DALEKOVOD

INFRASTRUCTURE ENGINEERING SECTOR

T: +385 1 241 11 11
E: dalekovod@dalekovod.hr
www.dalekovod.com

DALEKOVOD

CONNECTING WORLDS, BUILDING THE FUTURE

DALEKOVOD

E

P

C

ENGINEERING

Inhouse team of skilled experts constantly involved in project design and project execution

PROCUREMENT

Wide network of reliable business partners, contractors and equipment suppliers

CONSTRUCTION

More than 65 years of construction experience on various complex projects around the world

VERTICALLY INTEGRATED COMPANY

DALEKOVOD JSC.

Engineering, construction works, project management

ZAGREB

DALEKOVOD PROIZVODNJA LTD.

Own production of steel construction elements

DALEKOVOD PROJEKT LTD.

Electric and construcion design of transmission lines, substations and infrastructure objects

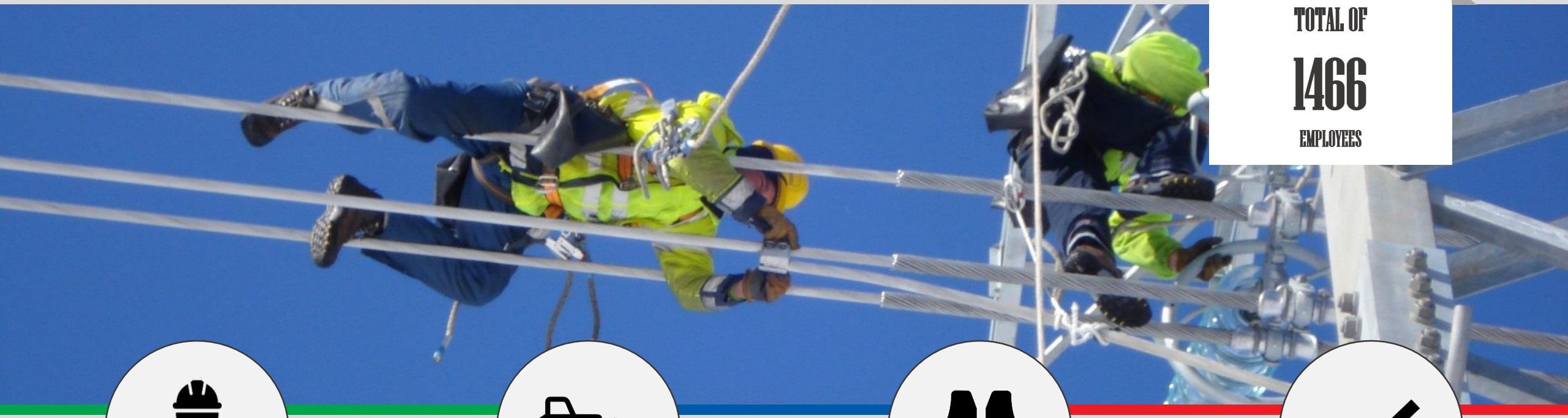
SUBSIDIARIES

- DALEKOVOD Norge
- DALEKOVOD Ukraine
- DALEKOVOD Sweden
- DALEKOVOD Slovenia
- DALEKOVOD BiH
- DALEKOVOD Montenegro
- DALEKOVOD Kosovo
- DALEKOVOD Macedonia
- DALEKOVOD Polska
- DALEKOVOD Finland

„END-TO-END" PROCESS CONTROL

	DESIGN Dalekovod Projekt	PRODUCTION Dalekovod Proizvodnja	CONSTRUCTION Dalekovod
INFRASTRUCTURE	✓ Catenary ✓ Power supply for railways ✓ Antenna towers ✓ Lighting systems ✓ Tunnels	✓ Steel and bearing structures ✓ Catenary elements ✓ Lighting poles ✓ Guard rails, protection nets, wire fences ✓ Antenna towers	✓ Power supply networks ✓ Catenary ✓ Equipping of tunnels, roads, highways and railway ✓ Antenna tower construction
TRANSMISSION LINES	✓ Overhead lines up to 500kV	✓ Hardware fittings and connectors up to 750kV ✓ Steel structures, steel lattice and polygonal towers	✓ Overheadlines up to 750kV
SUBSTATIONS	✓ Substations up to 400kV	✓ Substation connectors ✓ Steel structures	✓ Substations up to 750kV ✓ Secondary systems ✓ Electrical installations

MANPOWER



TOTAL OF

1466

EMPLOYEES

313

ENGINEERS

853

WORKERS

16

HSE STAFF

40

QUALITY CONTROL

QUALITY ASSURANCE, SAFETY, ENVIRONMENT AND CSR

1 QUALITY
Quality Management System
ISO 9001:2008
Certified by BUREAU VERITAS

2 ENVIRONMENT
Environmental Management System
ISO14001:2004
Certified by LRQA.

3 SAFETY
Occupational Health and Safety Management BS OHSAS 18001:2007
Certified by TÜV NORD CERT

4 CORPORATE SOCIAL RESPONSIBILITY
Member of UN Global Compact
Improvements implemented in accordance with UN recommendations

ISO 9001
BUREAU VERITAS
Certification

TÜV NORD
TÜV Croatia
OHSAS 18001

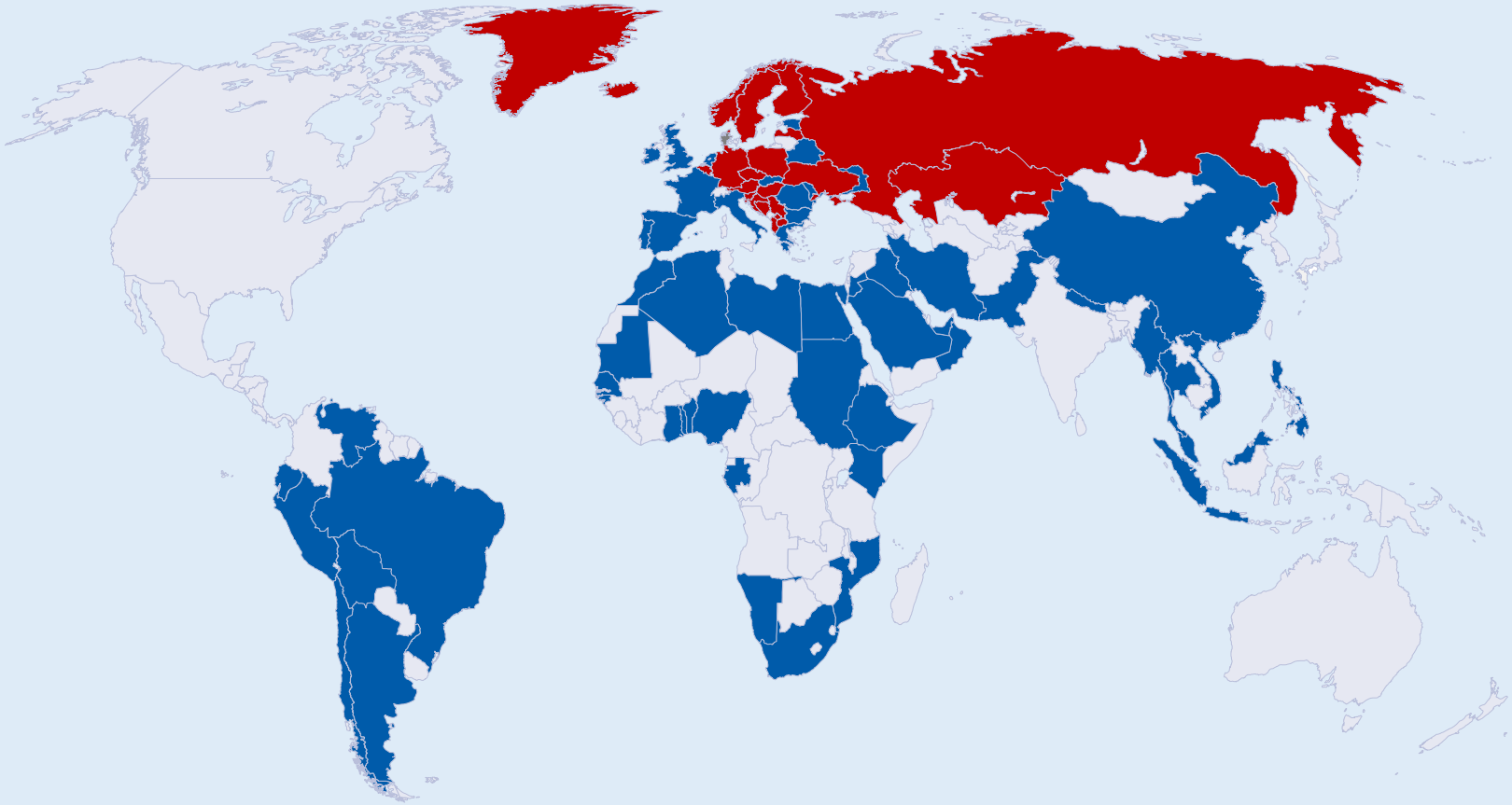
17025 HAA
1051/08

UVDB
empowered by Achilles
Registered

Sellihca

Continuous training and education of employees, including periodical re-certification for work in construction of electric facilities and for work at height

DALEKOVOD WORLDWIDE



PROJECTS

EQUIPMENT DELIVERY

DALEKOVOD

KEGOC

ALSTOM

MAVIR

VATTENFALL

AUTOCESTA RIJEKA-ZAGREB

الشركة السعودية للكهرباء
Saudi Electricity Company
Empowering Energy

НАЦИОНАЛНА ЕЛЕКТРИЧЕСКА КОМПАНИЯ ЕАД

HŽ INFRASTRUKTURA

LANDSNET

الشركة العُمانية لنقل الكهرباء ش.م.ع.م
OMAN ELECTRICITY TRANSMISSION COMPANY S.A.O.C

Hrvatske autoceste d.o.o.

