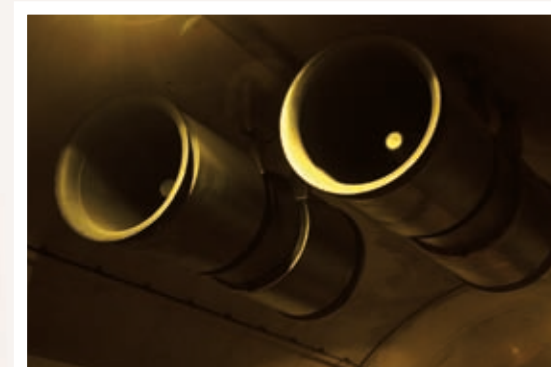
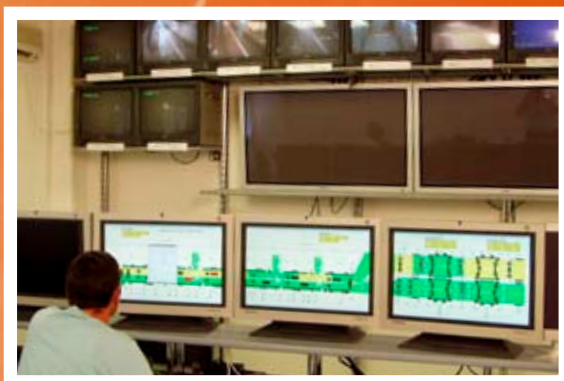
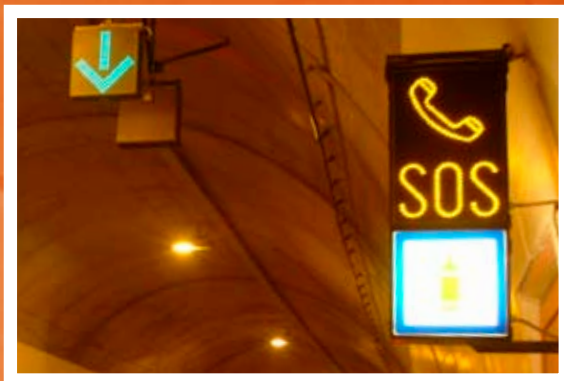




tunnel equipment

| opremanje
tunela



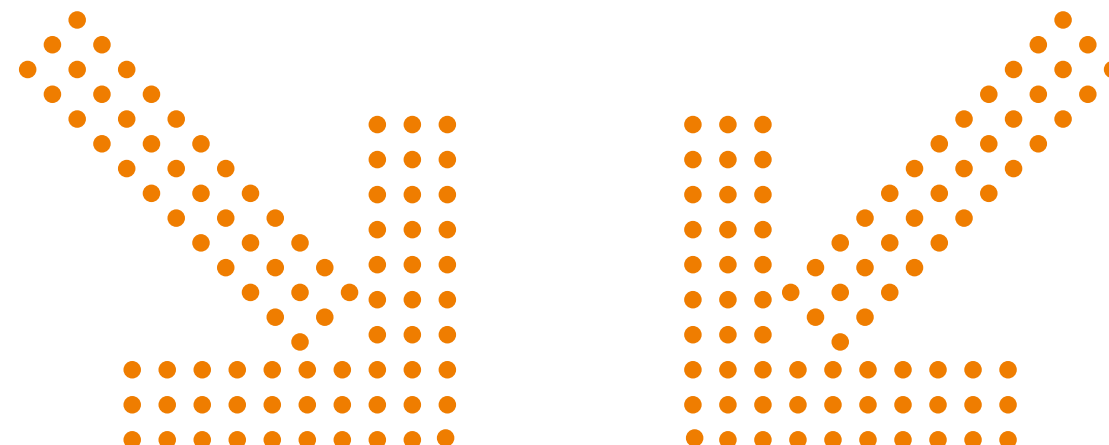


U posljednjih nekoliko godina Dalekovod d.d. sudjelovao je u izgradnji i opremanju autocesta te se u područjima energetike, telekomunikacija i opremanja nametnuo kao odgovoran i pouzdan partner koji radi prema prihvaćenim i usvojenim europskim standardima.

