

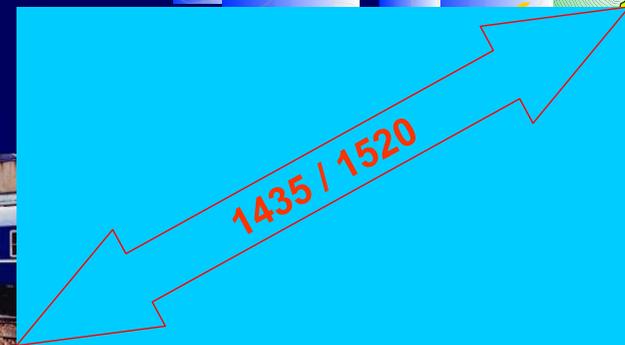


Experience and results of operation the SUW 2000 system in traffic corridors:

- ❖ I – Warsaw – Vilnius,
- ❖ III – Krakow – Kiev,
- ❖ II – Warsaw – Minsk – Moscow.

Piotr Waryń

PKP Intercity spółka z o.o.



Vienna, May 2005

Goal - customers' satisfaction



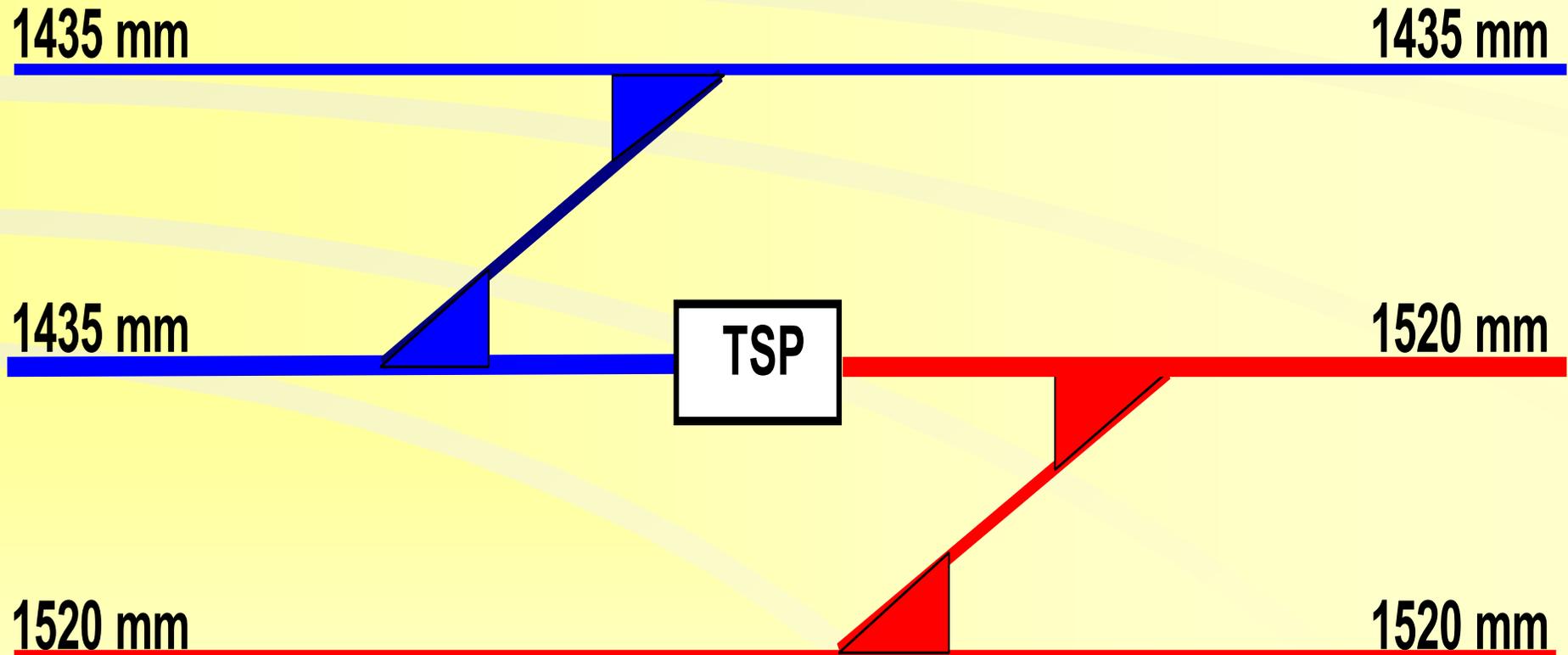
SUW 2000 – technical information

Implementation of the SUW 2000 system was preceded by research on test rig in CNTK – Warszawa and completed on August 2000.