SVEVIND

FINGRID

Statnett

BKK

PSE

ELES

HEP

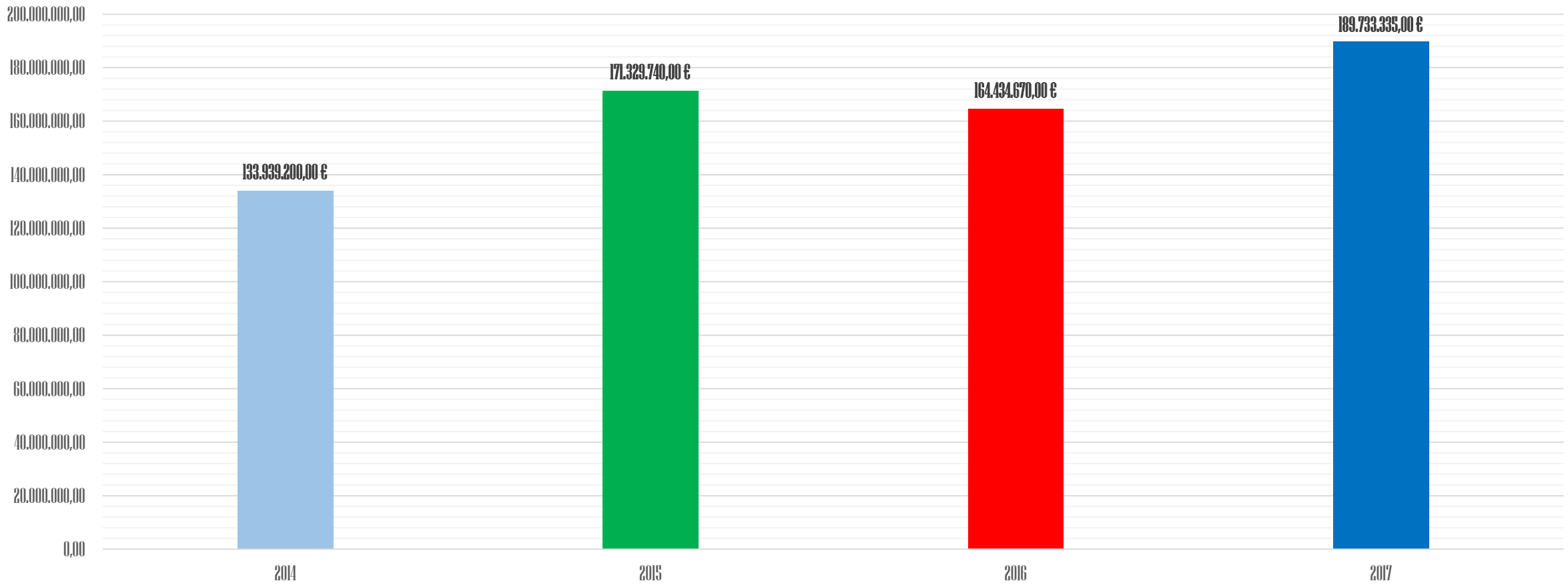
TELE2

vip

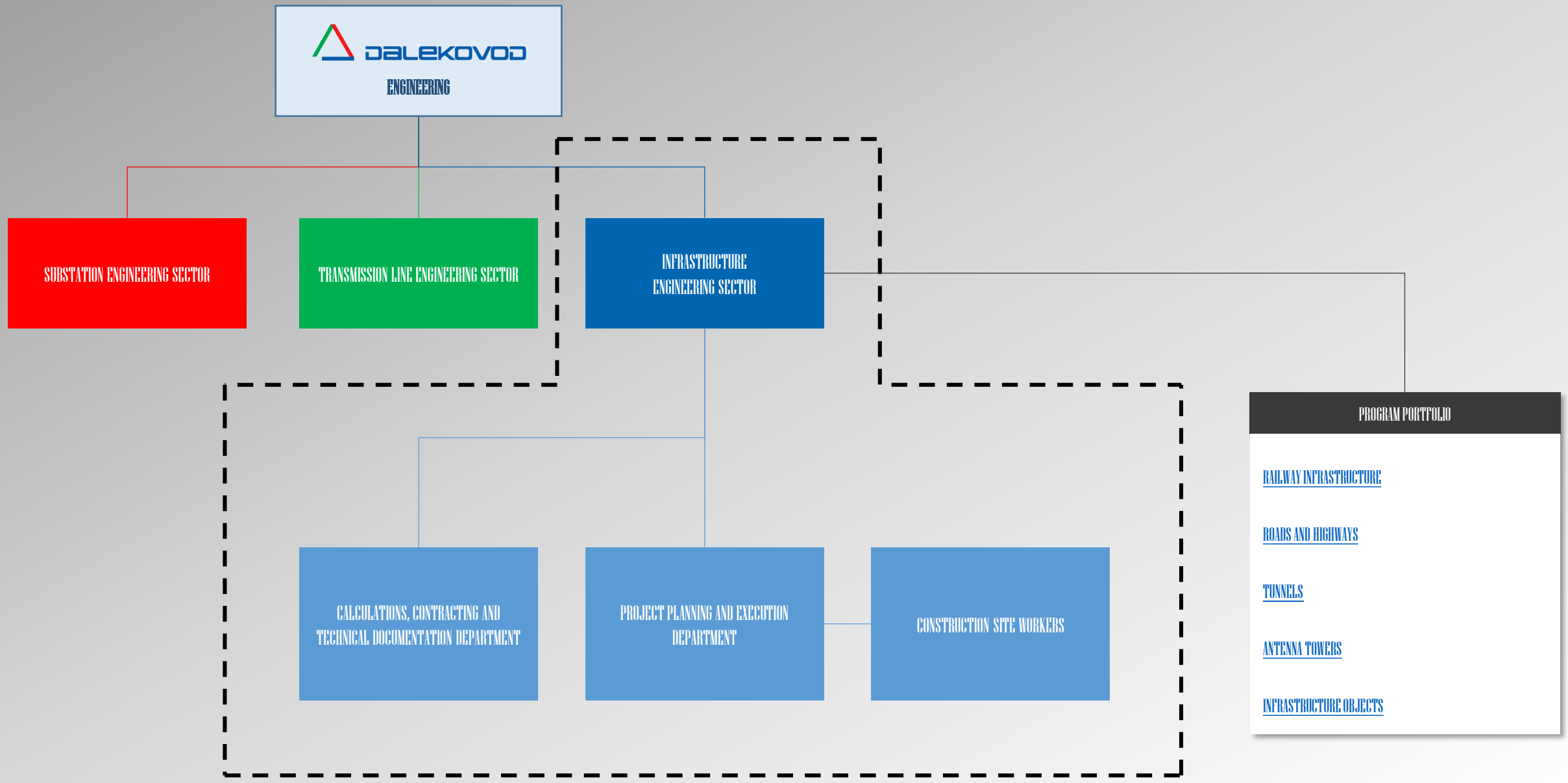
OiV

RH MUP

REVENUE

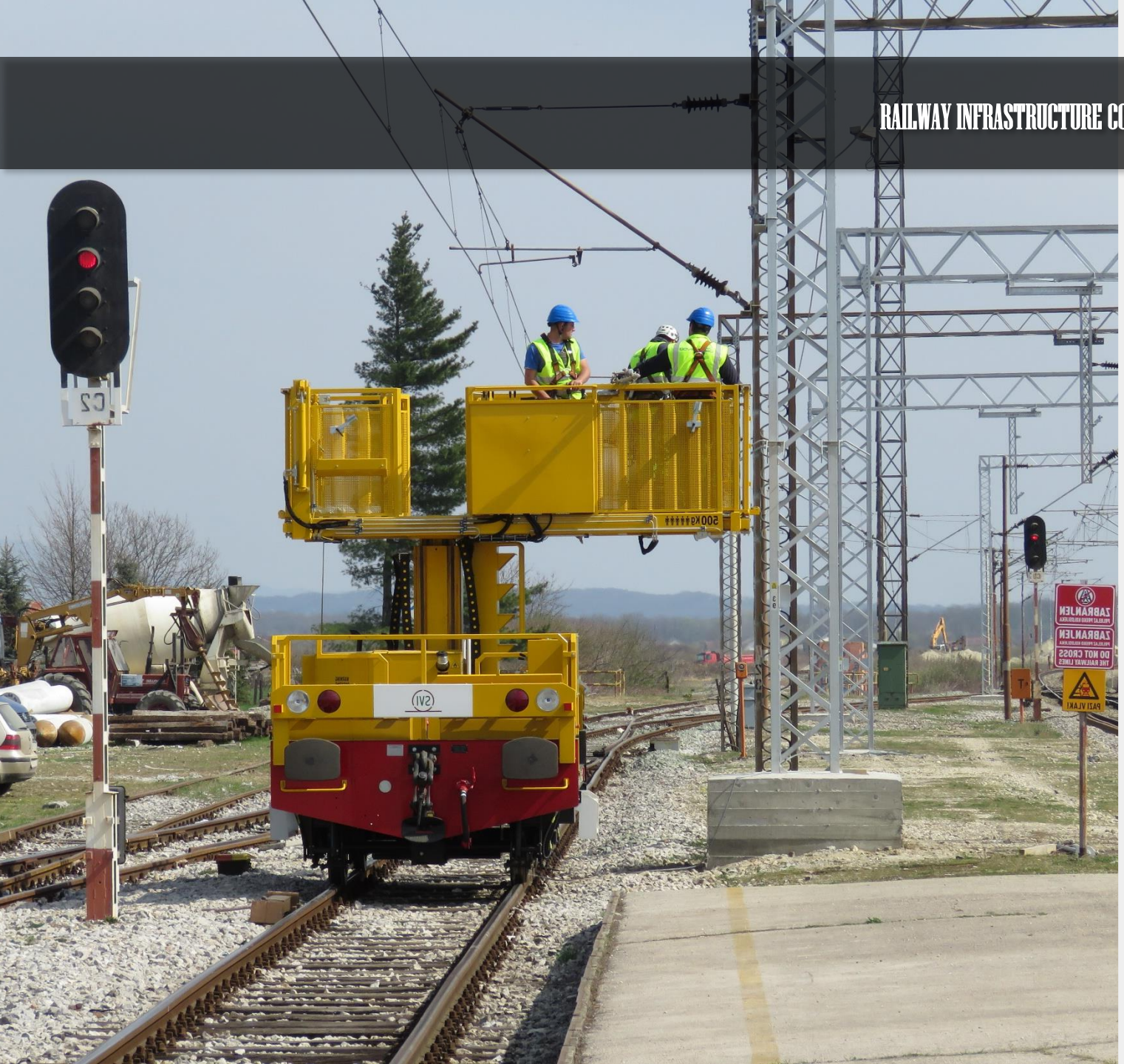

200.000.000,00
180.000.000,00
160.000.000,00
140.000.000,00
120.000.000,00
100.000.000,00
80.000.000,00
60.000.000,00
40.000.000,00
20.000.000,00
0,00
133.939.200,00 €
171.329.740,00 €
164.434.670,00 €
189.733.335,00 €
2014
2015
2016
2017

ORGANIZATIONAL SCHEME - BUSINESS UNITS AND SECTORS



RAILWAY INFRASTRUCTURE

RAILWAY INFRASTRUCTURE CONSTRUCTION



- ✓ Overhead catenary system
- ✓ Railroad and railway station lighting
- ✓ Noise protection barriers
- ✓ Electric traction substations
- ✓ Cable laying and relocation
- ✓ Load bearing steel structures
- ✓ Telecommunication infrastructure

