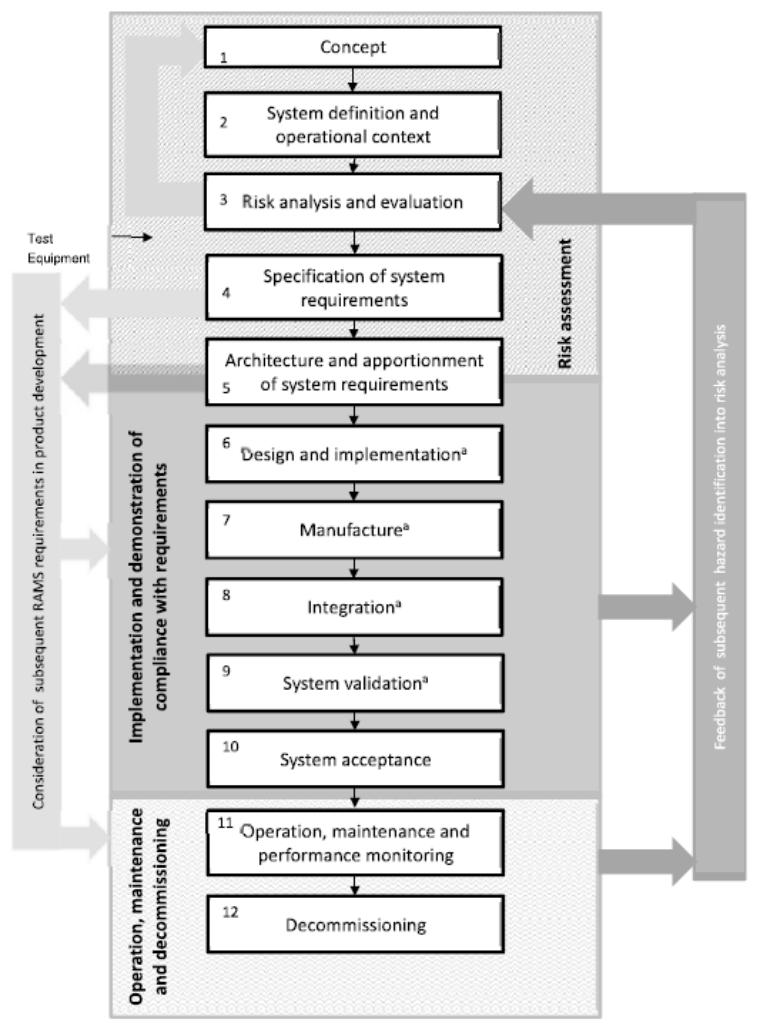
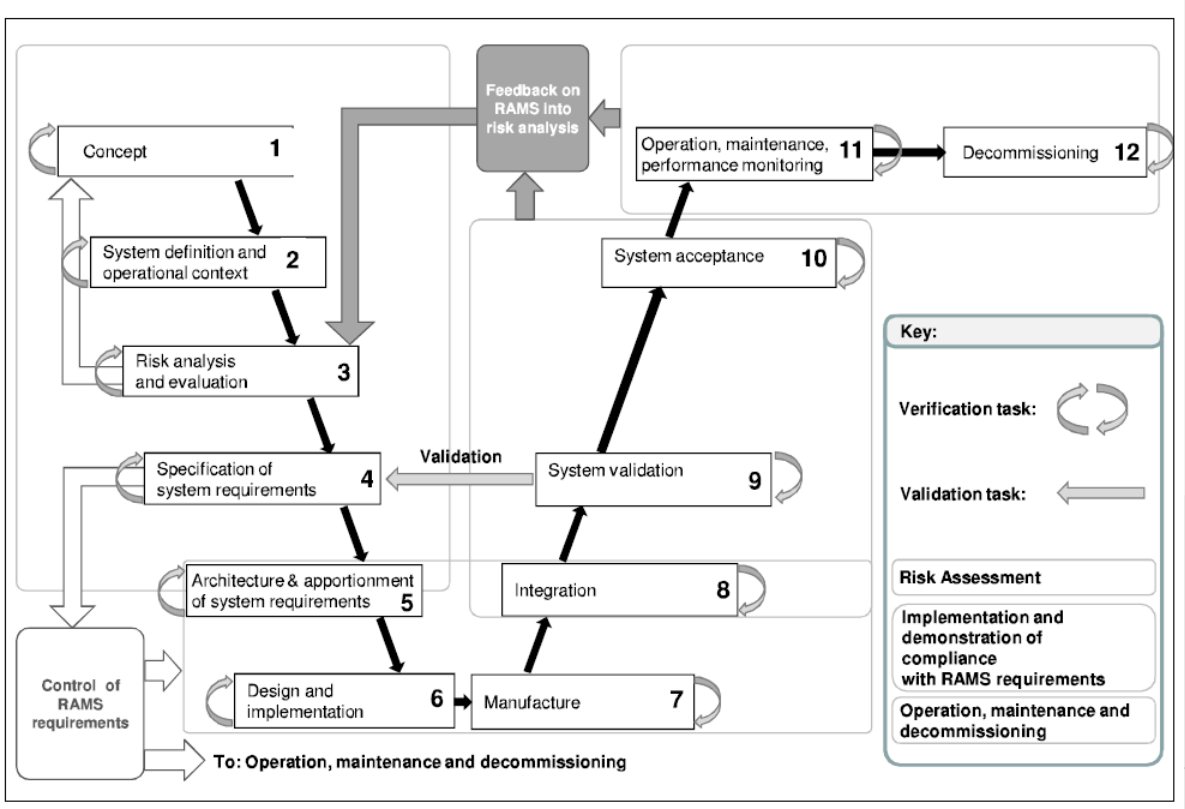
SOFTRONIC
Group