Tome u prilog govori i podatak da je Dalekovod d.d. 2008. godine dobio izvješće o pregledu i evaluaciji tunela u zemljama EU s aspekta rizika i sigurnosti opremanja tunela koje je načinila i objavila organizacija EURO-TAP - European Tunnel Assessment programme.

Tuneli **Javorova kosa, Plasina, Grič, Mala Kapela i Brinje** bili su, u konkurenciji 152 tunela iz 18 europskih zemalja u razdoblju od 2005. do 2007. godine, najbolje ocijenjeni.

Dalekovod d.d. je izvodio opremanje svih spomenutih tunela.



In the past few years, Dalekovod d.d. has participated in the construction and equipping of motorways, and has proved itself in the areas of electric power, telecommunications and equipping as a responsible and reliable partner, running its operations according to accepted and adopted European standards.

Bearing witness to this is the fact that, in 2008, Dalekovod d.d. received a report on inspection and evaluation of tunnels in EU countries with regard to risks and safety of tunnel equipment made and published by the EURO-TAP organization - European Tunnel Assessment Programme.

*Competing with 152 tunnels from 18 European countries in the period from 2005 to 2007, the tunnels **Javorova kosa, Plasina, Grič, Mala Kapela** and **Brinje** received the top scores.*

Dalekovod d.d. has equipped all of the above tunnels.

Tuneli Sveti Rok i Mala Kapela

(najduži tuneli u Republici Hrvatskoj)



Opremljenost tunela ovisi o njegovoj dužini i projektiranim specifičnostima, stoga ostali tuneli nemaju ugrađene sve navedene sustave koje imaju tuneli Sveti Rok i Mala Kapela.

Ovisno o specifičnim potrebama i zahtjevima investitora, pojedini sustavi imaju vlastitu komunikacijsku mrežu na lokalnoj razini te redundantnu komunikacijsku mrežu do razine Centralnog sustava daljinskog upravljanja (CSDU).

Svi navedeni sustavi izgrađeni su kao funkcionalne cjeline u tunelima Sveti Rok i Mala Kapela uz potpunu međusobnu interakciju u smislu razmjene podataka i alarmnih zahtjeva između pojedinih sustava.

Centralni dijelovi svakog sustava nalaze se u operativnom Centru za kontrolu prometa (COKP) za svaki spomenuti tunel (glavna-sjever, krizna-jug), gdje su objedinjeni u sustav CSDU-a.

Operativni centar, uz ovako visoku tehničku opremljenost, ima stalnu danonoćnu operatorsku službu koja nadzire odvijanje prometa putem automatske regulacije kroz unaprijed definirane programe te po potrebi intervenira manualnim zahvatima po odgovarajućoj proceduri (potrebe održavanja i sl.), reagira na aktiviranje odgovarajućih alarma odnosno poziva u pomoć, provodi koordinaciju pomoći u tunelu, kao i interventno reguliranje prometa osobljem.

Tuneli su opremljeni sljedećim sustavima:

A. NADZORNO-UPRAVLJAČKI SUSTAVI

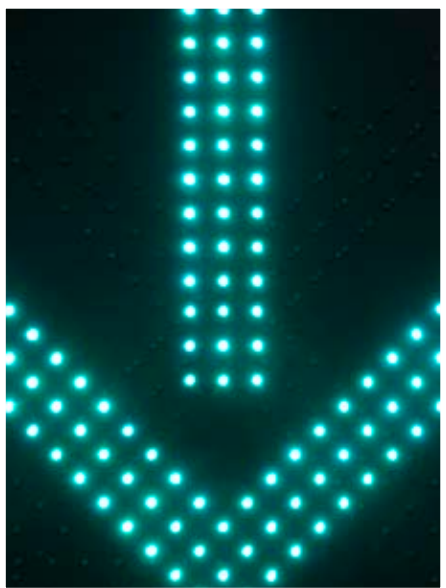
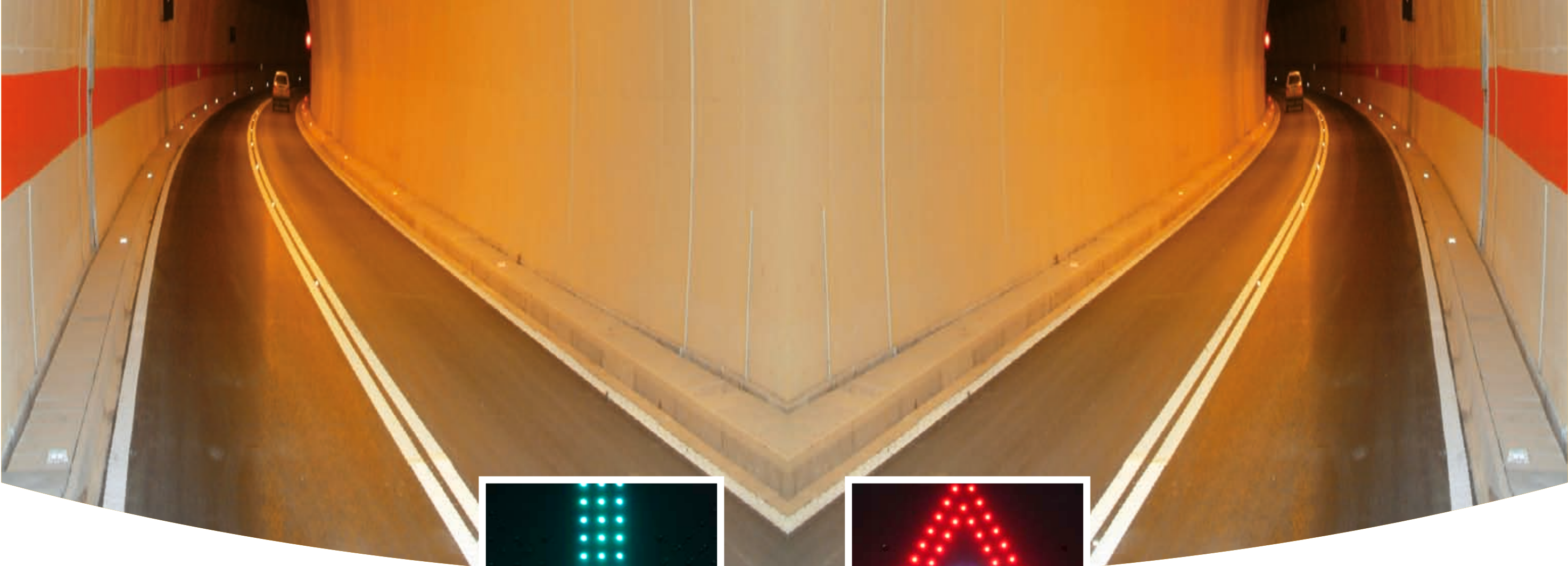
1. sustav nadzora i upravljanja ventilacijom
2. sustav vođenja i kontrole prometa
3. sustav nadzora i upravljanja rasvjetom
4. sustav nadzora i upravljanja vodoopskrbom
5. sustav nadzora i upravljanja elektroenergetskim postrojenjima

B. NADZORNO-ALARMNI SUSTAVI

1. sustav za dojavu požara
2. sustav videonadzora i detekcije prometa

C. NADZORNO-KOMUNIKACIJSKI SUSTAVI

1. sustav razglasa
2. sustav telefonije u nuždi
3. sustav radiodifuzije
4. sustav lokalne komunikacijske mreže



CSDU obavlja rano otkrivanje zastoja prometa te lokalizira uzrok, a operativna služba određuje njegovu težinu. Na bazi prikupljenih podataka i alarma, CSDU provodi unaprijed određeni automatski scenarij regulacije prometa te putem odgovarajuće signalizacije (semaforske lanterne, svjetlosni prometni znakovi), pisanih poruka (displaya), radiodifuzije i razglasa upozorava sudionike u prometu na opasnost i ograničenja, a kod težih zastoja obavlja blokiranje ulaza u tunel po pojedinim zonama u tunelu, te usmjerava promet prema najbližem sigurnom izlazu iz tunela.