OVERHEAD CATENARY SYSTEM HARDWARE

DALEKOVOD PRODUCTION PROGRAMME

1 Load bearing steel structures

2 Cantilever solutions

3 Suspension hardware

4 Tensioning equipment

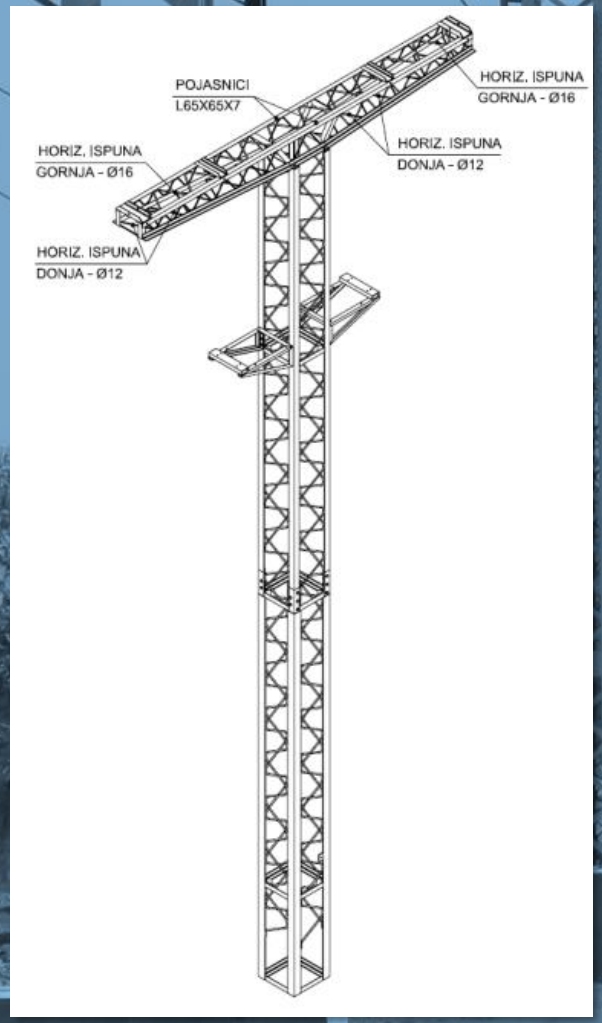
5 Contact line equipment

6 Switch disconnectors and surge arresters

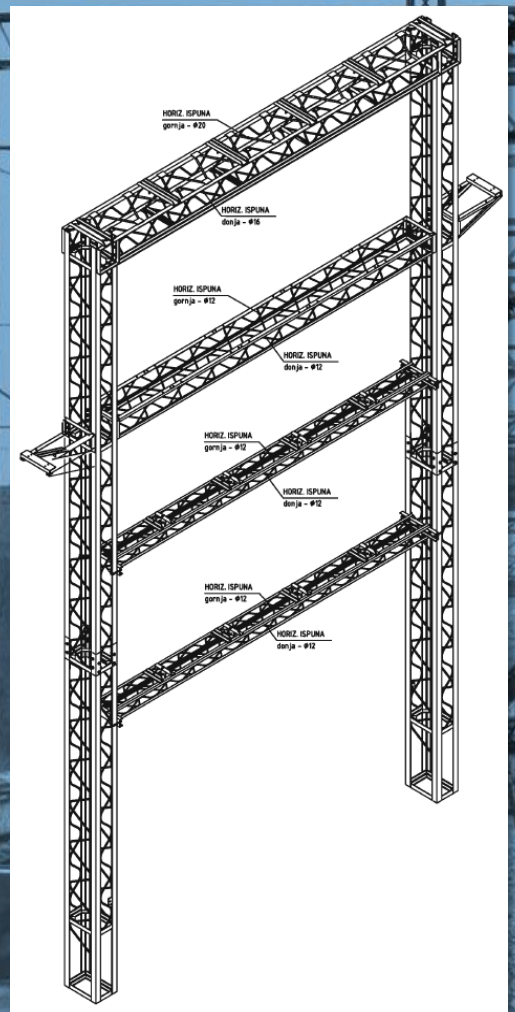
7 Insulators

OVERHEAD CATENARY SYSTEM HARDWARE

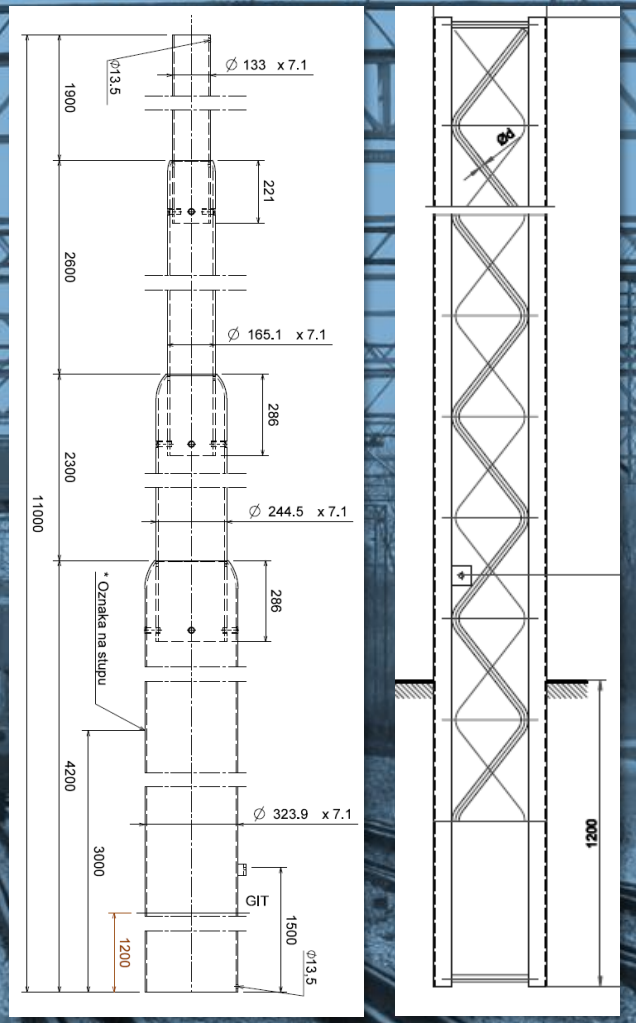
LOAD BEARING STEEL STRUCTURES AND FASTENERS



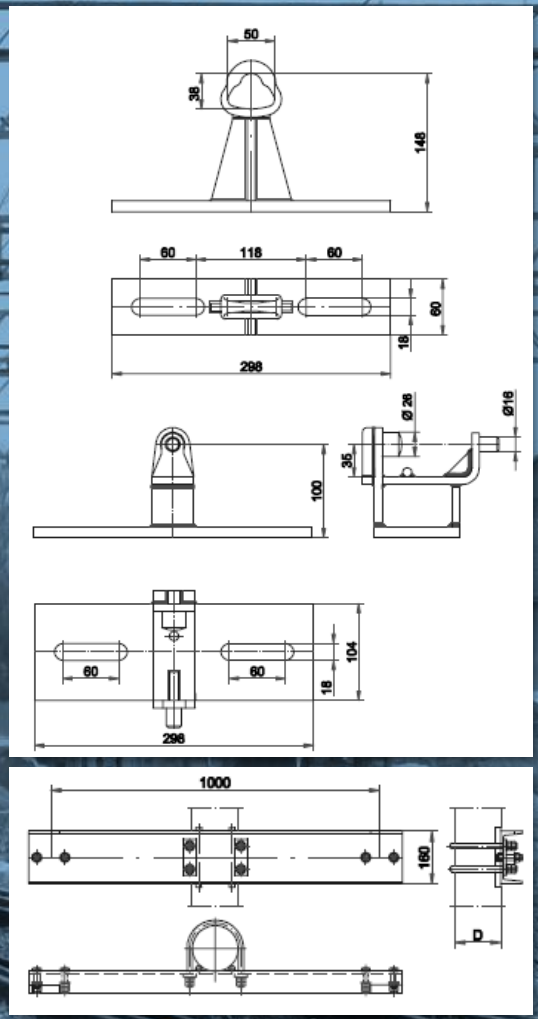
Transversal tie towers



Customized portals



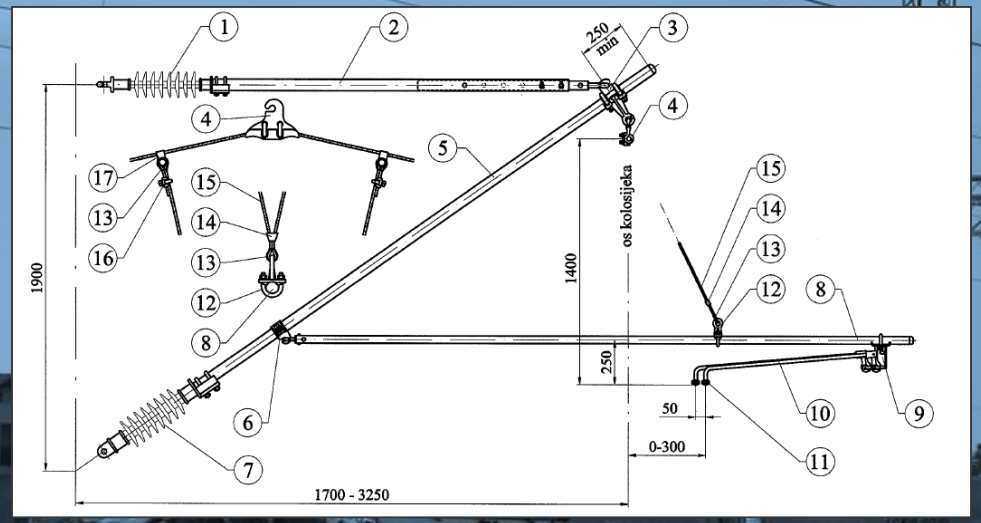
Tubular and lattice poles

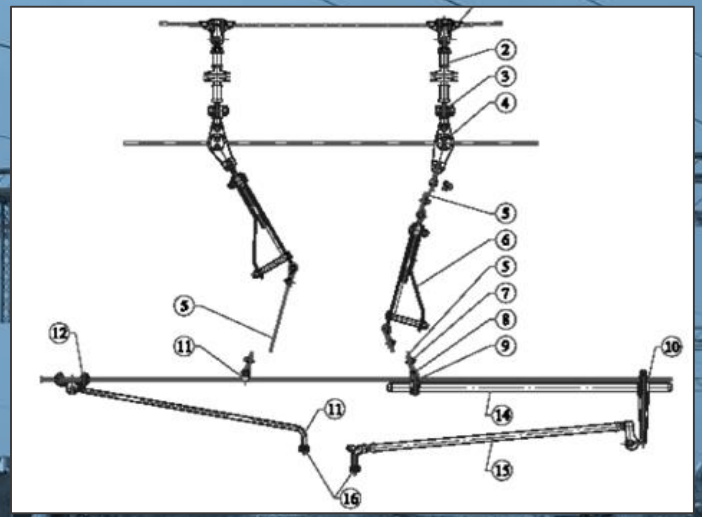


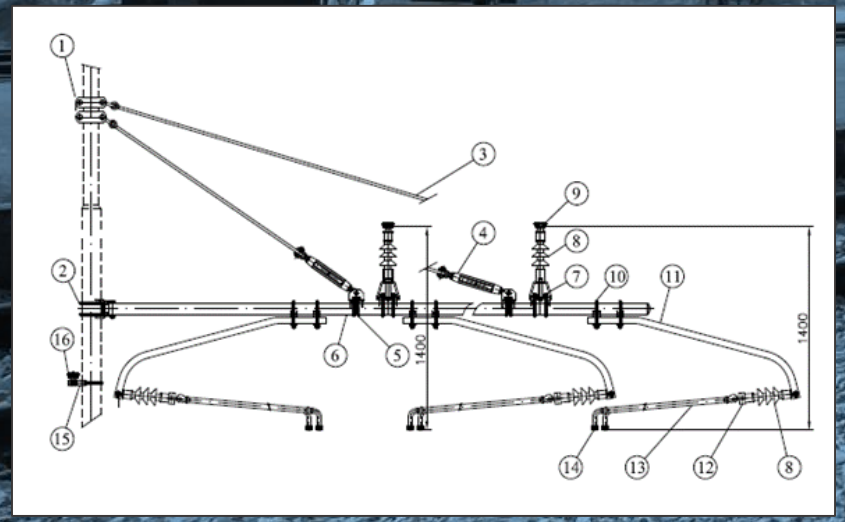
Fasteners and jointing equipment

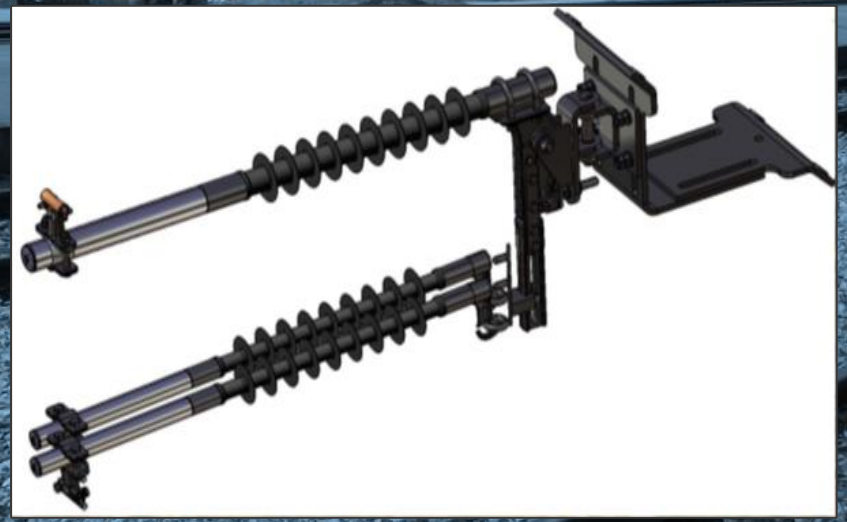
OVERHEAD CATENARY SYSTEM HARDWARE

CANTILEVER SOLUTIONS







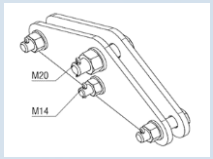


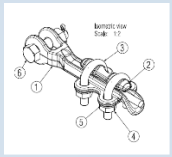
- ✓ Cantilever assemblies for light, medium, heavy and very heavy loads
- ✓ Cantilever assemblies for single or double contact wires
- ✓ Cantilever assemblies with and without bracket support
- ✓ Cantilevers for non-active lines
- ✓ Tension aluminum cantilevers
- ✓ Compression aluminum cantilevers
- ✓ Tunnel cantilevers

OVERHEAD CATENARY SYSTEM HARDWARE

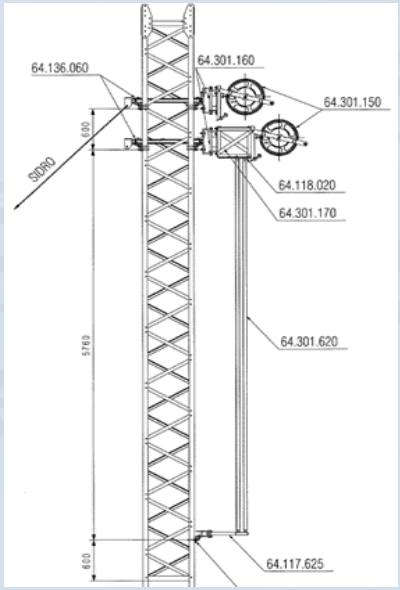
CATENARY ACCESSORIES

Suspension and tensioning equipment



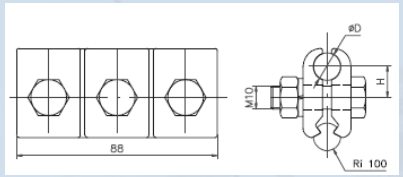


Fittings and clamps

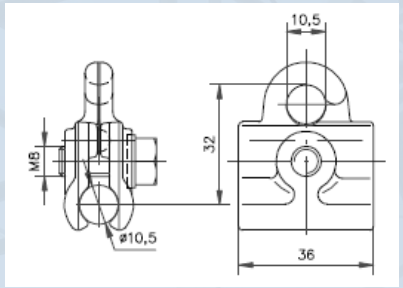


Tensioners

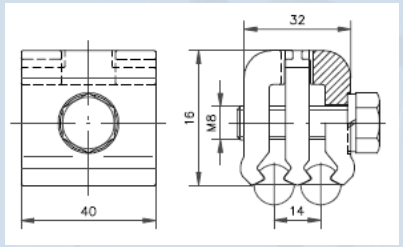
Contact line equipment



Wire clamps

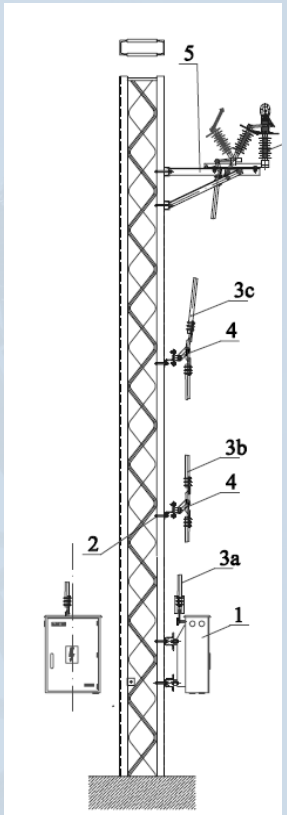


Dropper clamps

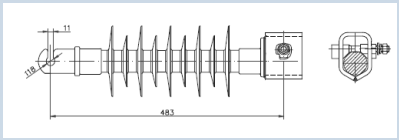


Wire clips

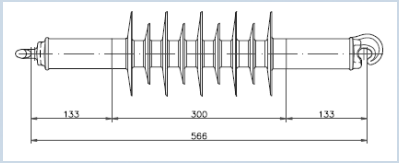
Switch-disconnectors and surge arresters



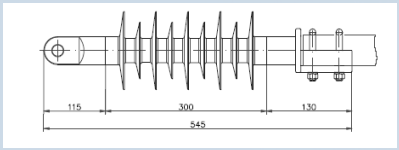
Insulators



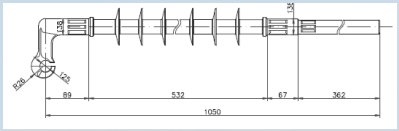
Cantilever insulators



Tension insulators



Post insulators



Steady arm insulators

RAILWAY INFRASTRUCTURE CONSTRUCTION

OVERHEAD CATENARY SYSTEM

- ✓ Excavation and construction of concrete foundations
- ✓ Assembling of load bearing structures using lifting machines and cranes
- ✓ Installation of catenary system hardware and contact lines
- ✓ Testing and fine tuning

RAILWAY INFRASTRUCTURE CONSTRUCTION

LIGHTING AND NOISE BARRIERS

LIGHTING

- Inhouse production of railroad and railway station lighting poles
- Construction of pole foundations
- Power supply cable connection
- Corrosive protection and painting of the existing lighting poles

NOISE BARRIERS

- Construction of foundations
- Inhouse production of steel HE profiles
- Installation of noise absorption barriers produced by reputed manufacturers

RAILWAY INFRASTRUCTURE CONSTRUCTION

POWER CABLES AND TELECOMMUNICATIONS

POWER CABLES

- Cable trench excavation
- Laying, connecting and testing of railroad cables
- Relocation of existing cables

TELECOMMUNICATION INFRASTRUCTURE

- Installation and relocation of telecommunication cables
- ETCS equipment installation and wiring
- Installation of the optical cables onto catenary construction

REFERENCES

DUGO SELO - KRIŽEVCI PROJECT

Reconstruction of 38 km of existing railroad track and construction of 36 km of new track, along with 4 railway stations

100 PORTALS

850 CATENARY POLES

1600 CANTILEVERS

4000 TENSIONING AND SUSPENSION ELEMENTS

102 km ELECTRIC TRACTION POWER LINES

Project start 2016 - expected completion by 2020

DALEKOVOD

REFERENCES

ISEV PROJECT

Railway reconstruciton between Rijeka and Moravice in Croatia

Turn key project - design, production and construction

Project objective: switching from 3kV DC system to 25kV AC system

Complete electric traction reconstruction, including:

- ✓ 135 km of overhead catenary system
- ✓ Overhead power transmission lines
- ✓ Transformer substations
- ✓ Switchgards
- ✓ Remote control center
- ✓ Telecommunication system

DALEKOVOD

Project completed in 2014


HIGHWAYS

DALEKOVOD

1. Steel guard rails
2. Noise barriers
3. Road portals
4. Signalization
5. Lighting
6. Power supply
7. Traffic monitoring system

STEEL GUARD RAILS

Inhouse production of steel guard rails for roads, bridge railings, overpass protection nets and wire fences

Basic types of steel guard rails:

- One-sided barrier (JO)
- One-sided spaced barrier (JDO)
- Double-sided barrier (DO)
- Double-sided spaced barrier (DDO)
- 2 x One-sided barrier (2 x JDOT/2)
- 2 x Double-sided barrier (2 x DDOT/2)
- One-sided spaced barrier, protection level H3

Designed and manufactured according to international standards:

- EN 1317-1 - Road restraint systems - Part 1: Terminology and general criteria for test methods
- EN 1317-2 - Road restraint systems - Part 2: Performance classes, impact test acceptance criteria and test methods for safety barriers

STEEL GUARD RAILS

CERTIFICATION AND TYPE TESTING

TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Technical and Test Institute for Construction Prague
Akreditovaná zkušební laboratoř, Autorizovaná osoba, Certifikační orgán, Notifikovaná osoba, Inspekční orgán
Accredited Testing Laboratory, Authorized Body, Certification Body, Notified Body, Inspection Body
Prosecká 811/76a, 190 00 Praha 9 - Prosek, Czech Republic

EC CERTIFICATE OF CONFORMITY

No. 1020 – CPD – 090-023834

In compliance with the Directive 89/106/EEC of the Council of European Communities of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to the construction products (Construction Products Directive – CPD), amended by the Directive 93/68/EEC of the Council of European Communities of 22 July 1993, it has been stated that the construction product:

Product

ROAD RESTRAINT SYSTEM
variant : road steel single sided safety barrier
type : JDOT/2

placed on the market by:

DALEKOVOD d.d.
INo: 080010093
address: Marijana Čavića 4, Zagreb, Croatia

and produced in the factory:

DALEKOVOD d.d.
INo: 080010093
address: Vukomerička bb, Velika Gorica, Croatia

DALEKOVOD TIM d.d.
INo: 24370218091
address: Školska bb, Topusko, Croatia

is submitted by the manufacturer to a factory production control and to the further testing of samples taken at the factory in accordance with a prescribed test plan and that the notified body

1020 – Technical and Test Institute for Construction Prague

has performed the initial type-testing for the relevant characteristics of the product, the initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of the factory production control.

This certificate attests that all provisions concerning the attestation of conformity and the performances described in Annex ZA of the standard

EN 1317–5:2007+A1:2008

were applied and that the product fulfils all the prescribed requirements.

This certificate was first issued on 17 Juni 2010 and remains valid as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the FPC itself are not modified significantly.

The stamp of the Notified Body 1020
Prague, 17 Juni 2010

Ing. Jiří Studnička
Deputy manager of the Notified Body

Type tested by **Technical and Test Institute for Construction Prague**, an independent and internationally recognized testing institution

Containment levels

H1 - acceptance test **TB11**

H2 - acceptance tests **TB11** and **TB51**

H3 - acceptance tests **TB11** and **TB61**

Test TB11

Vehicle with mass of 900 kg, speed 100 km/h, collision at the angle of 20 degrees