Life cycle

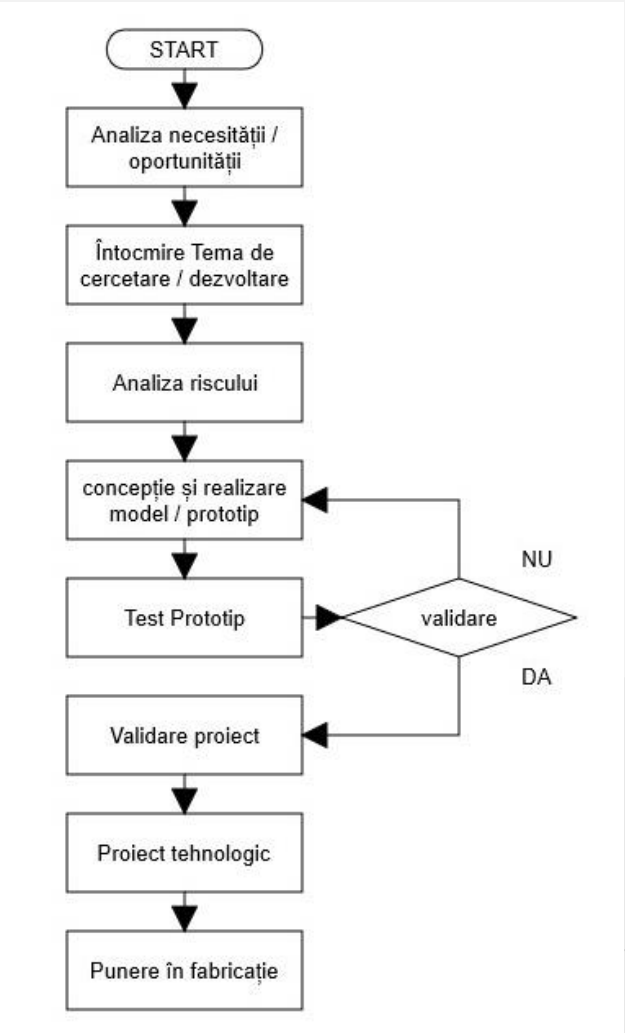


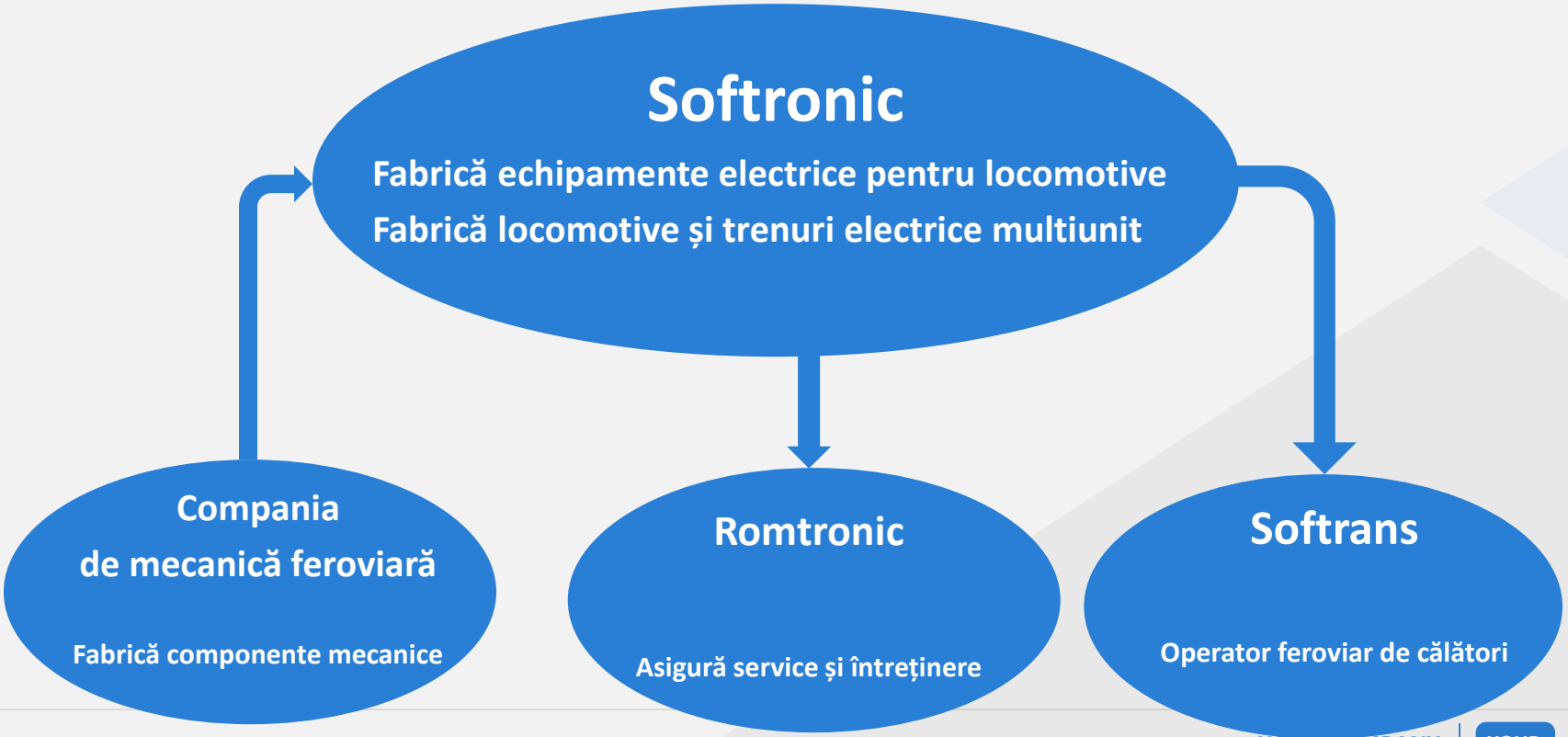
Management process and cycle life

The V cycle


Feedback on RAMS into risk analysis
Concept 1
System definition and operational context 2
Risk analysis and evaluation 3
Specification of system requirements 4
Architecture & apportionment of system requirements 5
Design and implementation 6
Manufacture 7
Integration 8
System validation 9
System acceptance 10
Operation, maintenance, performance monitoring 11
Decommissioning 12
Validation
Control of RAMS requirements
To: Operation, maintenance and decommissioning
Key:
Verification task:
Validation task:
Risk Assessment
Implementation and demonstration of compliance with RAMS requirements
Operation, maintenance and decommissioning

