



Railway transportation of Corporate
Enterprise „Thermal Power Plants
Nikola Tesla“ Ltd Obrenovac

TRAINS WITH ONE PASSENGER





Railway transportation of TENT Ltd Obrenovac

CE Power Plants „Nikola Tesla” consists of four production branches, with the total number of 14 units with the power of 3.288 megawatts, and of Railway Transportation that delivers coal from the mining facilities to the unloading bunkers of Power Plants „Nikola Tesla”.

The Obrenovac-Vreoci railway line was built in 1967. with the main purpose of transporting coal from RB Kolubara to the facilities for the production of electricity. With the construction of Obrenovac power plants and the increased coal demand, a powerful system of Railway Transportation also emerged, supplying the thermal facilities with „black blood cells” from Kolubara like bloodstream. In the course of the past 43 years this traffic line has been re-built, expanded and in some sections relocated, so that its track with 105 switches now extends over 100 kilometers. **For more than four decades the transportation on this industrial route has been organized for a single passenger – the Kolubara lignite.**



With an average daily transportation of 90.000 tons, it is officially the busiest traffic line in Europe, where 60 full and as many empty compositions pass in the course of 24 hours.



LINES

Coal transport is carried out by standard lines in longitude of 62 kilometers (width of 1.435 meters) and narrow track lines with a length of 5.234 km and a width of 900 millimeters. Standard gauge railway network has the characteristics of lines in the first order, the allowable axle pressure of 22 tons and a weight per meter of 8 tons. The speed limit is of 80km per hour, with a speed section up to 140km/h. Prescribed maximum speed is 75km / h.

Normal track

Length of 62 km

Width of 1.435 m

Stripes and rows

Allowed axle pressure 22t

Permissible weight per meter 8t

The maximum speed of 75km / h

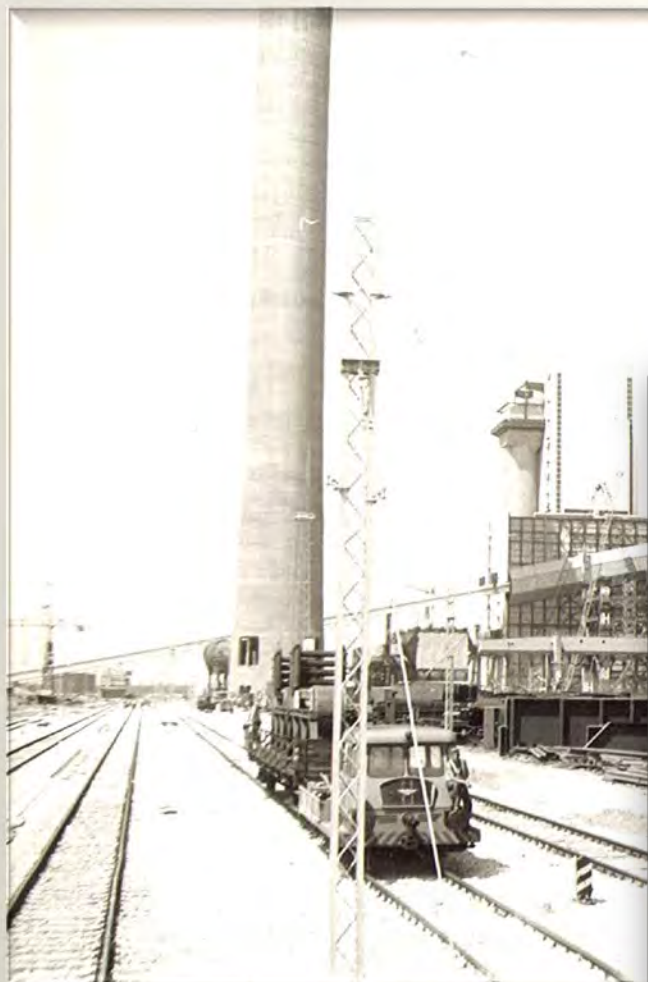
Narrow track

Length 5.234 km

Width 900 mm

The first cargo on Railway Transportation lines was transported by locomotives of Yugoslav railways. The first tons of coal were carried in 1969 by steam- locomotives, series „33”. The more modern locomotives were used with the increase of transport volume, locomotive CEM, French-made, and diesel electric locomotive, series „641”, owned by SW. 1971. Organization of Railway Transport of Obrenovac power plants begins with the purchase of their own diesel electric locomotive, series „661”. Electrification of railroad was completed in late 1976, when traction of electric trains „441” produced by „Rade Koncar” started. Purchase of locomotive series „443”, produced by „Skoda” in 1983 completed loading, transport and unloading of trains by means of electrical traction.

LOCOMOTIVE





Wagons

For the transport of coal for power plants Obrenovac a dual-axle car type „Arbel” is used, made in a wagon factory in Kraljevo under the French license, whose form, dimension and construction are related to the way of loading and condition for quick coal unloading. RT has 424 cars type „Arbel” and 77 cars series „F” for traffic on the gauge with narrow track, the width of which is 900 millimeters.