Test TB51

Bus with mass of 13.000 kg, speed 70 km/h,

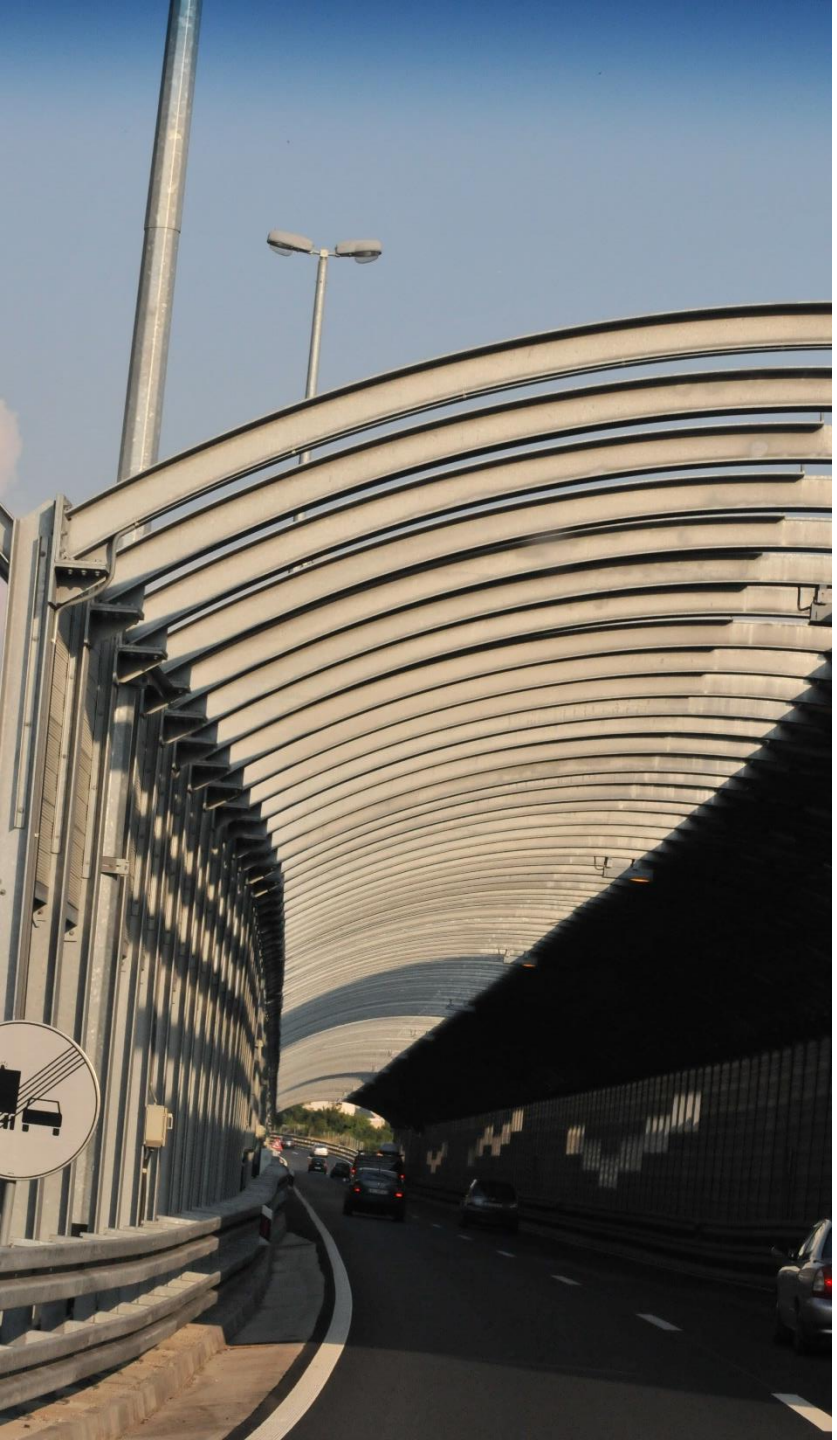
collision at the angle of 20 degrees

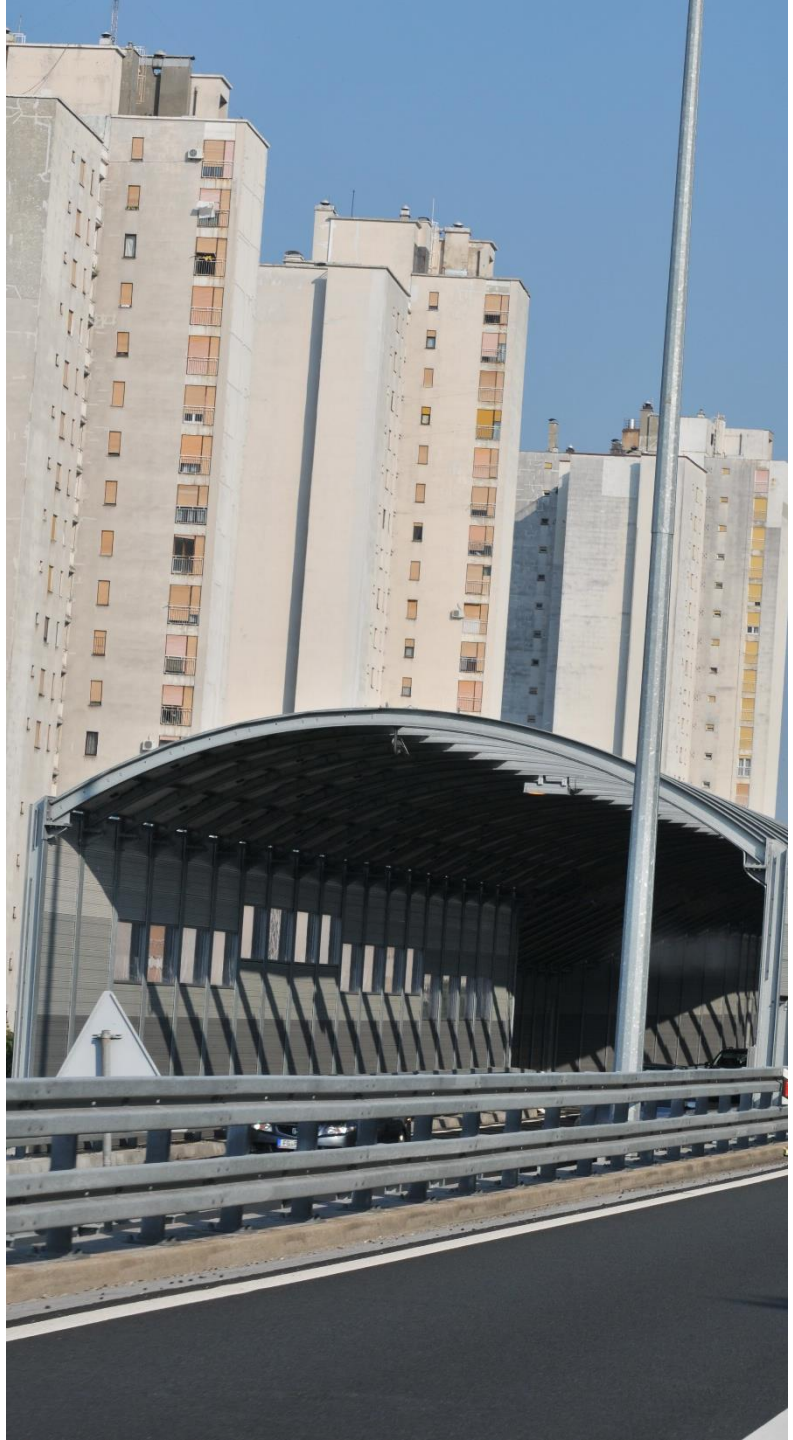
Test TB61

Truck with mass of 16.000 kg, speed 80 km/h, collision at the angle of 20 degrees

NOISE BARRIERS

- ✓ Optimal noise protection on roads
- ✓ All elements feature high absorption
- ✓ Harmoniously fitted in with the environment
- ✓ Noise barriers meet the following requirements:
  - ✓ Specific material characteristics
  - ✓ Acoustic shielding and attractive design
  - ✓ Cost-efficient and easy mounting
  - ✓ Long-term wear resistance
  - ✓ Adaptation to local conditions
  - ✓ Maintenance free and can be repaired





HIGHWAY NOISE BARRIER

RIJEKA

ROAD PORTALS AND LOAD BEARING STRUCTURES

- ✓ Own production of different types of load bearing steel structures - Dalekovod Proizvodnja Ltd.
- ✓ Different types of portals which fully or partially overarch the road at places where guidance is required make the road visible from a greater distance, thus greatly contributing to the overall security and guidance of traffic on roads and highways
- ✓ Design and size of road portals depend on the type of road signals which the construction needs to carry, the road width that needs to be spanned, the climate in which they are being put up (areas exposed to wind, occurrence of snow and ice, etc.), and special requirements of investors, if any

SIGNALIZATION

HORIZONTAL AND VERTICAL

- ✓ Traffic signs
- ✓ Warning signs
- ✓ Information signs
- ✓ Restriction signs
- ✓ Danger signs
- ✓ Direction signs
- ✓ Position signs
- ✓ Indication signs
- ✓ Service signs
- ✓ Additional panels
- ✓ Road lines
- ✓ Road markings

LIGHTING

Own production of lighting poles, lamp cantilevers, connection material and other lighting accessories

Designed, manufactured and type tested in accordance with **international standard**

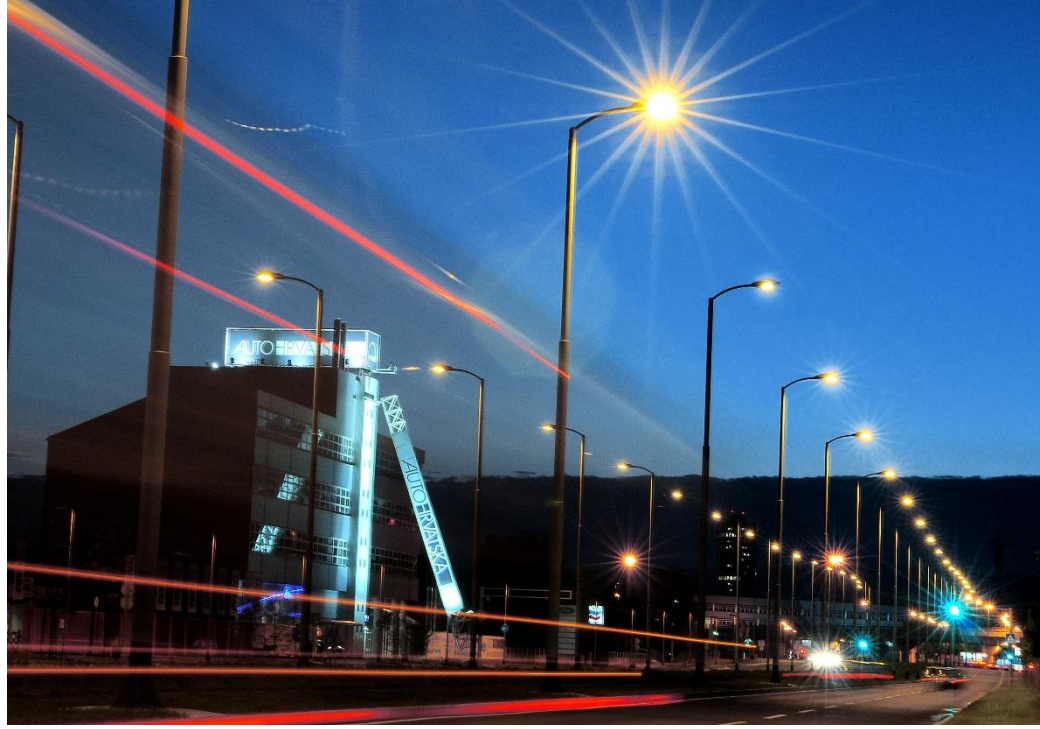
EN 40-5:2002 „Requirements for steel lighting columns"

Type tested by internationally approved and recognized institution **„Technical and Test Institute for Construction Prague"**

Suitable for lighting of the **entire road infrastructure** - highways, local and state roads, bridges, roundabouts, overpasses, underpasses, tunnels, road junctions etc.

Wide lighting and reflector pole production portfolio:

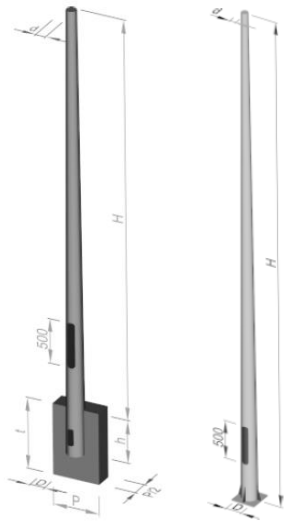
- ✓ SRS series lighting poles
- ✓ KORS series lighting poles
- ✓ CRS series lighting poles
- ✓ SUN reflector poles
- ✓ Lamp and reflector cantilevers
- ✓ Lighting accessories and connection material



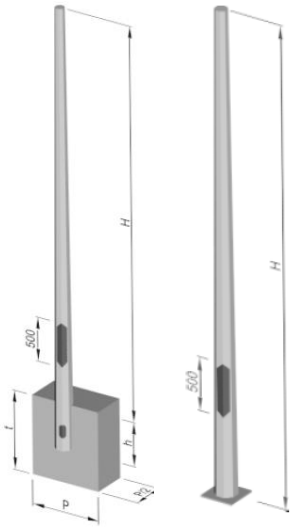
LIGHTING
PRODUCTION PORTFOLIO

lighting poles

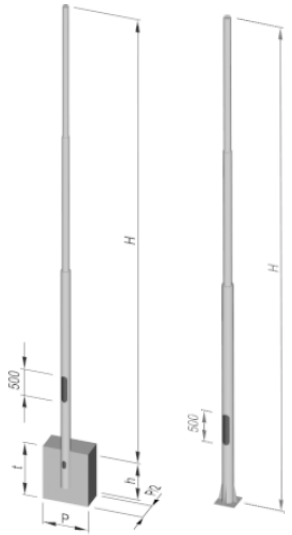
SRS series



KORS series

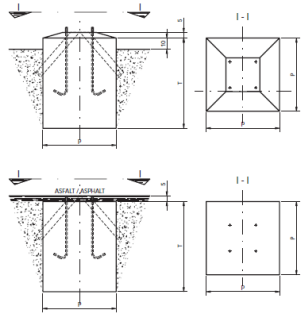


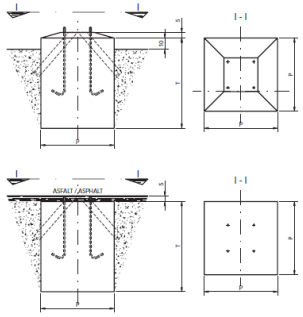
CRS series

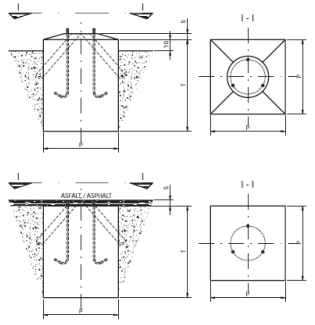


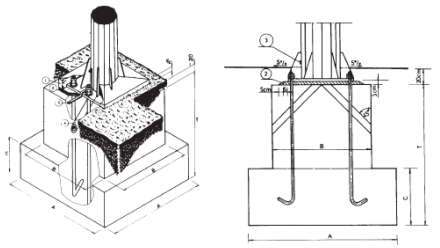
SUN series

Foundations

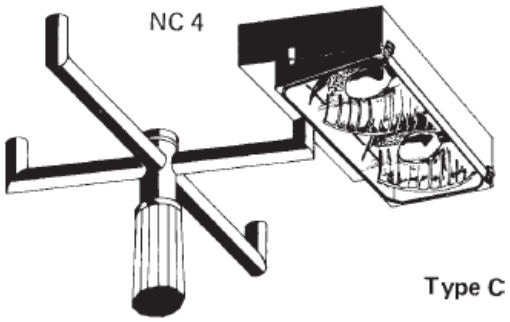


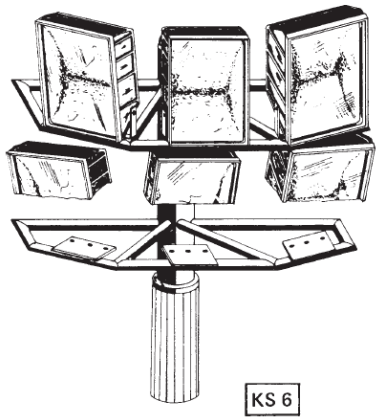


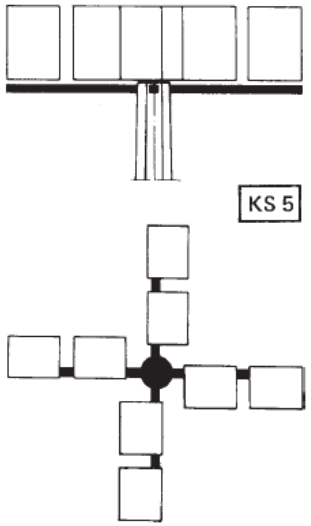


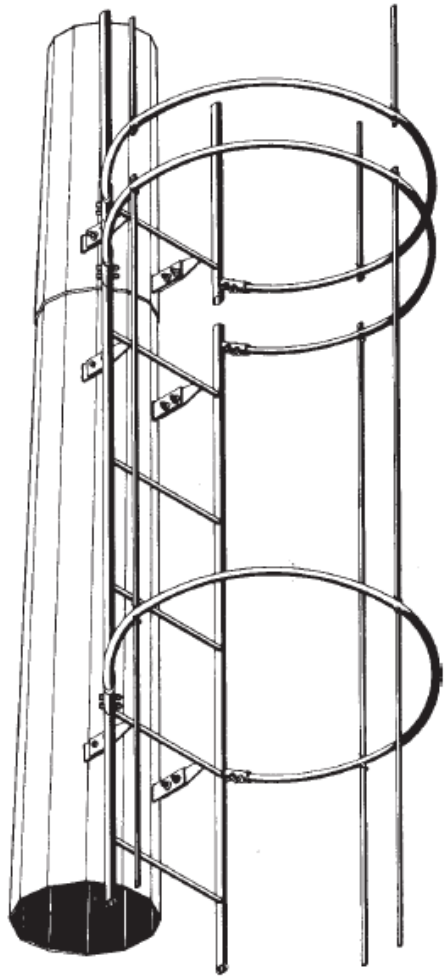


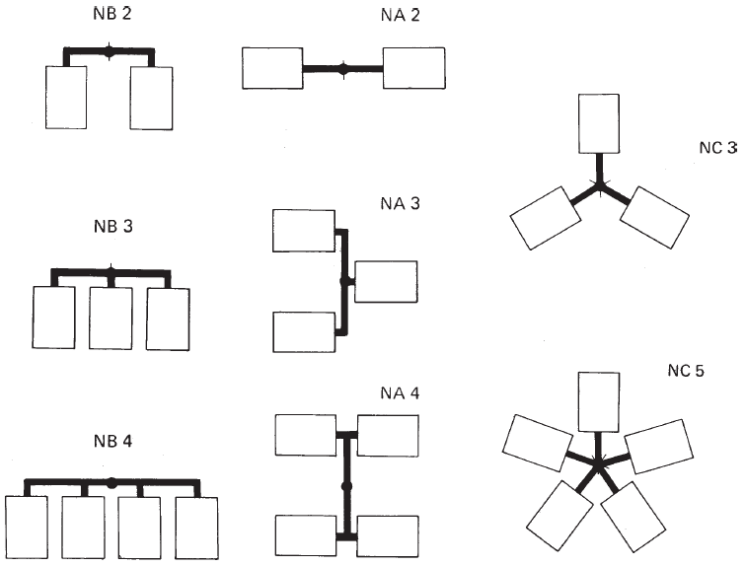
- ✓ Different types and shapes of lamp and reflector cantilevers
- ✓ Ladder with climbing protection
- ✓ Connection material and other accessories