R&D Life cycle




Softronic
Fabrică echipamente electrice pentru locomotive
Fabrică locomotive și trenuri electrice multiunit
Compania
de mecanică feroviară
Fabrică componente mecanice
Romtronic
Asigură service și întreținere
Softrans
Operator feroviar de călători

SOFTRONIC Group


SOFTRONIC

Electric Multiple Units and locomotives producer


CMF

Metallic construction of large and small subassemblies


SOFTRANS

Railway passenger and freight transport operator

SOFTRONIC

CRAIOVA ROMANIA

Softronic deals with rail rolling stock construction, modernization, repairs and upgrades.

Established in Craiova Romania in 1999 with the main purpose of modernizing locomotives and producing railway safety equipment **Softronic** is today Southeastern's Europe the only manufacturer of Electric Multiple Unit trains and electrical locomotives.

Softronic proudly continues the city's tradition in the locomotive manufacture, our top engineers coming from the former Electroputere plant where over 3000 electric and diesel – electric locomotives were built.

With more than 200 locomotives modernized, 23 new locomotives built and over 400 employees, Softronic provides tailored and environmental friendly solutions to more and more clients.

Softronic values its employees (most of them young and top graduated from Universities) recognizing their importance helping them develop further, sustaining together the growth.

OUR TIMELINE

For Softronic and Softrans

1999
Softronic Company is founded

2004
First locomotives are modernized

2008
The first AC- DC loco is produced is producedafter 1990 **PHOENIX**

2010
The first AC- AC loco in Romania Is produced **TRANSMONTANA**

2013
The first low floor train in Romania is produced -**HYPERION**

2014

200 locos were modenized

6 Phoenix locos were built

17 Transmontana locos are built

2004
Softrans company is founded with the initial purpose of testing Softronic's rail vehicules

2005
Softrans obtains authorization for both freight and passenger transportation

2010
Softrans begins freight transport in Romania

2014
Softrans begins operating passenger train **Hyperion**

SOFTRONIC
www.softronic.ro

PRODUCTION FACILITIES

Our production capabilities are able to create high precision products

Softronic has fully integrated production capabilities to manufacture locomotives and EMUs from the ground up and to provide complete overhaul upgrade, maintenance and testing services including all support systems in their entirety.

.

OUR GOAL

Our key to succes is to develop rail vehicles for european clients capable to operate heavy trains

Main clients

- **DB Schenker** (Romania)
- **Green Cargo** (Suedia)
- **DB Schenker** (Hungary)
- **MMV** (Hungary)
- **CER** (Hungary)
- **CFR** (Romania Rail States)
- **Cargotrans Vagon** (Romania)
- **Transferoviar Group** (Romania)

BI-SYSTEM LOCOMOTIVE TRANSMONTANA

TRANSMONTANA SOFTRONIC

Description

EXPERIENCE

By combining experience with innovations systematically oriented to client benefit and cost effective in 2010, Softronic built the first locomotive in Romania with asynchronous traction motors .

CLIENT'S NEEDS

Understanding the needs of transport operators we are able to offer a modern and reliable locomotive Transmontana specifically adapted for country conditions like: Romania, Hungary, Slovakia, Austria and Turkey etc.

INNOVATIVE ENGINEERING

BI-SYSTEM

The locomotive, equipped with regenerative braking (20% economy), is powered with 15 kV AC an 25 kV AC, capable of reaching speeds of 120 km/h when operating freight services and 160 km/h for passenger traffic.

POWERFUL SIX AXLE

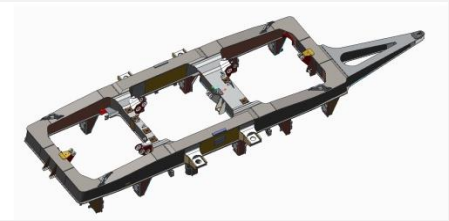
Transmontana is a 6000 kW electric six axle vehicle with a modern design meeting all technical parameters and the following standards: EN,ISO, UIC and is registered at the ERA (European Railway Agency) database.

