Let's Construct Europe's Future
With Innovative Buildings and Infrastructures
Construction and Societal Challenges

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Previous experiences

First European FRP vehicular bridges:

- Pumacon bridge (Spain 2004)
- HP FutureBridge M111 bridge (Spain 2008)
Manual process
Installation – manual/semi manual

- Beam-deck system
Conclusions:

- FRP bridges can be manufactured manually.
- FRP bridges manufactured manually are not economically competitive comparing to those made in steel or in concrete.
Economical study

Cost study:
- labour
- material
- energy
- manufacturing
- transport
- assembly

Conclusions:
- Automating the process will make the product cheaper and more competitive.
Trans-IND

„New Industrialised Construction Process for transport infrastructures based on polymer composite components”

Starting date | 1st June 2009
---|---
Duration | 4 years
Trans-IND Consortium

20 partners (9 countries)

- 6 large companies
- 6 High-Tech SME’s
- 8 Research organizations

Research:

Industry:
The main objective is to develop a cost-effective integrated construction process that will enable the maximum capability of industrialisation of components for transport infrastructures using FRP composite materials.
Innovative conceptual model for composite components covering among others:

- material engineering and components design
- off-site manufacturing facilities and processes
- intelligent logistics
- on-site assembly and disassembly
- procurement (public and private)
- knowledge management
Trans-IND detailed objectives

- Catalogue of FRP road infrastructure elements and quick plug-in joint solutions between them.
- Off-site industrialisation process based on innovative machinery, ICT tools and robotics.
- On-site assembly methods based on RFID, intelligent positioning systems, ICT’s and robotics.
Trans-IND detailed objectives

- Software platform for holistic management, design, simulation, visualization and knowledge management of the process.
- Recommendations for standardisation of FRP components.
- Demonstration of the flexible industrialisation system through real scale bridge build up.
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- What are FRP composites?  
- What are FRP Composites Properties?  
- FRP Composites in Civil Engineering  
- What are the advantages using FRP Composites Materials?  

## STRUCTURAL COMPONENTS
- Beams  
- Decks  
- Joints  

## SECONDARY ELEMENTS
- Acoustic Barriers  
- Safety Barriers  

## TRANS-IND PROJECT
- Project Summary  
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- INTRODUCTION
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Trans-IND components

Open-shaped beam
Span: 9-18 m

Close-shaped beam
Span: 15 – 30 m

U-shaped beam
Span: 25 - 45 m

Main materials:
- Glass fiber
- Carbon fiber
- Epoxy resin

After the conceptual study
Trans-IND bridge concept I
Trans-IND elements

Deck solution

Acoustic barriers

Safety barriers

Acoustic barriers

JOINTS
Beam manufacturing

- Filament winding process
- Automated type Placement

Deck, Safety Barriers, Acoustic Barriers

- Pultrusion process
Morphological control

3D representation of the Scanning System on a open shaped beam mould
Morphological control
www.trans-ind.eu

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