Maximum
wagon
capacity

• 57 tons

Maximum
wagon
volume

• 84 m³

Wagon
length

• 15,16 m

Wagon net
weight

• 22,7 t

Maximum
speed

• 80 km/h

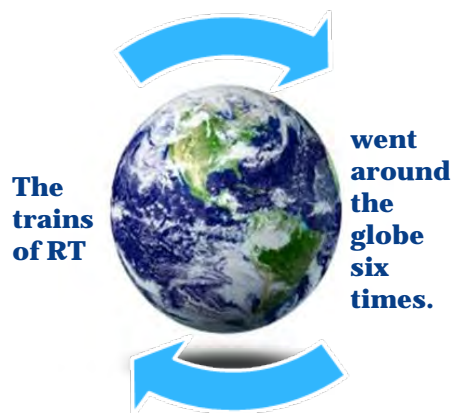
Coal loading is done by placing an empty composition on the loading place and remotely controlled motion of locomotive „443” - Skoda by the operator for loading, which brings the speed of the composition in compliance with the coal supply for loading in the best way. The train admission and dispatching process is performed by the executive personnel of the RT (train dispatcher, driver, car inspector and maneuver operator).

Unloading of coal is also performed during motion by remote composition motion at low speed and handling the installation for unlocking, as well as opening and closing the car door after unloading. Fixed installation is made up of a column with bulge (trindele) and ramps for closing of door.

Total transport of coal



1969-2012 840 million tons of coal



If rails of industry track could speak they would say that it is through their „shoulder”, for over forty years ago, millions of tons of cargo crossed. More precisely, from August 30 1969, when the first train of coal went into the then CE Obrenovac, until today, in more than 840 million tons of coal, or nearly 560.000 trains were brought. The compositions which these trains were hauled were about 240.000 kilometers long and could go around the globe six times.



Records RT

The highest annual transportation of coal the Rail Transport carried out in 2011 (more than 29 million tons), the best monthly result also is realized in 2011 (2.8 million tons), and a daily record of the transportation is slightly older - on February 16 2002 is achieved, and amounts to 106.910 tons.

The highest
annual
transportation

- 2011
- More than 29 million tons

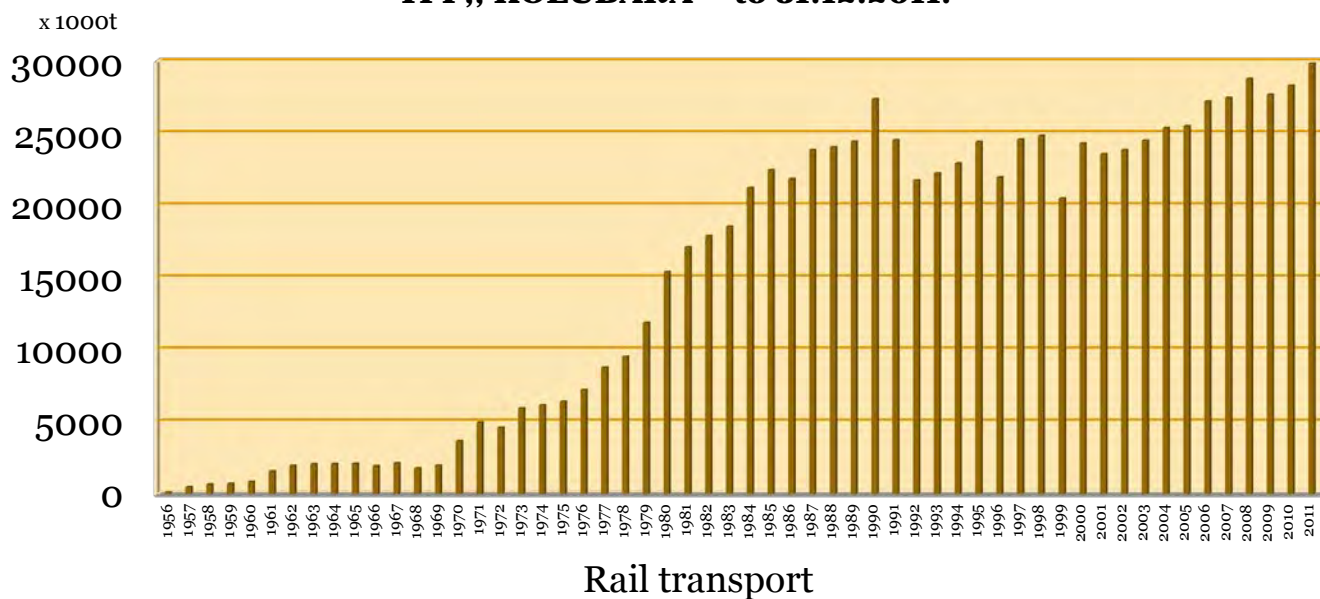
The largest
monthly
transportation

- December, 2011
- 2.8 million tons

The largest
daily
transportation

- 16.02.2002.
- 106.910 tons

Transportation of coal from the beginning of work TPP,, KOLUBARA “ to 31.12.2011.