QUALITY SUPPLYERS

CMF – SOFTRONIC HOLDING (ROMANIA)
CARBODY

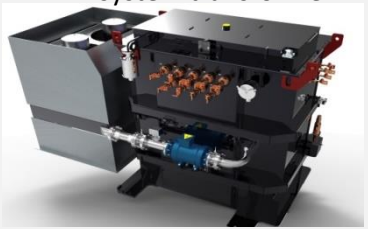
SOFTRONIC (ROMANIA)
Driver desk

CMF – SOFTRONIC HOLDING (ROMANIA)
BOOGIE



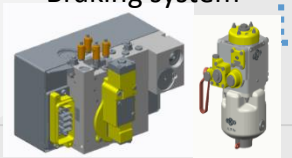
EST EISENBACH (GERMANY)
Crash absorbers

ABB (SWITZERLAND)
BI-system transformer

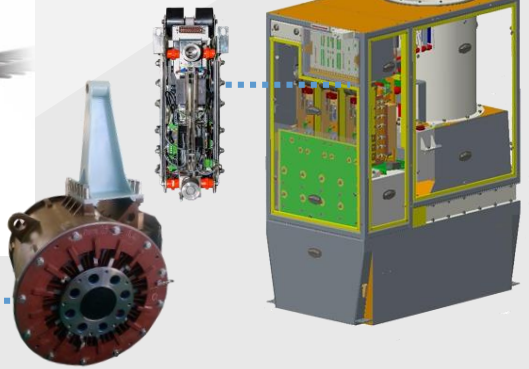


STEMMANN TECHNIK (GERMANY)
Pantograph

KNORR BREMSE (GERMANY)
Braking system



SOFTRONIC (ROMANIA)
Complete traction equipment

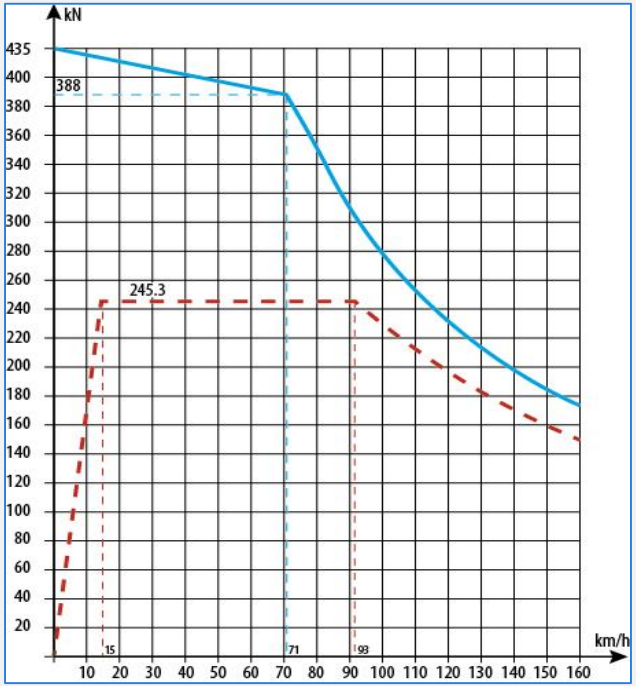


SOFTRONIC
www.softronic.ro

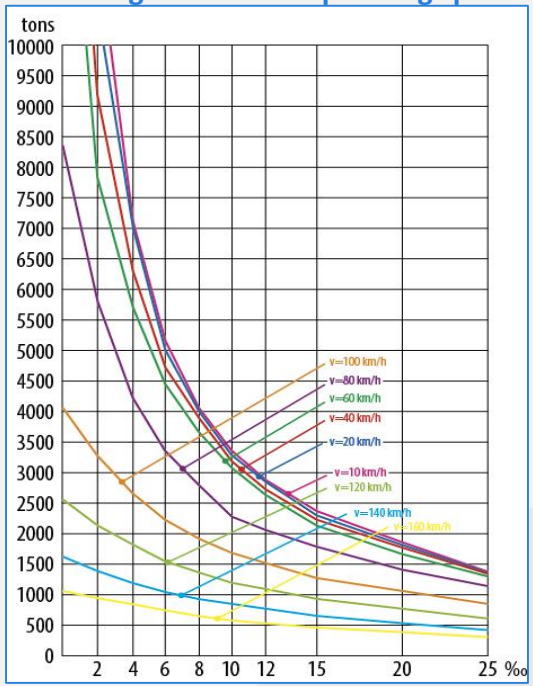
TECHNICAL DATA

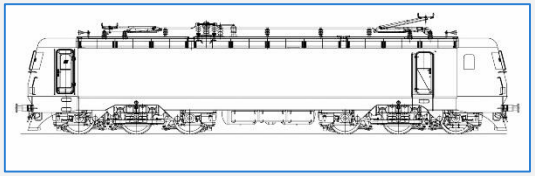
Bi-system six axle locomotive

Tractive effort at start-up



Train loads as function of different gradient and operating speed





Traction engine	6 x 1000 kW
Power	6000 kW
Design speed	120/160 km/h
Tractive force at Start-up	435 kN
Traction Voltage	25 kV-50 Hz/ 15 kV 16.7-Hz
Safety Systems	PZB Indusi, EVM120, MIREL, LS90, WSP (Wheels anti slide and slip)
Control system	Micro-controllers and microprocessors based

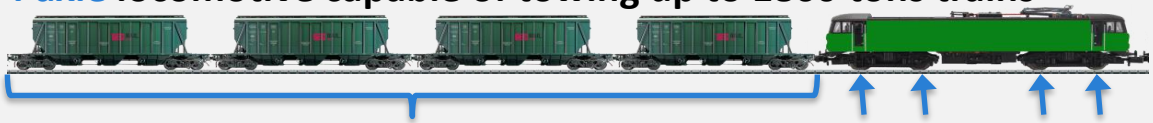
ADHESION = MAIN ADVANTAGE

SIX AXLE LOCOMOTIVE

Six axle locomotive Transmontana capable of towing trains up to 2800 tons