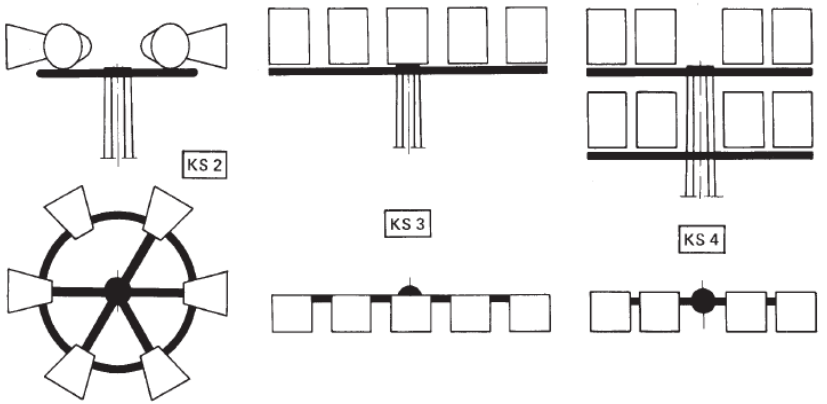






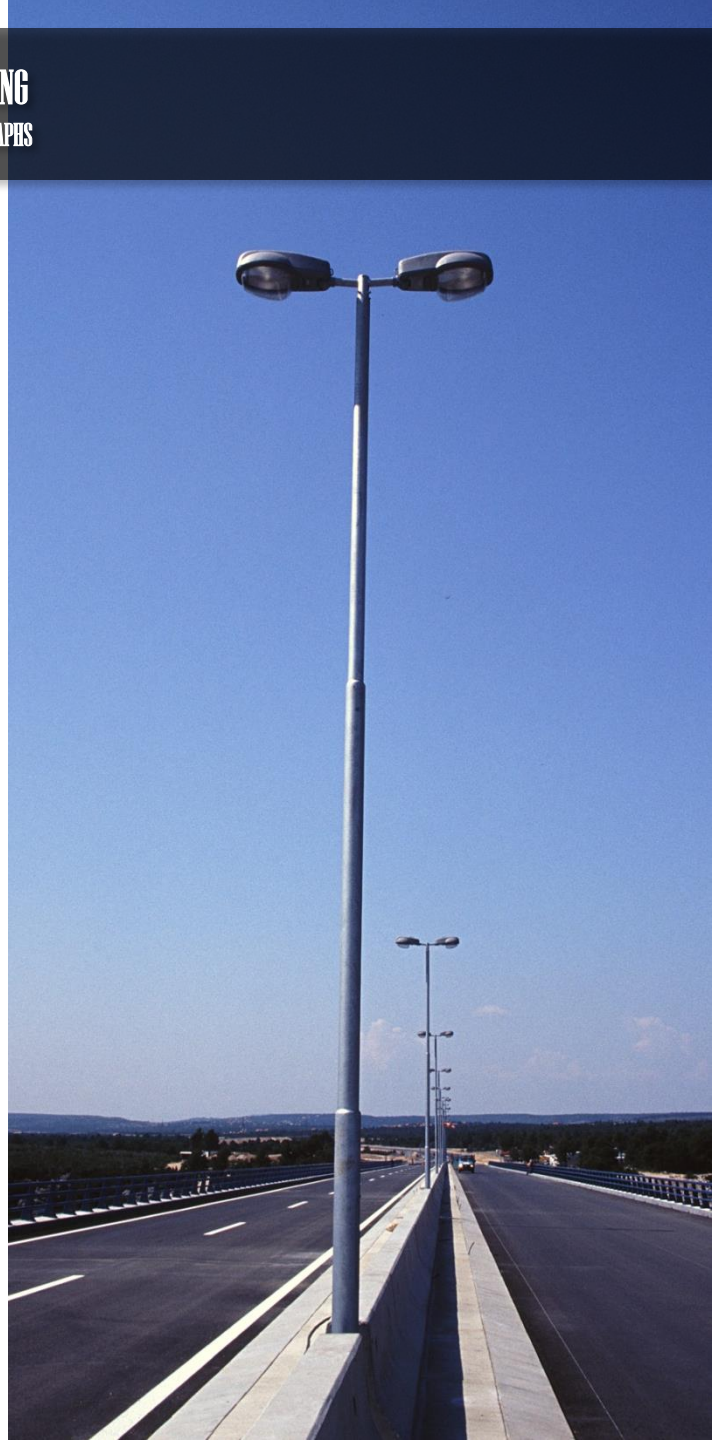




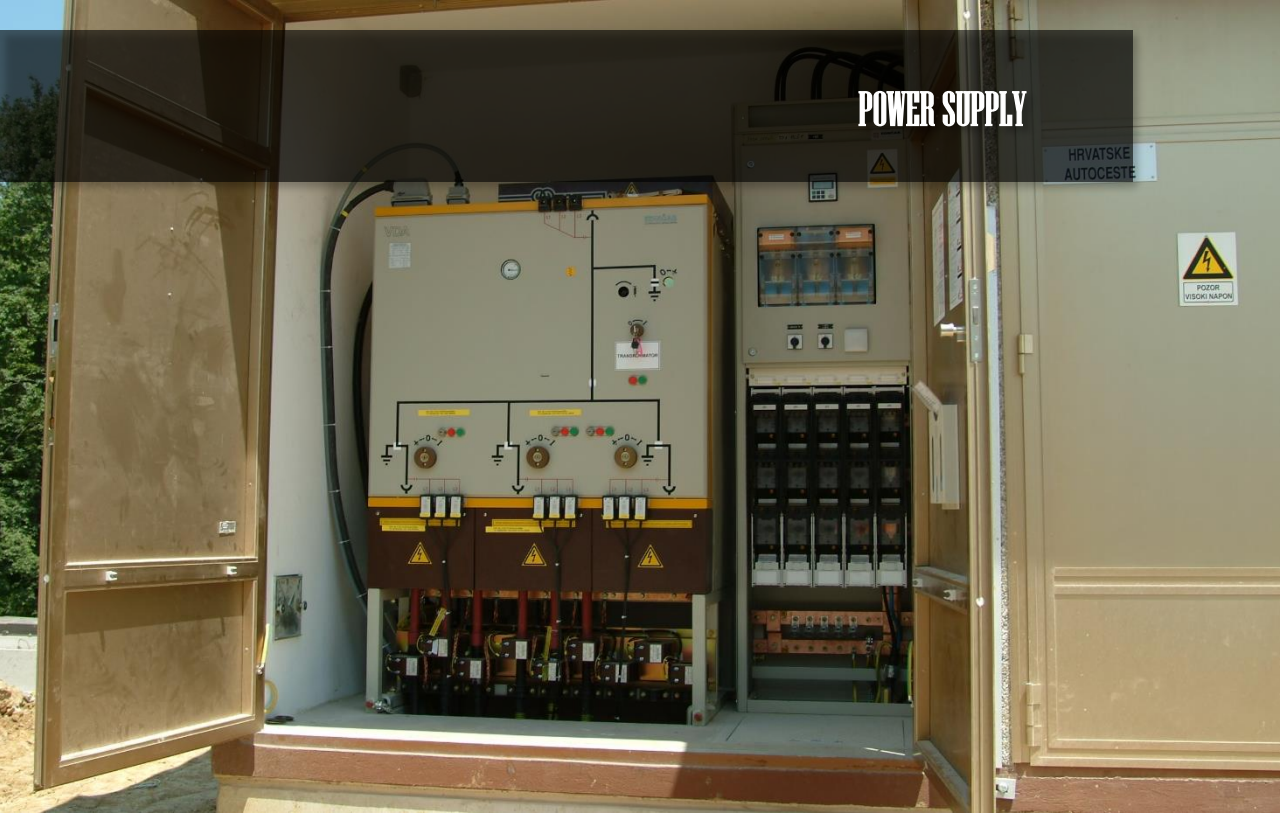


LIGHTING

PHOTOGRAPHS



POWER SUPPLY



- ✓ Metal enclosed and concrete housed transformer substations up to 1000kVA, consisting of medium voltage ring man unit, power transformer and low voltage switchgear
- ✓ Connection to other parts of the power grid or switchboards through high-quality fire resistant electrical power cables
- ✓ Cable laying, installation or relocation - power cables, telecommunication cables, signal cables
- ✓ Ensuring continuous electrical power supply and providing electricity to all infrastructure objects that require power source

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TRAFFIC MONITORING SYSTEMS

- ✓ *VIDEO CAMERAS - traffic surveillance*
- ✓ *METERING STATIONS - road temperature, wind speed, humidity, ice etc.*
- ✓ *TRAFFIC DENSITY - road utilization*
- ✓ *SPEED MONITORING*

REFERENCES

A1 HIGHWAY ZAGREB-SPLIT-DUBROVNIK

REFERENCES

A6 HIGHWAY BOSILJEVO-RIJEKA

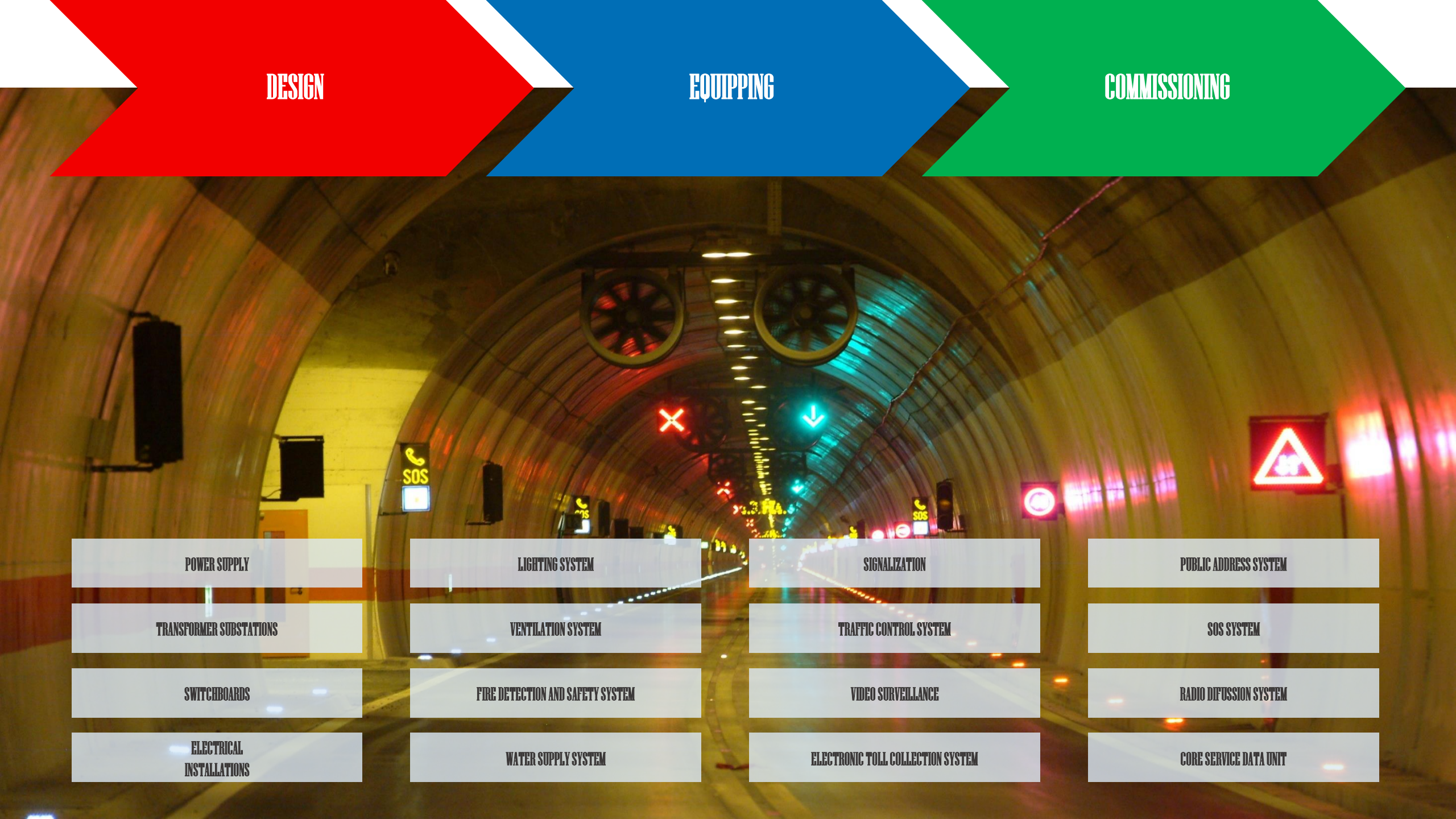
REFERENCES

A3 HIGHWAY BREGANA-ZAGREB-LIPOVAC

DALEKOVOD

„Complete tunnel equipping, regardless of length, complexity and specific requirements..."

TUNNELS


DESIGN
EQUIPPING
COMMISSIONING
POWER SUPPLY
TRANSFORMER SUBSTATIONS
SWITCHBOARDS
ELECTRICAL INSTALLATIONS
LIGHTING SYSTEM
VENTILATION SYSTEM
FIRE DETECTION AND SAFETY SYSTEM
WATER SUPPLY SYSTEM
SIGNALIZATION
TRAFFIC CONTROL SYSTEM
VIDEO SURVEILLANCE
ELECTRONIC TOLL COLLECTION SYSTEM
PUBLIC ADDRESS SYSTEM
SOS SYSTEM
RADIO DIFUSSION SYSTEM
CORE SERVICE DATA UNIT

POWER SUPPLY

- ✓ The tunnels are powered from two MV/LV substations:
  - RMU on the primary (MV) side
  - Power transformer
  - Low voltage switchgear panels on the secondary (LV) side
- ✓ Connection to tunnel switchboards through fire resistant power cables
- ✓ Rating of the electrical equipment is determined in the design stage of the project, according to calculated power loads and most recent regulations and standards
- ✓ In case of a power outage, UPS system is installed in order to maintain a continuous supply of the electrical energy to the connected systems
- ✓ Possibility of spare power supply from diesel generator

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LIGHTING

OUTSIDE:

- ✓ Lighting of the both entrance and exit zones - lamps produced by reputed manufacturers mounted on lighting poles manufactured in our own facilities (Dalekovod Proizvodnja Ltd.)
- ✓ Installation of lighting sensors in front of the tunnel - automatic detection of light intensity regulates the lighting regime (number of turned on lights at the tunnel entrance zone)

INSIDE THE TUNNEL:

- ✓ Lengthwise tunnel lighting - lamps are mounted on the tunnel ceiling at distance of every 12-15m until the end of the tunnel, paired in two, with one of the lamps always connected to the UPS system
- ✓ Lighting of vehicle lay-by
- ✓ Lighting of the pedestrian passages
- ✓ Evacuation lamps used as guidance towards tunnel exit or pedestrian passage - always on, connected to UPS system

VENTILATION

- ✓ Reversible axial fans mounted on the ceiling are responsible for the air flow through the tunnel
- ✓ Main purpose - the dilution of combustion gases produced by motor vehicles and smoke spreading control in the event of a fire
- ✓ Tunnels are equipped with different types of detectors such as carbon monoxide concentration sensor, visibility and fog sensor, air flow direction and velocity sensor etc.
  All this information is constantly being gathered and sent to the Core Service Data Unit wherefrom ventilation is regulated automatically or manually.
- ✓ Ventilation regulation system is programmed to manage following scenarios:

  1. Normal operating state - air flow direction of the fans is in line with the natural air flow direction **(cost reduction)**.
     In case of severe air pollution, the air flow through the tunnel is regulated in a way that minimizes the transmission of pollution

  2. Ongoing fire - evacuation phase and smoke extraction - the number of working fans and the air flow is regulated manually according to pre-defined scenarios for such incidents

DALEKOVOD

SIGNALIZATION

„Complete horizontal and vertical signalization..."

- ✓ Traffic signs
- ✓ Warning signs
- ✓ Information signs
- ✓ Restriction / Danger signs
- ✓ Direction, position or indication signs
- ✓ Service signs
- ✓ Additional panels

FIRE DETECTION AND PROTECTION SYSTEM

„Equipping tunnels with the whole fire protection system - including automatic and manual fire detection, fire extinguishers, water supply system, fire alarm system etc."

- ✓ Main objective of the fire detection and protection system is primarily to protect the lives of the people, and secondary to protect the objects and the equipment. Firefighting measures include fast fire detection, coordinated alarm notification, safe, quick and panic-free evacuation, fast and directed intervention of firefighters.

- ✓ Fire in the tunnel can be detected through following:
  1. Detection by optical cable mounted on the ceiling of the tunnel
  2. Detection by manually pressing the fire buttons located on the portals in the tunnel
  3. Detection by limit switch when the fire extinguisher is taken from it's place

- ✓ The fire detection is obtained by measuring both the temperature in the tunnel and temperature deviation parameters near the optical cable on the ceiling. Combination of conditions such as exceeding the set maximum temperature, exceeding the set temperature increase in specific time period or exceeding the average set temperature are all triggers for fire protection system to engage.

- ✓ Fire detection in transformer substations is a part of separate fire protection zone and the detection is obtained through automatic fire detectors connected to the central fire detection unit.