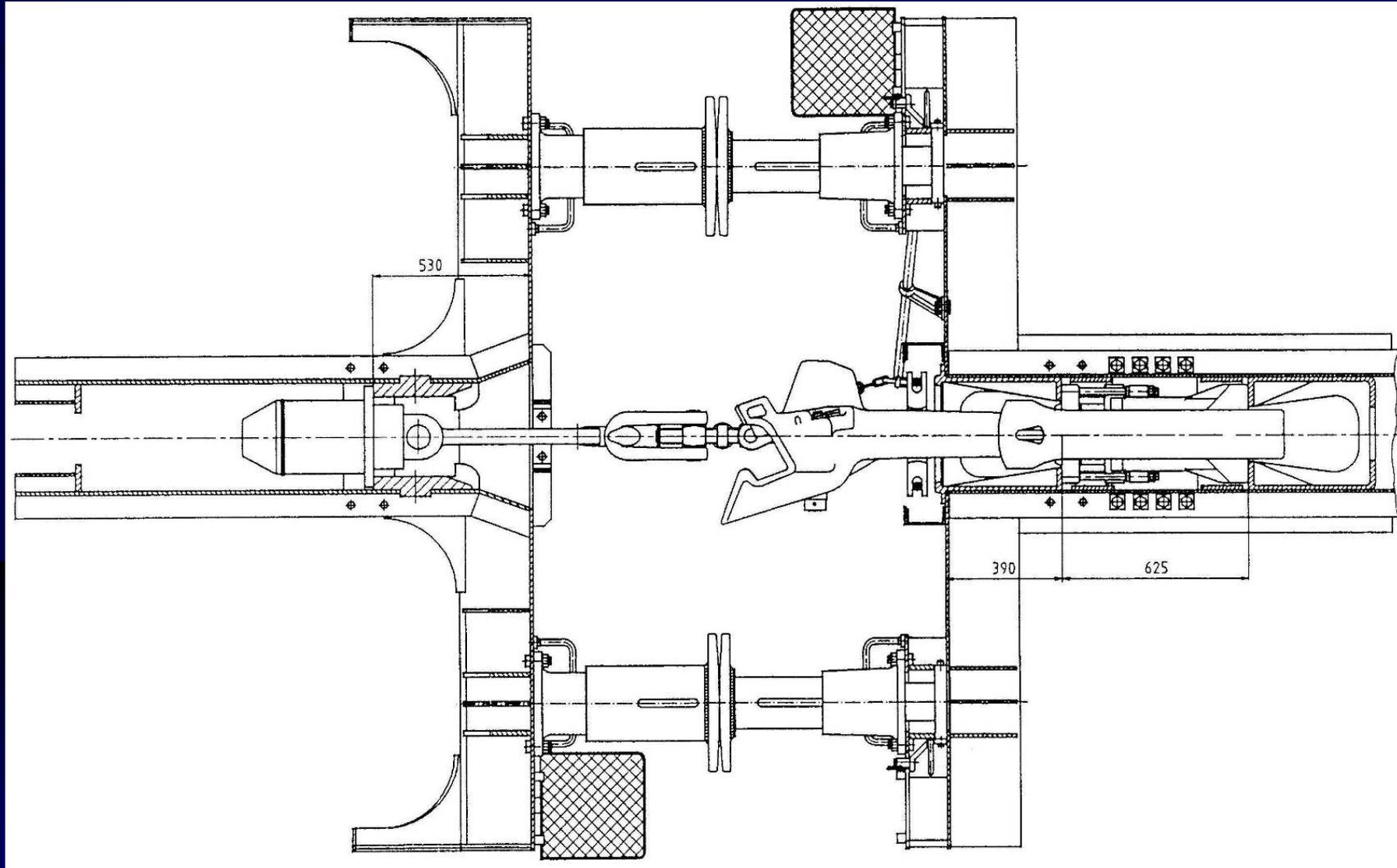
- ❖ Polish solution of adjustable gauge wheelset – SUW 2000 was submitted to UIC.**
- ❖ Conformity of the SUW 2000 system with requirements contained in the UIC 510-4 leaflet was confirmed by the UIC.**

SUW 2000

Example of positioning of the track gauge changing facility (TSP) at the 1435/1520 mm interface



