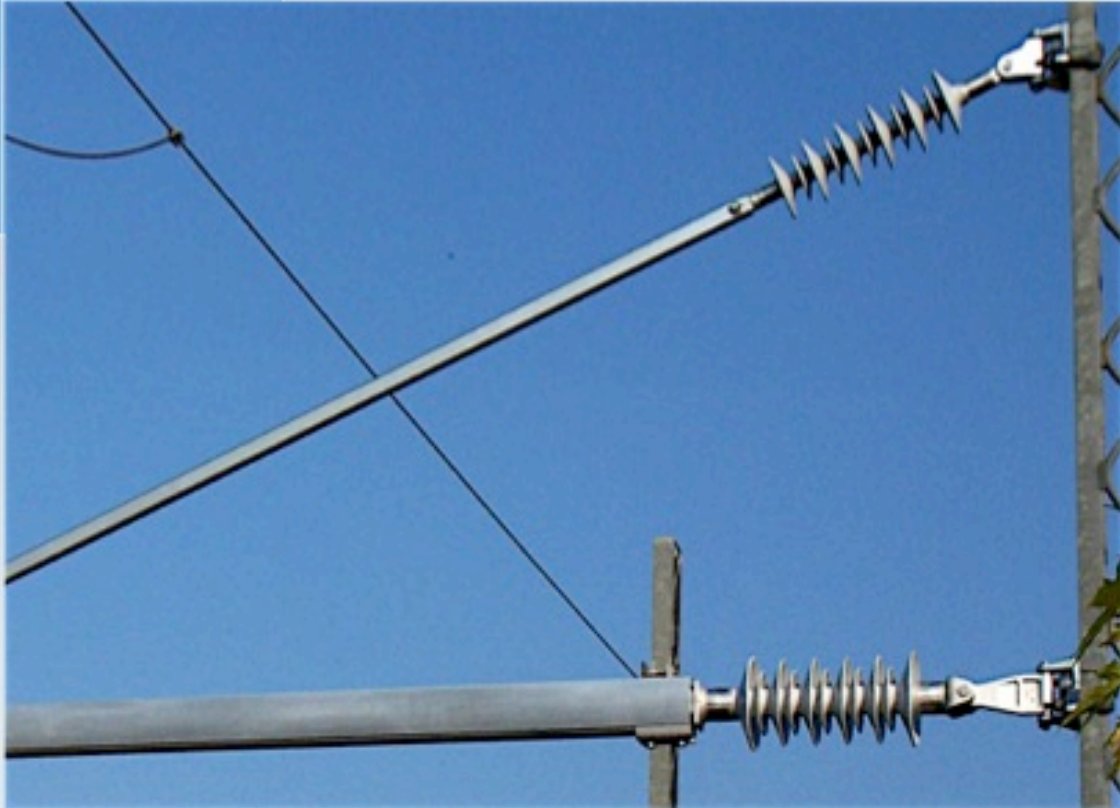


**HSR 25 kV ac. Speed Over 155 mph  
Tested over 225 mph**





**HSR 25 kV ac. Speed Over 155 mph  
Tested over 225 mph**





North West Electrification Project

United Kingdom

Now operational between Manchester and Newton-Le-Willows



**December 2013 - Manchester to West Coast Main Line and Newton-le-Willows**

**December 2014 - Newton-le-Willows to Liverpool Lime Street; Huyton to Wigan**





**United Kingdom**



# **Cost Savings**



Cantilevers Comparing



<b>Comparative Table</b>	<b>Note</b>		
Material	The material is one of the most important changing. Aluminum doesn't need maintenance because self-produces a protective layer of oxidation.	Steel	Aluminum
n. of Components to assembly	This is a real important thing which is an important thing that has big implications for management of warehouse and geometry cantilever adjustments during and after installation.	10	3
n. of Bolts to be screwed	Striking difference that changes forever the timing of pre-assembly and geometry control during maintenance	20	6
Weight (kg)-(lb)	Weight allows easier transportation and installation reducing, in some cases, the number of labor force	80 - 176,37	46 - 101,41
Tools	Reducing to only one tool also reduces the speed of assembly and the cost of purchasing tools	4/5	1
Kind of Section	The right section in aluminum is much more performant than the right in steel.	Tubular	Patented
Overhead Supporting	No Comment	-	Urban - Subway - 210 mmq. to 610 mmq
Kind of Supported Power Supply	No Comment	-	Urban - 600 V to 3kV c.c. or 25 kV c.a.
Resistant to tensioning loads up to:	Minimum curve radius 250 m. = 270,43 yard, and the anchorage post in the worst condition of the curve	-	2000 daN per wire until maximum of 4 wires