DALEKOVOD

CORE SERVICE DATA UNIT (CSDU)

The CSDU provides early detection of traffic congestion and localizes its cause, while the operator in the center determines its severity. On the basis of collected data and alarms, the CSDU conducts a pre defined scenario for traffic regulation, as well as warns traffic participants of dangers and limitations by means of appropriate signalization (traffic lights, traffic signs), written messages (displays), radio diffusion and the public address system. Also, in the case of a severe incident, the CSDU blocks entrances into the tunnel and guides traffic participants to the nearest exit by means of predetermined automated traffic regulation scenarios.

MONITORING AND MANAGEMENT SYSTEMS

- ✓ Ventilation
- ✓ Traffic
- ✓ Lighting
- ✓ Water supply
- ✓ Power supply

MONITORING AND ALARM SYSTEMS

- ✓ Fire detection
- ✓ Video surveillance and traffic detection

MONITORING AND COMMUNICATION SYSTEMS

- ✓ Public address
- ✓ Emergency telephone
- ✓ Radio diffusion
- ✓ Local communication network

TRAFFIC CONTROL SYSTEM

- Dynamic Lane Management
- Variable Speed Limits
- Ramp Metering
- Cross Border Traffic Management
- Co-ordinated Data Exchange - Real Time Traffic Information Provision

Rerouting, network management and traffic management planning

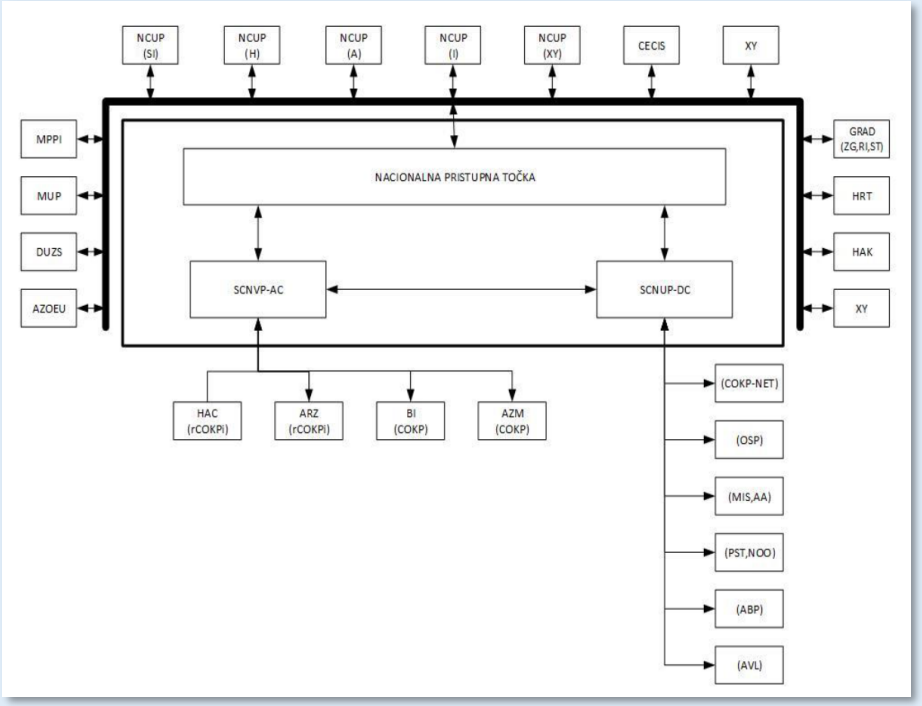
Lane or line control systems and related applications like **ramp metering, dynamic speed limits and overtaking control**

Linking traffic management and **traffic information systems**

Information exchange between individual vehicles and traffic management, like for Car-to infrastructure systems

Information exchange between management systems for different modes, like multi-modal information systems

Exchange of measured data



EUROPEAN TUNNEL ASSESSMENT PROGRAMME

Implemented over a period of eight years by the German ADAC

Croatian tunnels achieved high rankings:

Name of the tunnel	European test	Year of testing	Number of European countries involved in the test	Total number of tested European tunnels	Test ranking
Sveti Rok tunnel	EUROTAP	2010.	13	26	3
Tuhobić tunnel	EUROTAP	2009.	18	51	2
V. Globžac tunnel	EUROTAP	2008.	11	31	3
Brinje tunnel	EUROTAP	2007.	11	51	1
Grič tunnel	EUROTAP	2006.	14	52	2
Plasina tunnel	EUROTAP	2005.	11	49	3

„I've have inspected many tunnels across Europe and I must say that the Croatian tunnels are equipped with the best safety systems and deserve the highest rankings..."

GRACHAM HEYWOOD, traffic video detection expert from Great Britain, statement for the national television

DALEKOVOD

REFERENCES

„More than 40 equipped tunnels in total length of approximately 100 km during 15 year period, with value of contracted works over 150 million EUR..."

No.	Tunnel	Length [m]*
1	**Sveti Ilija**	**4248**
2	Trsat	1716
3	Škurinje I	824
4	Škurinje 2	1144
5	Katarina	860
6	Hrasten	556
7	Mali Prolog	1029
8	Vrata	524
9	Sopač	1550
10	Sleme	1716
11	Lučice	1180
12	Vršek	1730
13	Javorova Kosa	2980
14	Pod Vugleš	1190
15	**Mala Kapela**	**11602**
16	**Sveti Rok**	**11456**
17	**Tuhobić**	**4286**
18	V. Gložac	2252
19	Brinje	3082
20	Brezik	800

No.	Tunnel	Length [m]*
21	Grič	2500
22	**Plasina**	**4600**
23	Umac	880
24	Krpani	342
25	Ledenik	1536
26	Bristovac	1400
27	Čelinka	440
28	Dubrava	1600
29	Konjsko	2355
30	Šubir	1924
31	Kobiljača	1560
32	Puljani	834
33	Zmijarevići	600
34	Petrovac	491
35	Međak	397
36	Jušići	693
37	Sv. Kuzam	620
38	Braga	438
39	Rožman Brdo	1000
40	Čardak	1202

* Total length of the tunnel (sum of both tubes)

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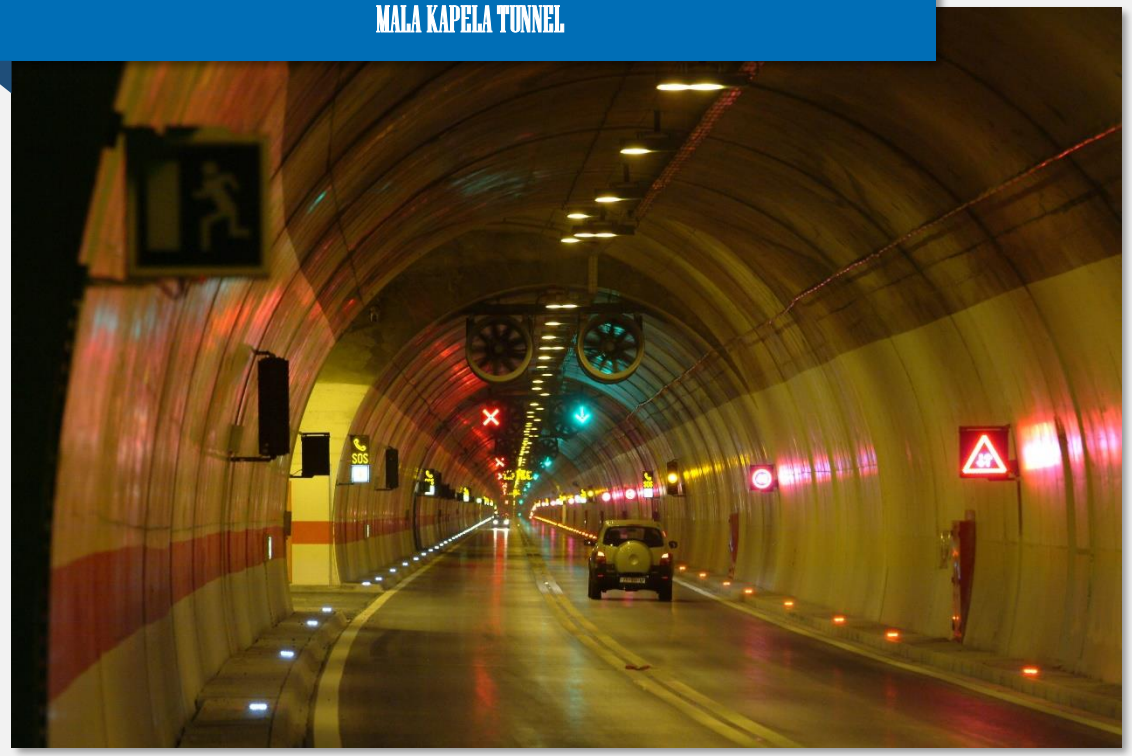
REFERENCES