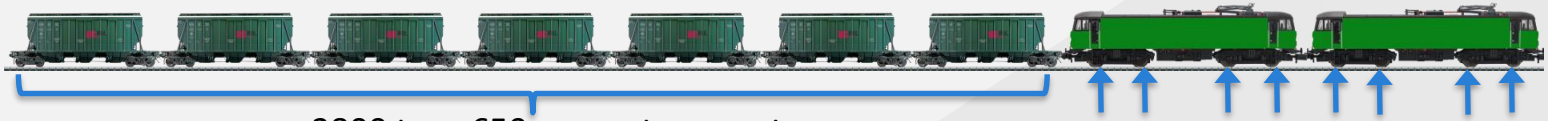
2800 tons 650m corn transport

4 axle locomotive capable of towing up to 1860 tons trains



1860 tons 430m corn transport

2800 tons trains needs two 4 axles locomotives increasing costs and reducing profit



2800 tons 650m corn transport

CONCLUSIONS

MAIN FEATURES

- ✓ Regenerative braking
- ✓ One hour power 6600 kW
- ✓ AC engines
- ✓ Six axle
- ✓ Low maintenance costs
- ✓ New design
- ✓ Bi-system
- ✓ Led headlamps
- ✓ Large cabins

TRANSMONTANA

Bi-system Transmontana authorized in Romania and Hungary. It is equiped with Mirel safety system in standard configuration.

OUR GALLERY

Transmontana locomotive

SOFTRONIC
www.softronic.ro

HYPERION ELECTRIC MULTIPLE UNIT

HYPERION SOFTRONIC

BI-SYSTEM EMU

Softronic's newest product, **Hyperion**, is an electric multiple unit train bi-system capable to operate both 25 kV AC and 3 kV DC

Hyperion is the first electric low floor train ever built in Romania, aiming to reduce costs and increase efficiency.

NEW PROJECT

The train was built using cutting edge technologies after a 2012 project. In the same time it is based on our previous experience in railway vehicles manufacture and equipped with high quality electrical and mechanical components.