# Processing into hours-labour

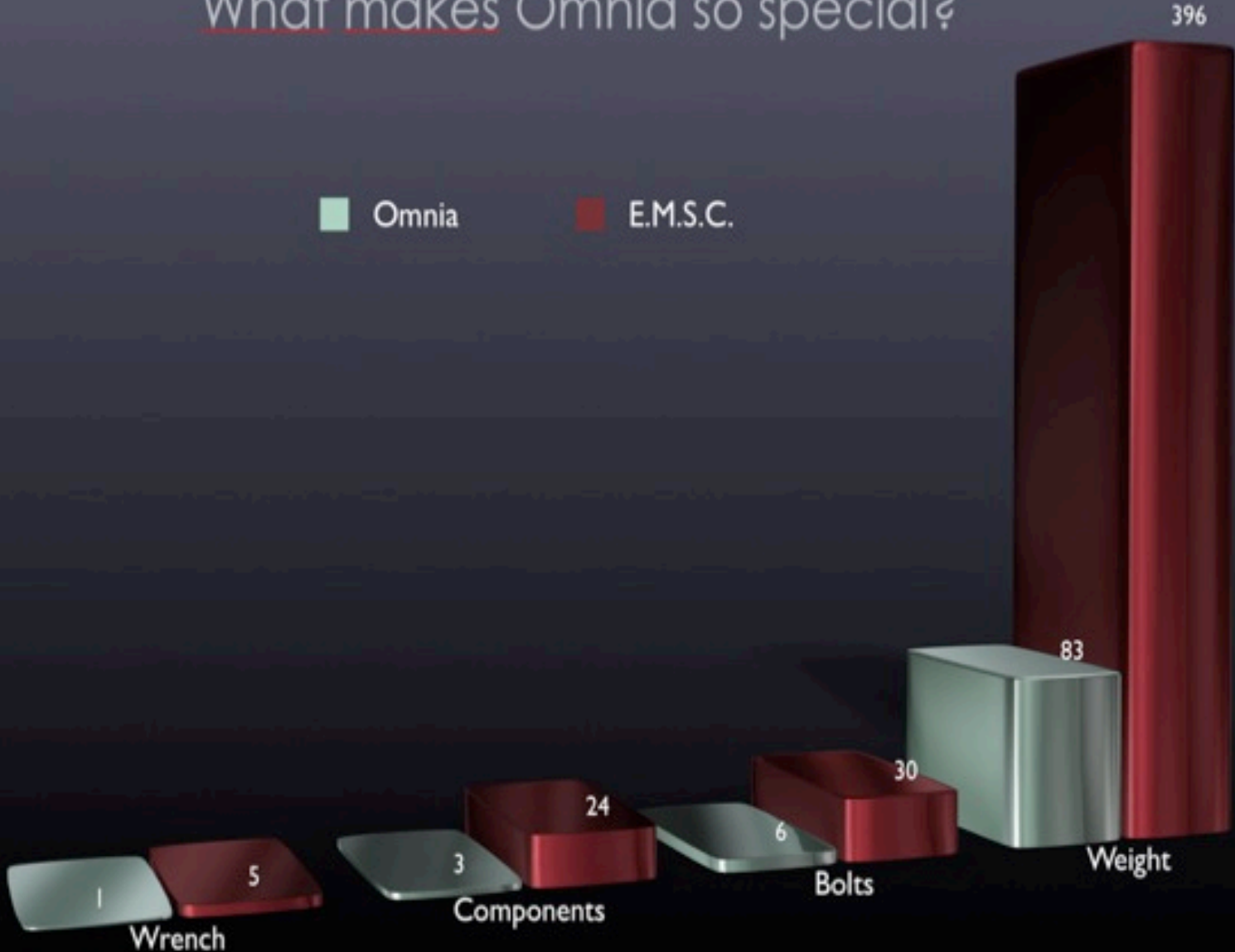
Comparative Table	 <i>Most used steel Cantilever</i>			 <i>Omnia Cantilever</i>		
	Human Resource	Hours/HR	Labour-Hours per cantilever	Human Resource	Hours/HR	Labour-Hours per cantilever
Hours to pre-assembly one cantilever	3	0h 30m 0s	1h 30m 0s	2	0h 10m 0s	0h 20m 0s
Hours to install one cantilever	3	0h 20m 0s	1h 0m 0s	3	0h 10m 0s	0h 30m 0s
Hours to regulate one cantilever geometry	3	0h 15m 0s	0h 45m 0s	3	0h 4m 0s	0h 12m 0s
			<b>3h 15m 0s</b>			<b>1h 2m 0s</b>

# Processing into Cost Savings percentage

Costs Comparative Table	 Most used Cantilever			 Omnia Cantilever		
	Labour-Hours per cantilever	Unit/h	Total Units	Labour-Hours per cantilever	Unit/h	Total Units
Totale Units per Cantilever	3h 15m 0s	1	3h 15m 0s	1h 2m 0s	1	1h 2m 0s
Percentage of Cost Savings per one Cantilever	<b>-67%</b>					

# What makes Omnia so special?

■ Omnia      ■ E.M.S.C.



Thank You