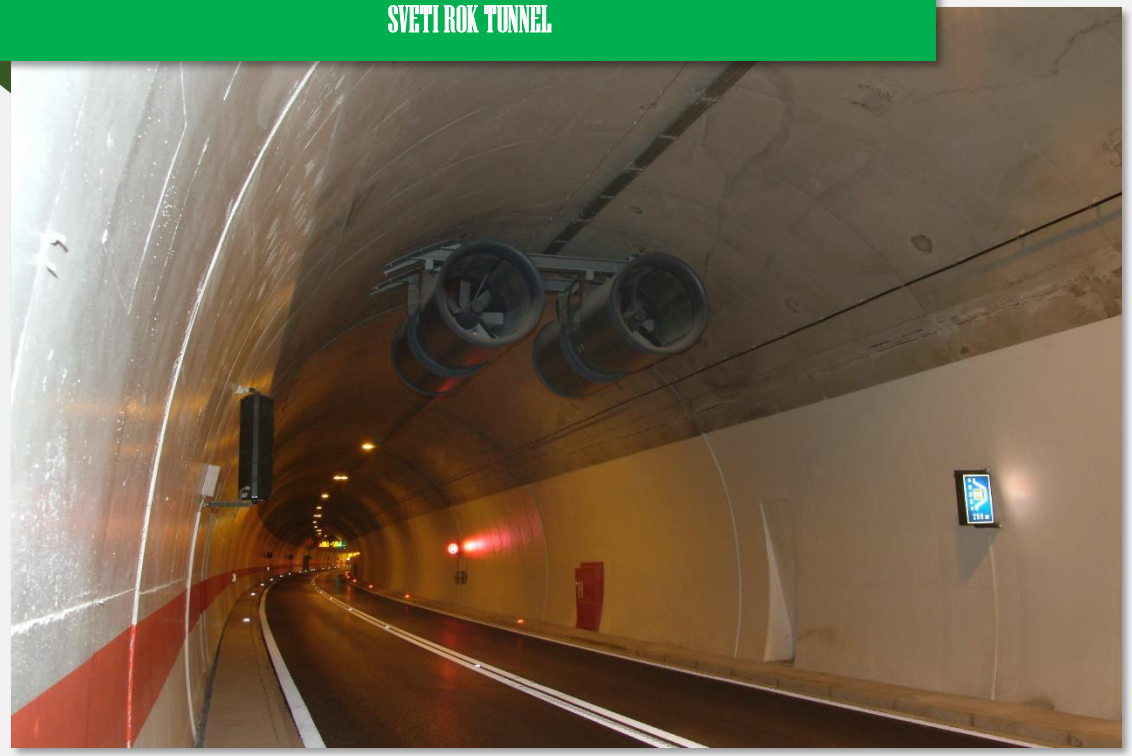
MALA KAPELA TUNNEL



Length: 2 x 5801 m

Contract value*: 25.461.428,00 EUR

SVETI ROK TUNNEL

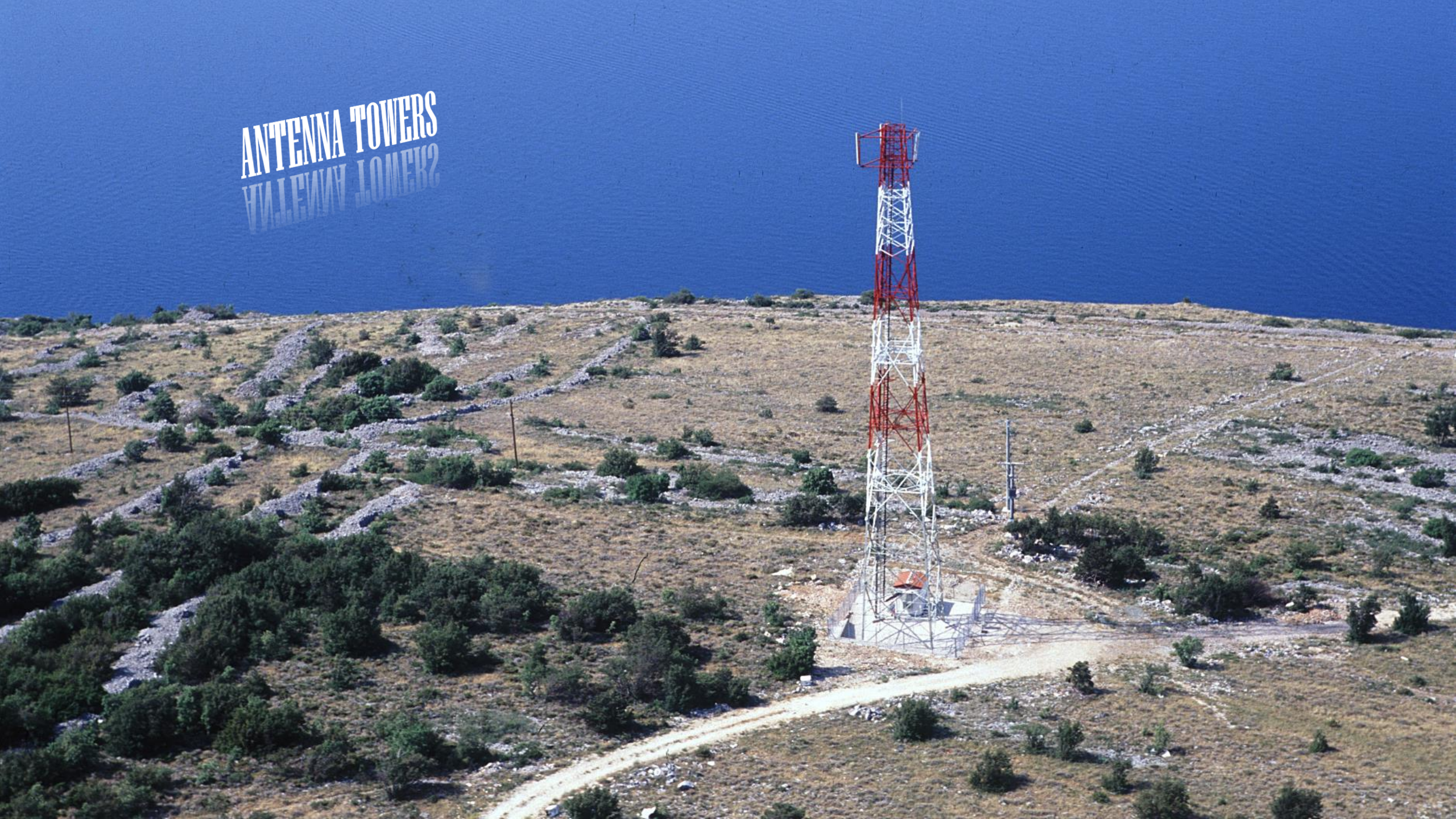


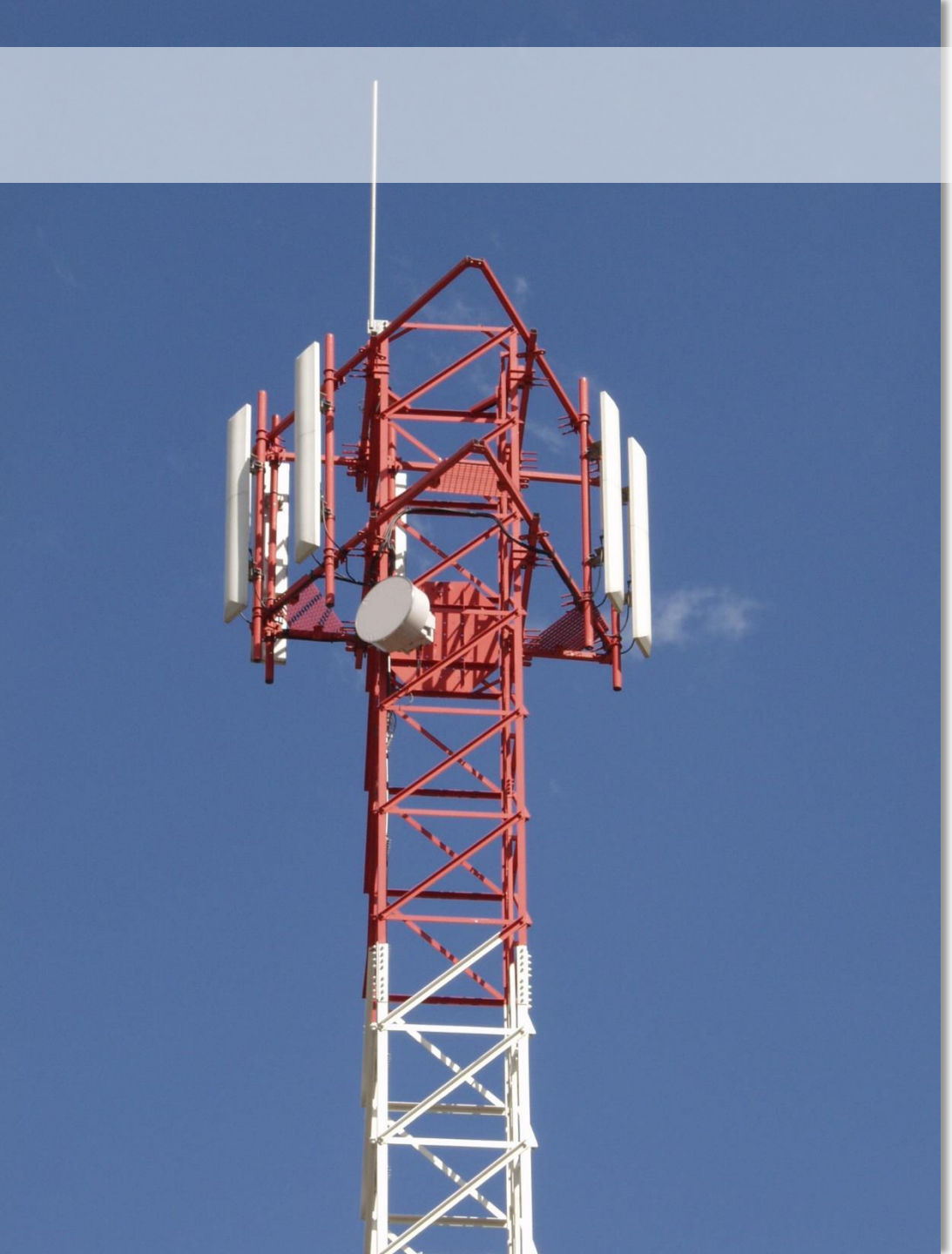
Length: 2 x 5728 m

Contract value*: 25.140.994,00 EUR

* Project scope included technical equipping of only one tube of each tunnel

ANTENNA TOWERS





DALEKOVOD

„Over 40 years of experience in design, production and assembling of towers for different purposes..."

- COMMUNICATION ANTENNA
- RADAR
- GSM MOBILE BASE STATION
- TELEVISION
- VIDEO SURVEILLANCE

MORE THAN 700 ANTENNA TOWER PROJECTS COMPLETED...

DALEKOVOD

DESIGN

- ✓ Preliminary solutions
- ✓ Concept design
- ✓ Detailed design
- ✓ As built documentation
- ✓ Geodesic study
- ✓ Geo-mechanical study
- ✓ Approvals and construction permits
- ✓ Static calculations
- ✓ Workshop documentation
- ✓ Project documentation revision

PRODUCTION

Steel lattice towers

- ✓ AR series
- ✓ ARCT series
- ✓ DAL series
- ✓ DAT series
- ✓ DAS series

Tubular towers

- ✓ AC series

CONSTRUCTION

- ✓ Corrosion protection
- ✓ Signal painting
- ✓ Geodesic works
- ✓ Tower foundation and plateau civil works
- ✓ Access road and infrastructure civil works
- ✓ Tower assembling and construction works
- ✓ Electrical installation works

Standard tower equipment:

- ✓ Ladder with back protection
- ✓ Fall safety system
- ✓ Working platforms
- ✓ Cable cantilevers
- ✓ Antenna cantilevers
- ✓ Signal light cantilevers
- ✓ Earthing connections

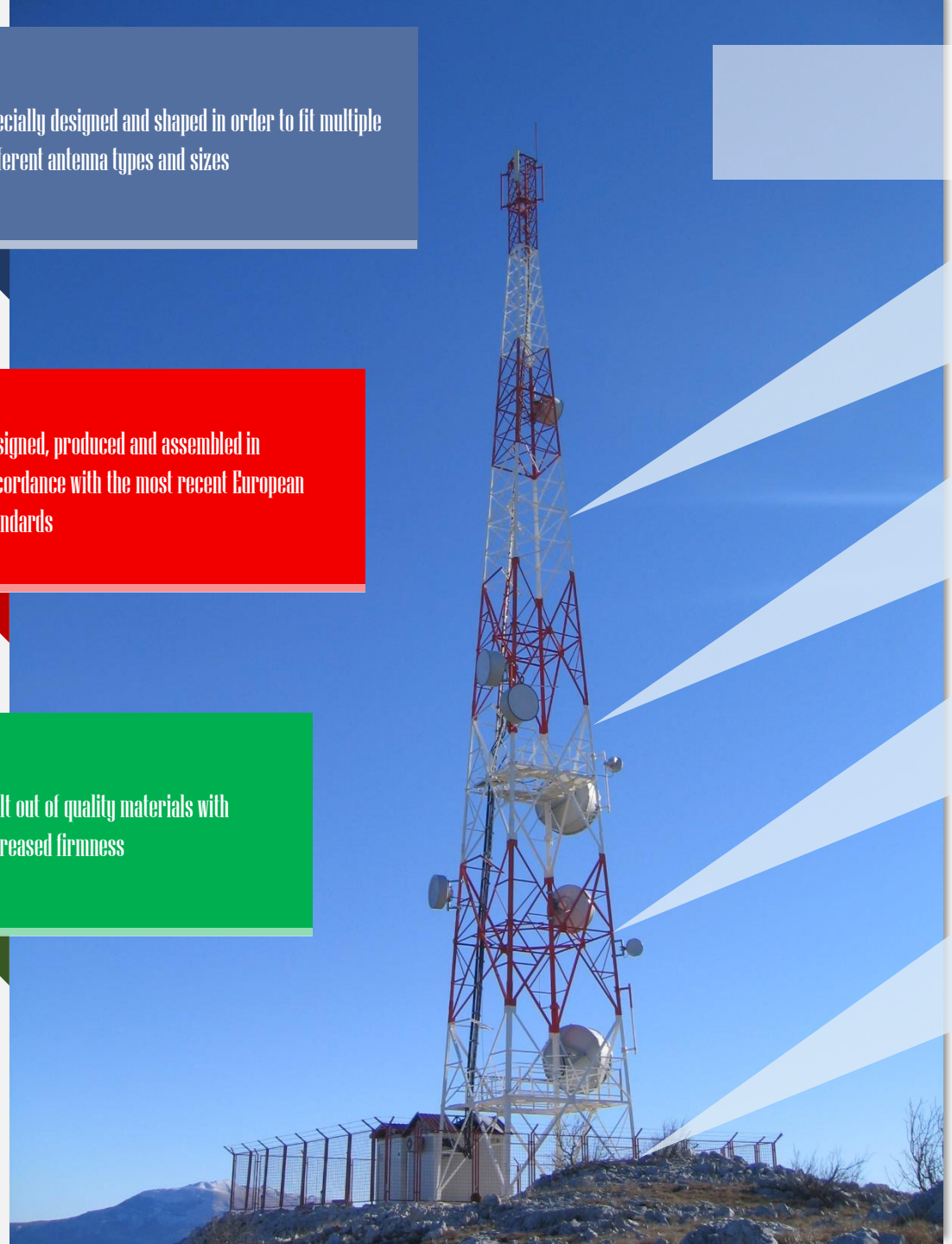
Customer benefits:

- ✓ Easy installation
- ✓ Minimal maintenance
- ✓ Suitable for harsh environments
- ✓ Fast delivery of materials
- ✓ Multiple ways of installation
- ✓ Multiple cable options
- ✓ Minimal foundation requirements

Specially designed and shaped in order to fit multiple different antenna types and sizes

Designed, produced and assembled in accordance with the most recent European standards

Built out of quality materials with increased firmness



DALEKOVOD

VISIBILITY

Painted with high quality signal colour in accordance with the air traffic regulations

CORROSION PROTECTON

Corrosion protection obtained through the process of hot-dip galvanization

CONNECTIONS

Tower parts and elements connected with bolts or welded together

FOUNDATION

Fixed with anchor bolts or imbeded directly into the concrete foundation

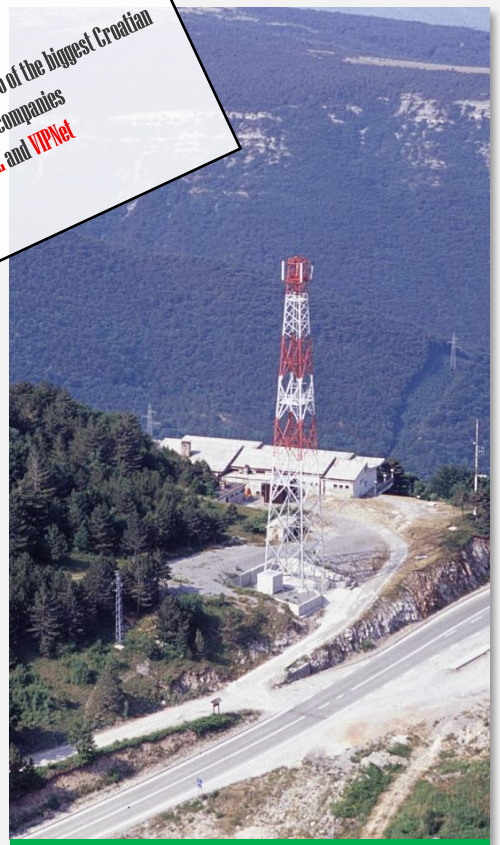
REFERENCES

DALEKOVOD

Project: Brdo Radoš
Location: Croatia
Investor: Ericsson NT d.d.

Exclusive contracts with two of the biggest Croatian telecom companies TELE2 and VIPNet

Project: Žigljen
Location: Croatia
Investor: TELE 2 d.o.o.

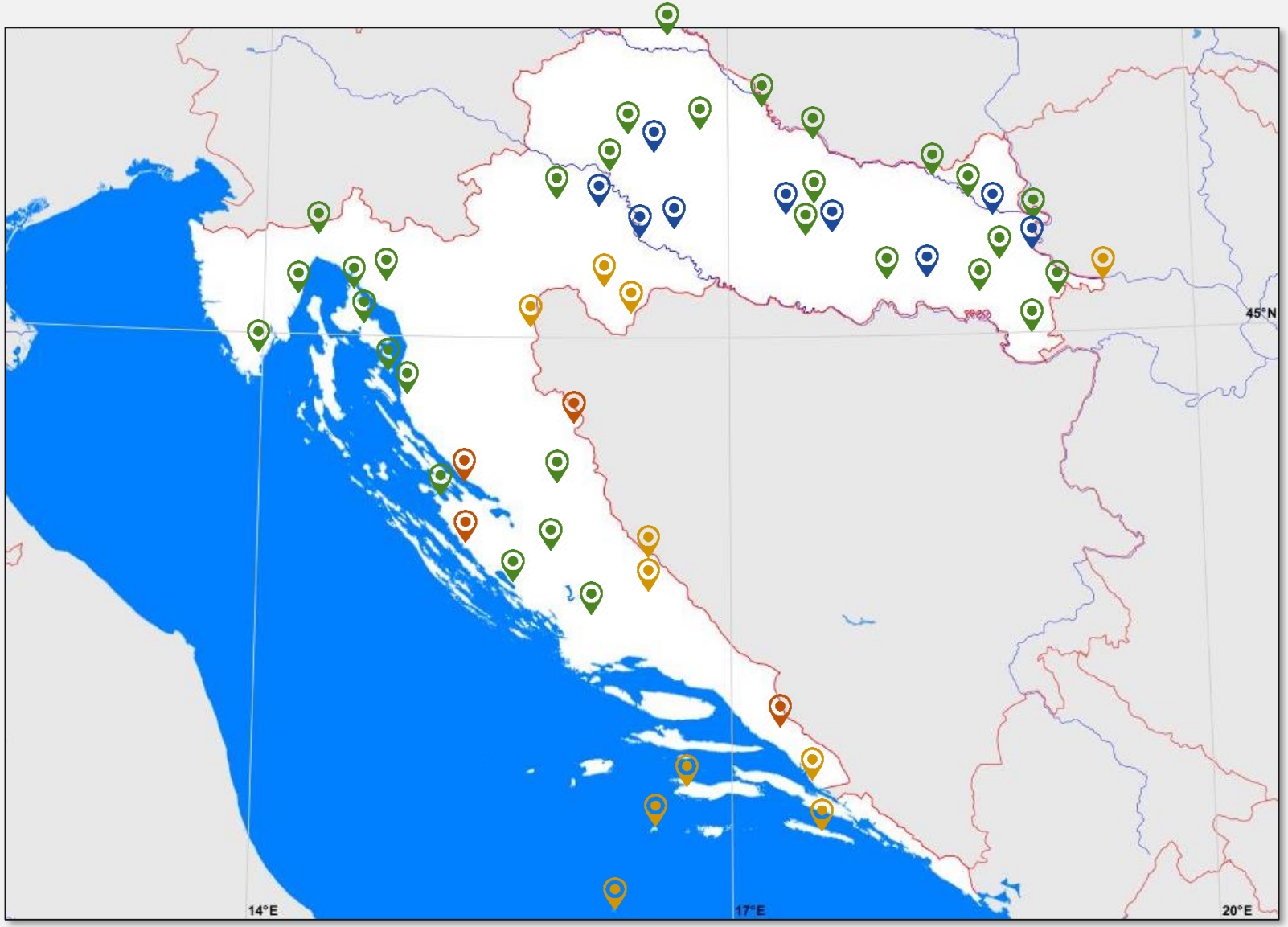


Project: Vratnik
Location: Croatia
Investor: VIPNet d.o.o.

Project: Dinjiška
Location: Croatia
Investor: OiV d.o.o

REFERENCES

DALEKOVOD



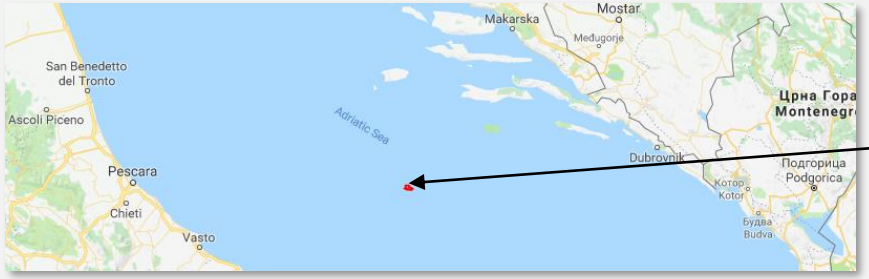
OiV

RH MUP

vip

TELE2

REFERENCES



Palagruža is an isolated uninhabited island with no infrastructure whatsoever. It is the furthest of all Croatian islands, half way across the Adriatic Sea, 75 km from the nearest island.