Modern equipment



Modern traction and wagons, modern techniques to track and railway facilities

For smooth, safe supplying, in constant continuity, Rail Transport is equipped with the railways line in the first order, modern traction and drag station with means (locomotive and wagons), the technique of time-line and railway installations (tele-traffic controls and traction, signaling and safety units, contact line, TT and radio service). There are in his composition the Traffic service, Towing service, Service on maintained and Rolling stock that make this branch unique of the whole regardless of geographic separation.



Remote control of traffic and traction

Year of 1980, modeled on the JR, the installation of equipment for remote control of traffic and traction began. The first phase is put into operation in June 1982 and then tele-command pulls is completed. The second phase was commissioned in August 1985, and then tele-control is completed also which gave the double function to plant. Tele-control of traffic and tele-command of electrical traction, ie. traffic and power-network contact will be monitored from a central location with the same light panels. From the middle of June 1990 the management of electrical traction is done by videoterminal, and the light board was obtained of sufficient places to accommodate the current synoptic traffic patterns and the future expansions.



From TENT's Rail Transport

ИЗ ЖЕЛЕЗНИЧКОГ ТРАНСПОРТА ТЕНТ-а

ЦДУ ТЕНТ-а: ускоро ће се олаве пратити целокупни железнички транспорт и издавати команде

**ЦДУ — ДЕО ЕЛЕКТРИЧНЕ ВУЧЕ
ПУШТЕН У ПРОБНИ ПОГОН**

1982, the newspaper TENT

CRC-part of electric traction was put into trial operation

Signal- Safety System

The entire railway network is equipped with a fail-safe signaling devices which are, in line with the increase in transport of coal and equipment, changed, modernized, reconstructed, following also the changes of configuration of the railway network. Installation of the new generation of devices and connection with the old plants would often require, the application of original solutions, unique in this technology, such as interface for connect of SS devices, manufactured by the Institute „Kirilo Savic” and traffic tele-command "WABCO Westinghouse."



Judging by the variety of installed devices, duration of exploitation and also operational safety, RT is a rather unique example. Recently, the SS units in stations Vreoci and Obrenovac are replaced by devices of the latest generation of AŽD Prague.





Winter conditions of work

During the winter period conditions were also created for safe coal transport and unloading at low temperatures (at temperature below minus 5 degrees). Due to the large amount of moisture in the coal, at such low temperatures, a layer of coal from the outside surface of the car freezes. To allow complete emptying and closing of car, a plant for defrosting is installed which defrost the frozen layer of coal with a certain amount of heat in order to fully empty the car which then remain dry car.

Plant for defrosting consists of heat exchanger, lift for spraying wagons, piping and channel for water recirculation.

The system of electric heating of switches was installed in year 1987/88, which solved the problem of freezing of switches in the winter period.

Ongoing maintenance of railway assets



To maintain a high level of operational readiness of the thermal units, RT has developed its own ongoing maintenance of the railway assets. At TENT A location, a depot for maintenance of traction equipment was built between the main operating facility, access road, the fifth station gauge and road to Obrenovac, which by its characteristics satisfies all standards applied in other similar depots. Ongoing maintenance of railway facilities is performed in one part of the depot, and in the second, maintenance of freight wagon with associated workshops, while several workshops are located in the building of CRC (for the CRC, the TT devices, the contact network).

Electrical workshop, mechanical workshop for locomotives, workshops of TK Towing and Traffic, workshops of SS appliances, specialized workshops for maintenance of braking equipment, locksmith workshop for wagons are stored in depot.

Certificates and licenses

Rail Transport of Corporate Enterprise TPP Nicola Tesla is the first railway in Serbia that received a certificate (and then a license) from the Republic Directorate for Railways, related to transport safety in 2009. It is a document that confirms the safety performance of the freight transport for own needs. The certificate opens up the possibility of transport of persons also on condition that CE TENT is registered for this category.

RT also has a license and certificate for management of the infrastructure.



Training and health protection of employees

The railway transport gives the great attention to vocational training and health care of employees. The Service for Staff Education CE TENT realizes the training of apprentices and training of workers who passed the professional exam, as well as primary and periodic tests carried out by the members of Commission for passing these exams.

Medical examinations (previous, periodic and extraordinary) are carried out by the Institute of Occupational Health and Safety for RTE Belgrade.



Collegiality of railway workers



August 30- the Day of RT

Solidarity, strong collegial relationships, readiness to help each other-these are the characteristics of railway workers of the Corporate Enterprise therefore celebration of the Day of RT is fully incorporated in the creation of the best possible interpersonal relationships among employees as well as fostering a sense of belonging to the railway and the Company. Each year, on August 30, in memory of the first unloading tons of coal at the today's TENT A location in 1969 are organized the one day socializing which also have a working character.



In the meantime, of course, new million tons of coal, hundred thousand of the kilometers traveled...



PE EPS
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