Connecting LAF coupler head with UIC screw coupling



SUW 2000 - International cooperation - Lithuania (1)

On the ground of the signed agreement of PKP DB and LG, supervised commercial operation of rolling stock through the Trakiszki (PKP) – Mockava (LG) border crossing was started in October 2000

- ❖ passenger train No. 27/28 Warsaw – Vilnius – Warsaw ,**
- ❖ Freight wagons on routes Mielec - Kazlu Ruda and Szczecinek – Kazlu Ruda.**

SUW 2000 - International cooperation - Lithuania (2)

Beginning of operation :

29 October 2000

Place :

Polish – Lithuania border

Preparations:

- ❖ modernization of vehicles - fitting six PKP coaches with 25AN/S boogies equipped with wheelsets of SUW 2000 system ,
- ❖ activation of the track gauge changing facility (TSP) in Mockava (LG)
- ❖ common tariffs
- ❖ common promotion
- ❖ cooperation with travel offices.



SUW 2000 – International cooperation - Lithuania (3)



**Track gauge changing facility (TSP) at the 1435/
1520 mm interface at Mockava station (LG)**

SUW 2000 – International cooperation - Lithuania (4)



**25 AN/S1 bogie with
SUW 2000 wheelset
under sleeping car
Görlitz 77-BK**



Couchette 110Ab-BK



**Sleeping car Bautzen
86-BK**

SUW 2000 - International cooperation - Lithuania (5)

❖ Journey time :

- **Warsaw – Vilnius 9h 10m,**
- **Vilnius – Warsaw 9h 06m,**

❖ Average commercial speed :

- **Warsaw – Vilnius 65,5 km/h,**
- **Vilnius – Warsaw 65,9 km/h,**

❖ Maximum speed :

- **PKP - 120 km/h,**
- **LG - 100 km/h.**

SUW 2000 - International cooperation - Lithuania (6)

- ❖ **Distance covered by particular coaches equipped with SUW 2000 system :**
from 488 400 km up to 625 200 km,
- ❖ **Number of gauge changing on the TSP for particular operated vehicles :**
from 814 up to 1042,
- ❖ **Total number of gauge changes on the TSP at Mockava station (LG):**
- 5 754,
- ❖ **Total number of wheelsets subjected to gauge change SUW 2000 system on the TSP at Mockava station (LG):**
- 46 032.

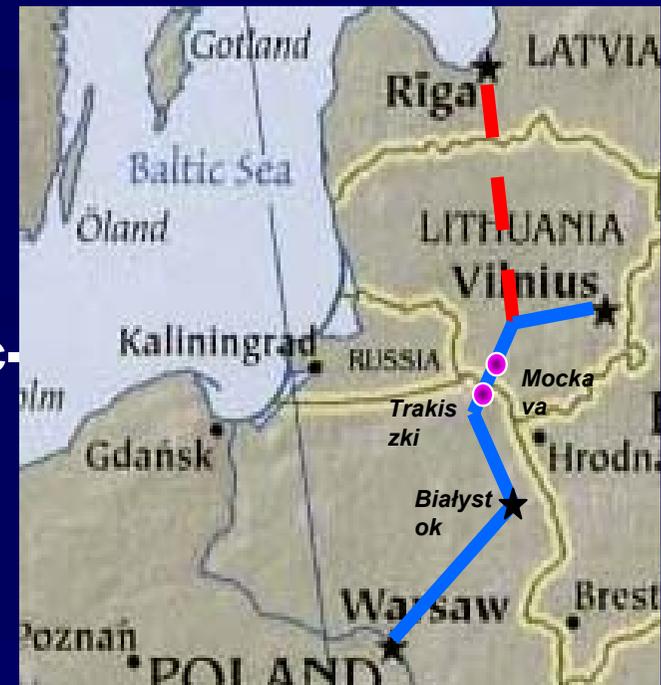
SUW 2000 - International cooperation - Lithuania (7)

❖ **Effectsts :**

- ✓ **direct connection to Lithuania, possibility of traveling availability without visas within the EU**
- ✓ **reduction of journey time by approx. 1h 30min,**
- ✓ **competittion with road transport,**
- ✓ **reduction of the necessary infrastructure at the border crossing.**

❖ **Plans :**

- **introduction of the second passenger train ,**
- **further reduction of journey time,**
- **implementation of Warsaw - Riga connection.**



SUW 2000 - International cooperation - Lithuania (8)