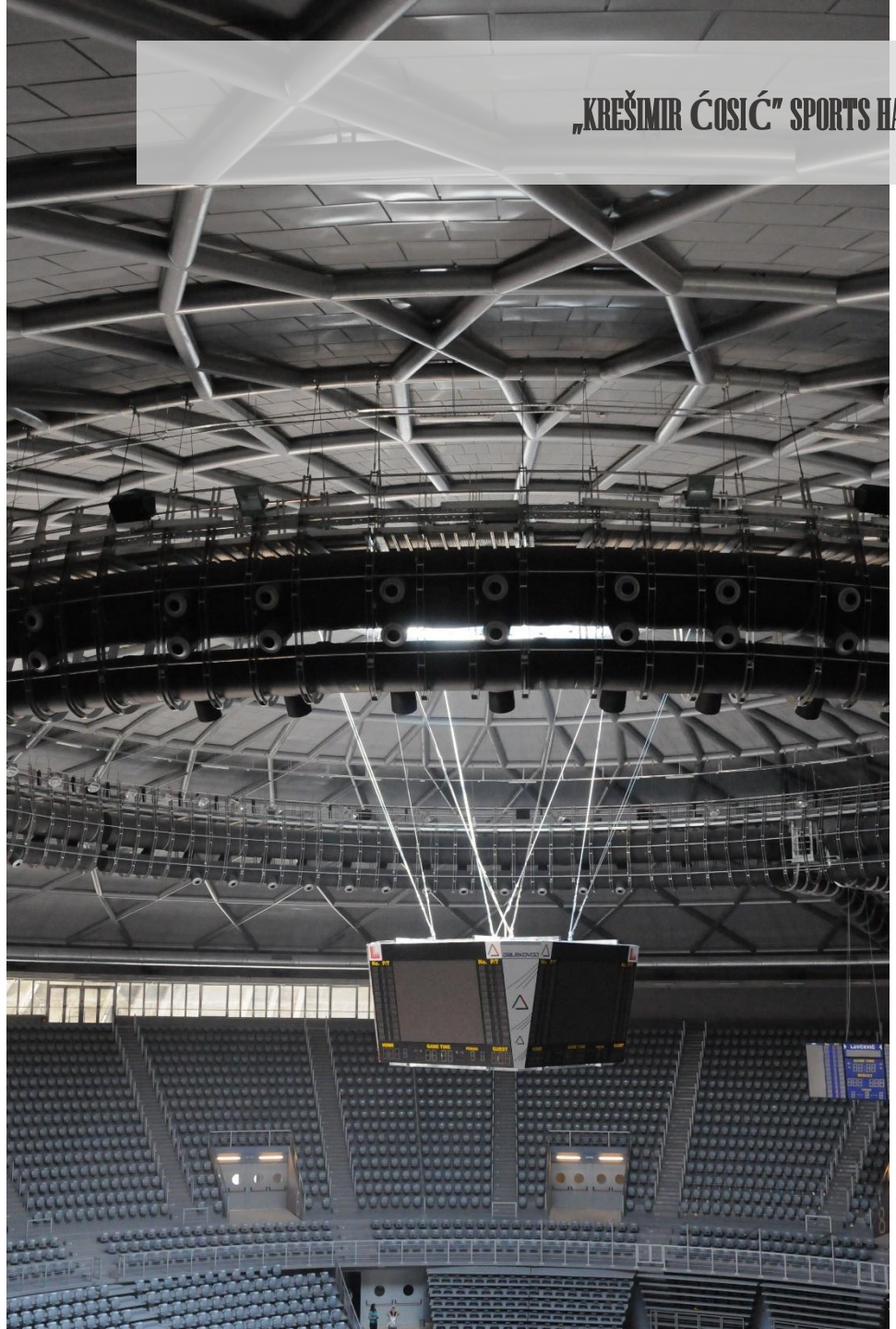
THE STORY OF PALAGRUŽA

QUICK FACTS

- ✓ Palagruža coast has no mooring, so all of the equipment, including the 200 kg cargo vehicle, had to be transported and manually unloaded using only a small boat owned by the lighthouse patrol. There is no regular boat navigation schedule and it was the only way of transportation.
- ✓ Because of a strong wind, the tower was unloaded on the other side of the island, from which it was manually carried through narrow and steep path all the way up to the assembling point - a cliff 60m high.
- ✓ Food for the workers and their personal belongings had to be lifted from the sea level to the lighthouse (90 m ASL) using only a ropeway. During the tower assembling, only 5 workers were able to participate due to insufficient space and slept in a lighthouse for a week.

INFRASTRUCTURE OBJECTS

„KREŠIMIR ĆOSIĆ" SPORTS HALL



Location: Zadar, Croatia

Steel structure span: 89,5 m

Total length of welded connections: 2.300 m

Total area of frame connections: 3.900 m^2

Load-bearing steel structure weight: 260.000 kg

Dome area (load-bearing steel): 6684 m^2

Assembling works duration: 85 work days

Steel weight needed to cover the dome (unit measure): 39 kg / m^2

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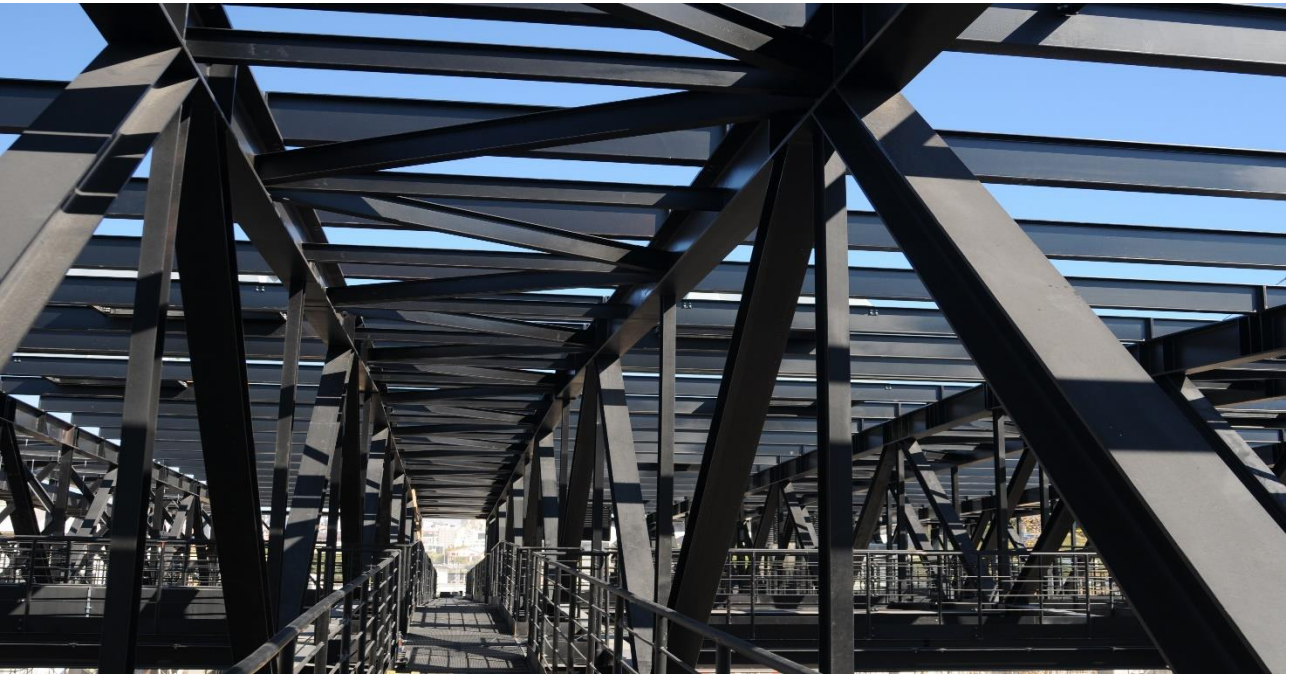
SPALADIUM CENTER

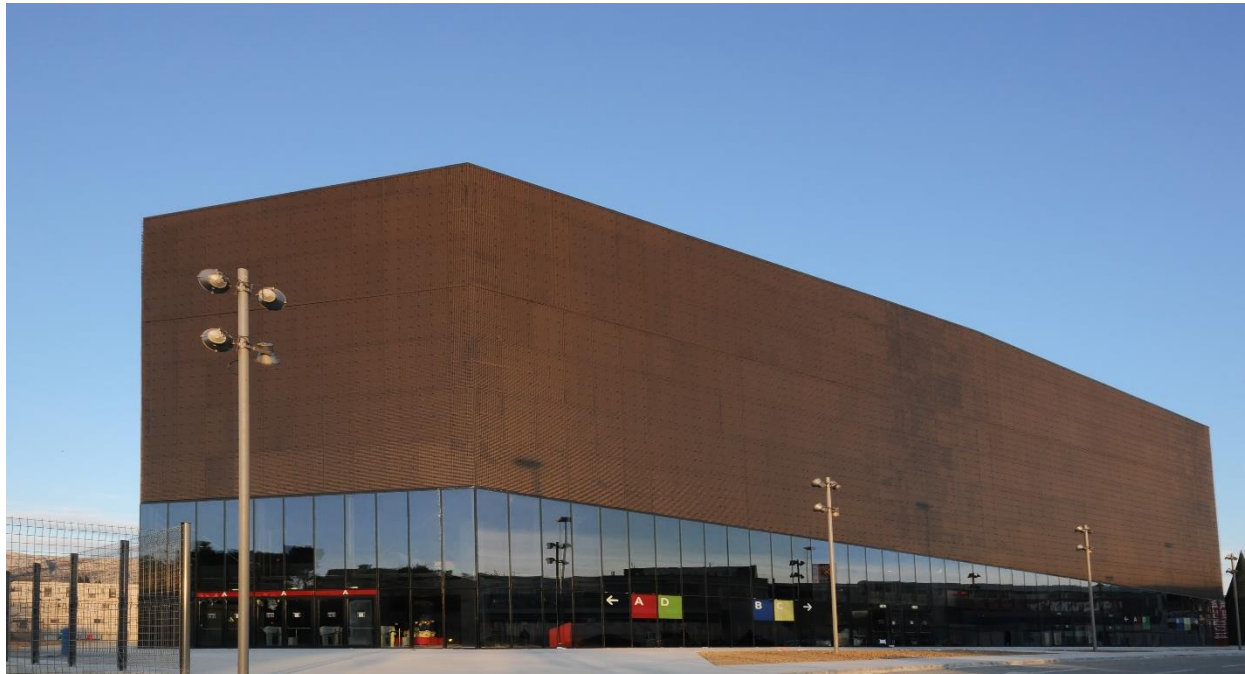
Location: Split, Croatia

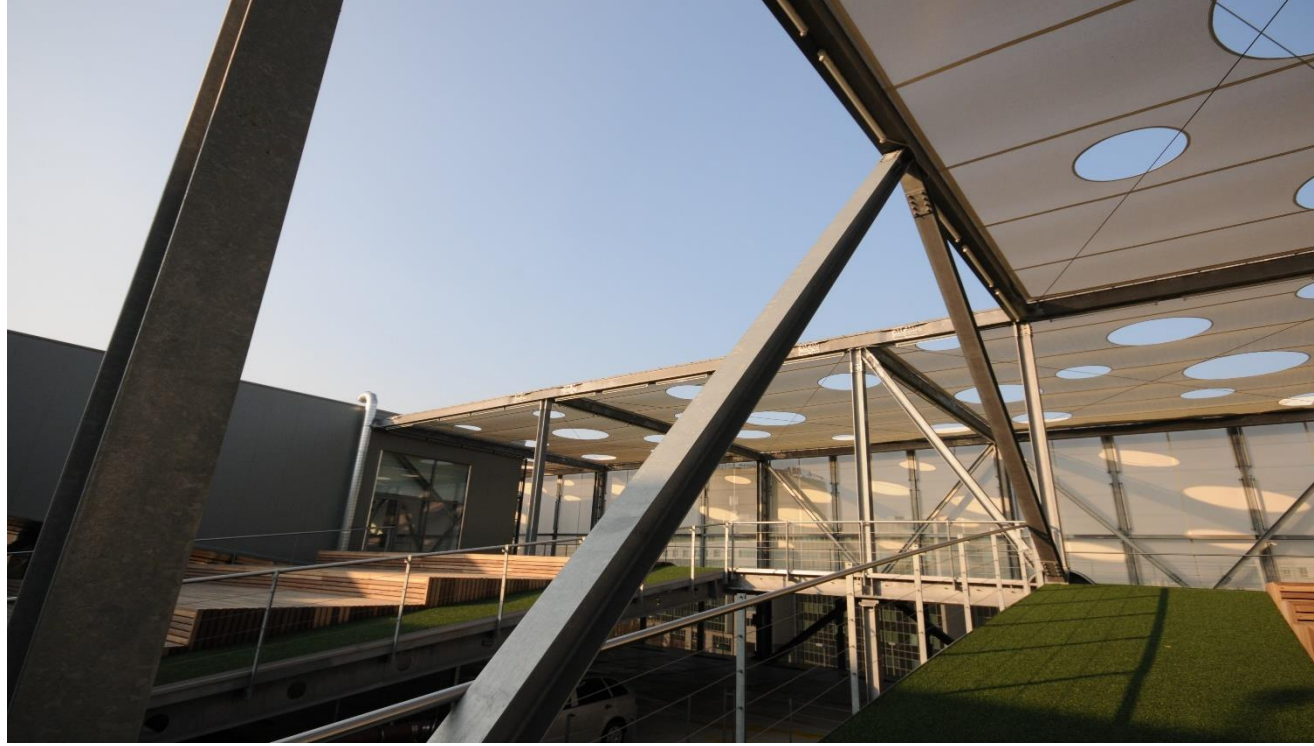
Object area: 78,5 x 98,5 m

Total steel construction weight: 1.650 tons

Cover area: 8.000 m²







MEDICAL EMERGENCY INSTITUTION

Location: Zagreb, Croatia

Object gross area: 10.960 m²

Total steel construction weight: 1.300 tons

5 floors + ground floor + cellar

Project duration: 730 days

DALEKOVOD

DUBROVNIK AIRPORT

Location: Dubrovnik, Croatia

Builiding gross area: 19.732,20 m²

Steel constrution weight: 335 tons

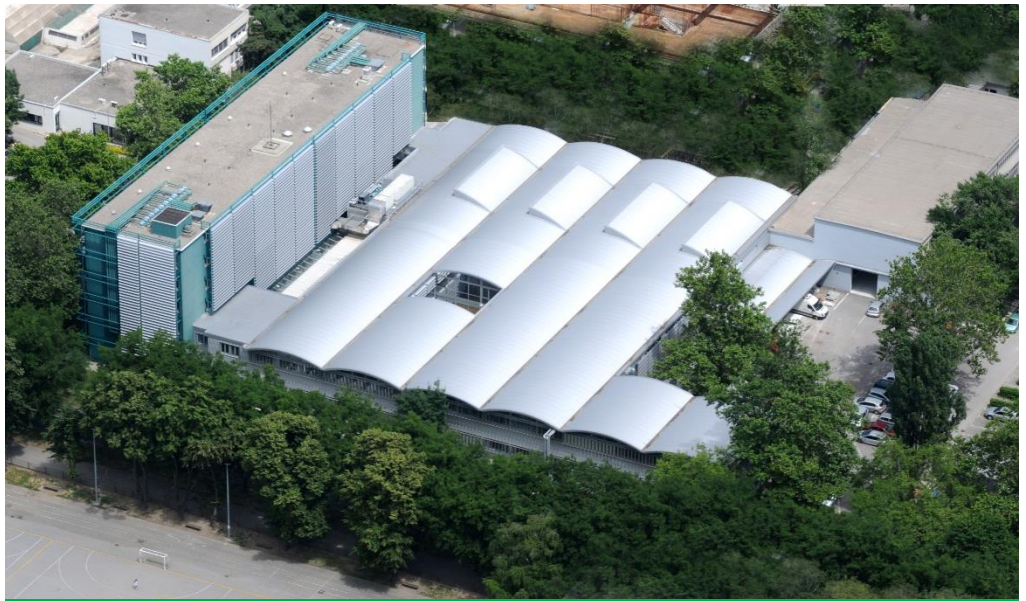
... and many more!

Industrial facility INA

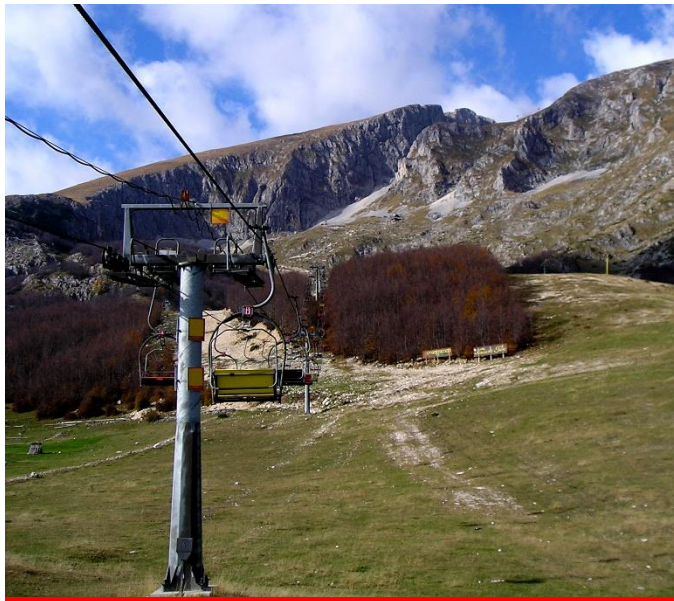
Overhead protection OMV

Galvanizing plant DUGO SELO

Production hall ELKA



Corporate building IGH



Mountain / Ski lift

„BUILDING THE FUTURE TOGETHER!"

DALEKOVOD