Skoda electrical locomotive Type E 424.0

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Abstract. This paper deals with an electric locomotive, which was produced by Skoda Plzen. Nowadays there exists only one electric locomotive by Skoda – E 424.001. This shunting locomotive is exhibited in Techmania Science Center in Pizen – in the original mounting hall of Skoda Plzen locomotive factory. Electric parts for the two produced locomotives were built in Electro technical Factory Doudlevce (ETD). This part of Skoda industrial complex has produced wide specter of electro technical devices since 1922. They have produced electric technic rolling stock apparatus for Skoda Locomotive factory since 1925. In 1920s they built five electrical locomotives of two types – two shunting locomotives E 424.0 and three fast train locomotives E 467.0. Locomotives were built for Prague interconnect railways, which was 26 kilometres long. Both locomotives were produced in December 1927 and they were tested in July 1928. They were in operation – shunting service – from the end of summer 1928 to the end of 1950s on Prague interconnect railways. After this period both locomotives were sent to South Bohemia. The E 424.002 was scrapped in Tabor in 1967, and the E 424.001 was preserved as Technical relict.

Keywords

1. History of Skoda Factory and Electro technical Factory Doudlevce

Skoda factory was founded in 1869, when Emil Skoda had bought Valdstein machinery works. Emil Skoda machinery works produced armour and artillery weapons to end of Great War. After war they have to change the production programme from weapons to civil products. Skoda factory needed its own electro technical factory. During Great War Skoda engineers negotiated about a new electro technical factory. This new factory didn’t started on a green grassland. Predecessor was Skoda workrooms and maintenance department. This structure was transformed into Electro technical department. It was the base of new Electro technical factory in Plzen – Doudlevce (ETD).[1] Separated group of electro engineers led by Vaclav Hykes was taken from the original department. This group dealt with French concern Schneider Creusot, Cie about production of electrical gyratory machines and transformers. Skoda electro technical factory in Plzen – Doudlevce produced licenced French electro technical devices and its own devices, too. They produced: small and medium asynchrony motors, turbo alternators, alternators, transformers, convertors, traction motors, distribution boards and devices for them. There were produced large industrial sections for sugar mills, breweries, cement works. Production of complete electrical locomotives was only a small part of the total electro technical production. Skoda produced electric locomotives for Czechoslovakian Railways (CSD) or for the heavy industry, equipment for diesel electric railway vehicles, trams, trolleybuses, electro cars, traction converter stations and traction lines. The ETD was at the front of technical development, because they had the own electro technical experimental laboratory. A part of Skoda electro technical concern was a physical research led by Vaclav Dolejsek from Physical spectroscopic institute of Charles University, founded in 1935 and led by Vaclav Havlicek.[2]

2. Electrification of Prague’s interconnect railways

After Great War dominant locomotives were steam locomotives. But a new phenomenon came to railways – electricity. First electrical locomotive “Ampère” was used in 1883 in the United States – in Ohio. Next electrical railway was built in Switzerland from Burgdorf to Thun. Germans experimented with electric railways near Berlin; they hold the speed record – 210.2 km/h. In our land electrical railways were propagated by Frantisek Krizik. He applied his theory on the local railway between Tabor and Bechynce. Second railway was built by Siemens & Schuckert between Certlov and Lipno. New Czechoslovakian railways (CSD) agreed with electrification of Prague interconnect railways as first step of electrification. The ministry commission determined three parts of railways electrification:

1) Prague interconnect railways,
2) Suburban railway Praha – Zdice,
3) Main railway Praha – Zdice – Plzen.[3]

Finally the Ministry of Railways determined alternating current 1500 V as the only one for Czechoslovakia. Traction lines were built by Krizik and Brown Boweri, Ceskomoravska – Kolben, Skoda Plzen and AEG. It was logic splitting of this large electrification process at Prague interconnect railways and a good chance for Czechoslovak Ministry of Railways to compare. The Ministry addressed five producers of electrical locomotives...
from eleven, which got a demand for sixteen electrical locomotives. This demand was for personal and fast trains locomotives, for light or heavy cargo trains and finally for shunting locomotives. Producers built wide choices of electric locomotives. Unfortunately, electrification was stopped in Prague; only 26 km were electrified and finally only nineteen electrical locomotives were produced.[4]

Skoda received an order for five electrical locomotives from sixteen locomotives ordered by CSD for Prague interconnect railways. Skoda produced five electrical locomotives of two types – two shunting locomotives E 424.0 and three fast train locomotives E 467.0. Both types had a lot of identical parts. This fact was important for unsophisticated construction and development, but mainly for operating. Technical specification described two locomotives with split frame, double driving engines, with hour power (with voltage in trolley wire 1350 V) on wheels 800 HPs, (588 kW by 30.3 km/h). Skoda typed these new locomotives as ELo2. Skoda produced these types of electrical locomotives: E 416.0, E 417.0, E 424.0, E 467.0 and E 407.0. Main difference between locomotives types E 423.0 and E.424.0 was the different arrangement of mechanical parts, split frame and connecting rod. The locomotive had one old construction element – it was the connecting rod – the part transferring motion from electrical engine to a couple of driving wheels. It was usual standard of that period; later the connecting rod was replaced by individual electro engines in driving wheels. Electrical devices were stored in both bonnets. In the front bonnet there were: air pressures tanks, six contactors of auxiliary engines, transformers group, absorber, and compressor; fan, slide controller. At the back bonnet there were: main circuit displacer, overcurrent relay, five main electro pneumatic contractors, fan and controller of motion. Energy was taken trough unified collector type US 509 A (Ceskomoravovska – Kolben, resp. CKD licenced by Westinghouse). Locomotives could be united and driven as one.[5]
Service of E424.001 and 002

Locomotives E 424.001 and E 424.002 were ordered by CSD in December 1925 and they were produced by the end of December 1927. One locomotive cost 1 590 000 Kcs. After security shunting tests in July 1928 the locomotives were tested by measuring vehicle between Vysocany and Vitkov. Locomotives had a good construction; they had only some small technical malfunctions. Locomotives E 424.001 and E 424.002 operated from 30th to 50th years in normal railway traffic. Both locomotives were out of order in January 1962 for serious malfunction of traction engines. In May 1962 Prague interconnect railways were switched to voltage 3000 V. Skoda locomotives E 424.001 and E 424.002 were sent to Rybnik – Lipno railway and they were used at building of Lipno dam. Locomotives were sent to Tabor in 1963, and E 424.002 was scrapped in January of 1967. E 424.001 was written in Historical locomotives list in June 1967. One year later E 424.001 was sent from Tabor to Plzen as booster for heavy railway machines. Locomotive idled in Plzen railway depot from 1971, where it was parked at different places to the end of 1974. Then, this locomotive was towed to Skoda scrapyard. There E 424.001 was found by Ing. Milos Opial, Skoda engineer, who saved it. At 50th Jubilee of production of Skoda electrical locomotives E 424.002 was put in exhibition condition and in 1977 it was exhibited behind Factory of Electrical locomotives. Later in 1997, the better place was found in front of Skoda Machinery – Transportation technics. Locomotive was moved down from pedestal and paint was repaired to incorrect blue colour. In May 2010 E 424.001 was transported to Techmania Science centre. At the new place the exterior of locomotive was repaired and repainted to original bottle green colour. Locomotive is the property of Regional technical museum in Plzen, which lends it to Techmania Science Centre. Now it is the last Skoda electrical locomotive from the first Czechoslovak republic era. This type was a reliable ancestor of modern Skoda electric locomotives.

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References


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