Dalekovod d.d. je, s obzirom na svoje dosadašnje iskustvo, u mogućnosti na stranim tržištima ponuditi opremanje tunela svim navedenim sustavima bez obzira na dužinu tunela, kompleksnost i posebne specifičnosti.



Sveti Rok and Mala Kapela tunnels

(the longest tunnels in the Republic of Croatia)



The Operations Centre, in addition to such high tech equipment, has a permanent, 24 h operations staff who monitor traffic by means of the automatic regulation through pre-defined programmes and, according to need, intervene with manual activities according to the appropriate procedure (maintenance needs and so on), react to the activation of corresponding alarms, that is, calls for assistance, conduct and coordinate assistance in the tunnel, as well as regulate traffic when necessary with personnel.

The CSDU provides early detection of traffic congestion and localizes its cause, while the operator in the centre 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.

Thanks to its extensive experience, Dalekovod d.d. has the possibility of offering its partners in foreign markets tunnel equipment for all of the above stated systems, regardless of tunnel length, complexity and specific characteristics.

The tunnels are equipped with the following systems:

A. MONITORING AND MANAGEMENT SYSTEMS

1. Ventilation monitoring and management system
2. Traffic management and control system
3. Lighting monitoring and management system
4. Water supply monitoring and management system
5. Electric power supply equipment monitoring and management system

B. MONITORING AND ALARM SYSTEMS

1. Fire detection system
2. Video surveillance and traffic detection system

C. MONITORING AND COMMUNICATION SYSTEMS

1. Public address system
2. Emergency telephone system
3. Radio diffusion system
4. Local communication network system

Reference

|References



Autocesta\Motorway ZAGREB - RIJEKA

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
JAVOROVA KOSA	1 x 1300 m	2003.
PODVUGLEŠ	1 x 610 m	2003.
ČARDAK	2 x 601 m	2007.
ROŽMAN BRDO	2 x 500 m	2005.
VELIKI GLOŽAC	1 x 1130 m	2006.

Autocesta\Motorway ZAGREB - SPLIT

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
SVETI ROK	1 x 5661 m	2003.
PLASINA	2 x 2300 m	2004.
GRIČ	2 x 1250 m	2004.
BREŽIK	2 x 400 m	2004.
BRINJE	2 x 1530 m	2004.
DUBRAVE	2 x 800 m	2004.
KONJSKO	2 x 1200 m	2004.
MALA KAPELA	1 x 5760 m	2005.

Državna cesta\State Road D8, Orehovica - Sv. Kuzam

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
Sv. KUZAM	2 x 310 m	2006.
DRAGA	2 x 210 m	2006.

Autocesta\Motorway ZAGREB - GORIČAN

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
HRASTOVEC	2 x 550 m	2003.
VRTLINOVEC	2 x 630 m	2003.

Autocesta\Motorway ZAGREB - SPLIT Dionica: Dugopolje-Šestanovac

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
ZARANAČ	2 x 370 m	2007.
BISKO	2 x 495 m	2007.
STRAŽINA	2 x 614 m	2007.
CRNA BRDA	2 x 360 m	2007.

Autocesta\Motorway RIJEKA-RUPA

NAZIV TUNELA \TUNNEL NAME	DULJINA \LENGTH	GODINA ZAVRŠETKA \YEAR OF COMPLETION
JUŠIĆI	2 x 330 m	2004.

COKP (Centar za kontrolu prometa)

- SVETI ROK
- DUGOPOLJE
- BENKOVAC
- BRINJE
- PERUŠIĆ