INOVATIVE ENGINEERING

COMFORT AND SAFETY

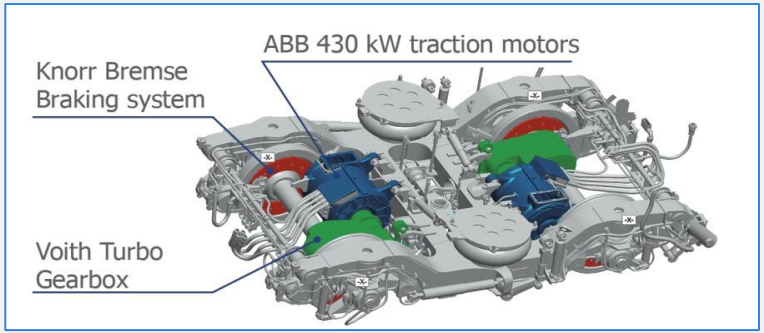
Comfort and safety are key aspects of our train offering open-space compartments, free internet access, diffused lighting systems and comfortable seats. All of these turn short and long journeys into an enjoyable and recreational travelling experience.

EU NORMS

The train meets the specific requirements of all European Standards (EN and UIC) and the technical specifications for interoperability (TSIs) and is regitered at the 2014 ERA (European Railway Agency) database.

TECHNICAL DATA

Hyperion Motor Bogie



Catenary supply voltage	25 kV - 50 Hz AC / 3 kV DC
Axle arrangement	Bo'2'2'2'Bo'
Number of vehicles	4
Seating capacity	188
Standing capacity (4 ppl/m^2)	215/225
Floor height:	600 mm
Entrance doors	1300 mm
Number of entrances	1 entrance per car side (8 doors total)
Overall length	69 935 mm
Vehicle height	4230
Tare weight	134,6 t
Maximum acceleration	0.85 m/s^2

EMU layout

MAIN FEATURES

- ✓ Regenerative braking
- ✓ Light weight steel construction
- ✓ Carefully designed aerodynamics
- ✓ Low maintenance costs
- ✓ New design
- ✓ Bi-system
- ✓ Led headlamps
- ✓ Seat number optimized

HYPERION

Bi-system Electric Multiple Unit

First electric low floor train ever built in Romania

Competitive Price

HYPERION GALLERY








QUALITY CERTIFICATES

1. Welding certificate according to EN 15085-2
2. Mechanical processing certificate according to EN ISO 3834-2
3. Quality management systems certificate according to SR EN ISO 9001
4. Safety management systems certificate according to SR OHSAS 18 001
5. Environmental management system certificate according to SR EN 14001

1


EUROPEAN FEDERATION
FOR
WELDING, JOINING AND CUTTING

2


ROMANIAN RAILWAY AUTHORITY
Bucharest, 393 Calea Griviței Ave., district 1

CERTIFICATION BODY OF THE MANAGEMENT SYSTEMS
OCSM-AFER

CERTIFICATE

SERIES SMC, NO. 037

S.C. SOFTRONIC S.R.L

3


ROMANIAN RAILWAY AUTHORITY
Bucharest, 393 Calea Griviței Ave., district 1

QUALITY/ENVIRONMENTAL MANAGEMENT SYSTEMS
CERTIFICATION BODY
OCSM-AFER

CERTIFICATE

SERIES SSO, NO. 079

S.C. SOFTRONIC S.R.L

4


ROMANIAN RAILWAY AUTHORITY
Bucharest, 393 Calea Griviței Ave., district 1

QUALITY/ENVIRONMENTAL MANAGEMENT SYSTEMS
CERTIFICATION BODY
OCSM-AFER

CERTIFICATE

SERIES SMM, NO. 104

S.C. SOFTRONIC S.R.L

5


Gesellschaft für Schweißtechnik International mbH

CERTIFICATE
Welding of railway vehicles and components according to
EN 15085-2

This is to certify that S.C. Softronic S.R.L.

Calea Severinului, nr. 40
200609 Craiova
ROMANIA