Poland– Lithuania freight traffic via Mockava station with the utilization of wagons equipped with the SUW 2000 system

| No | Wagon type | Wagon No. | Distance covered | Numer of travels | Numer of gauge chahges |
|-----|------------|------------------|------------------|------------------|------------------------|
| 1. | Sikks | 31 51 473 8550-6 | 100 055 km | 73 | 146 |
| 2. | Sikks | 31 51 473 8551-4 | 100 055 km | 73 | 146 |
| 3. | Haikks | 31 51 297 6318-3 | 100 837 km | 72 | 144 |
| 4. | Haikks | 31 51 297 6319-1 | 101 137 km | 72 | 144 |
| Sum | | | 402 084 km | 290 | 580 |



SUW 2000 - International cooperation - Ukraine (1)

On the ground of bilateral agreement between PKP and UZ supervised commercial operation of rolling stock through the Medyka (PKP) – Mostic-ka-2 (UZ) border crossing was started in December 2003

**❖ passenger train No. 35/36 Cracow - Kiev -
Cracow**

SUW 2000 - International cooperation - Ukraine (2)



SUW 2000 - International cooperation - Ukraine (3)

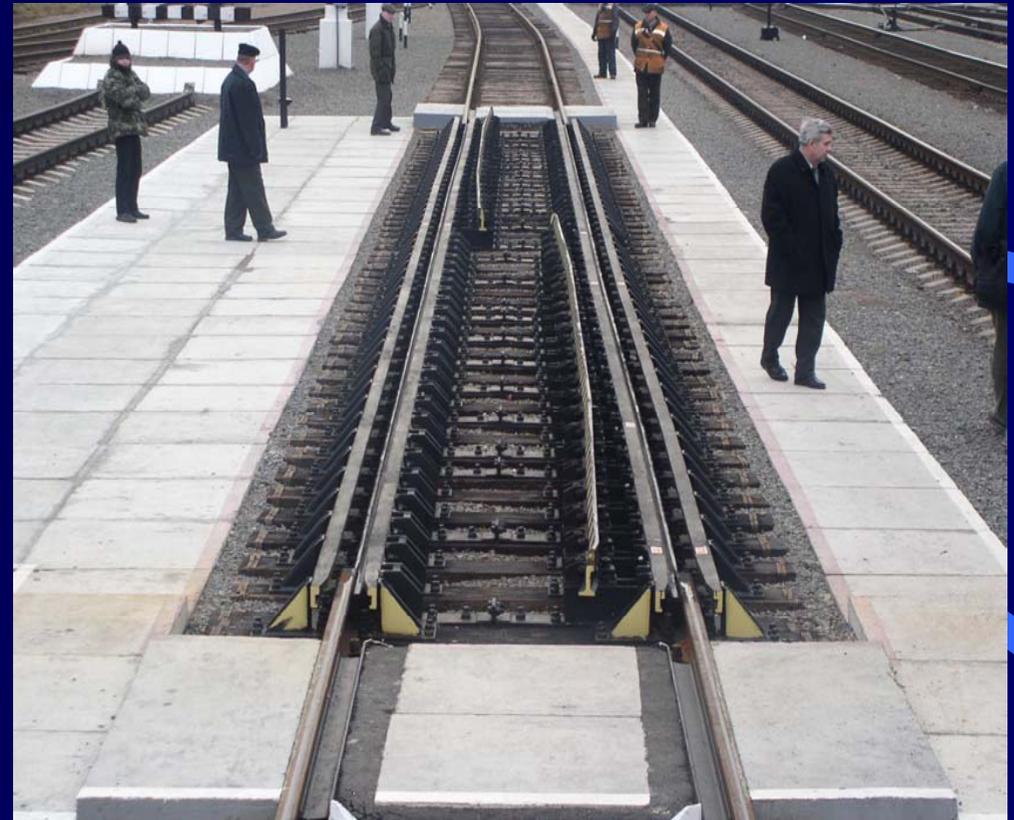
Beginning of operation: 15 December 2003

Place : Polish – Ukrainian border

Preparations :

- **modernization of four PKP and five UZ vehicles coaches equipped with 25AN/S bogies with wheelsets of SUW 2000 system and upgrading of coach interiors to EuroNight standard,**
- **activation of the track gauge changing facility (TSP) in Mostiska-2 (UZ),**
- **common tariffs,**
- **common promotion,**
- **cooperation with travel offices.**

SUW 2000 - International cooperation - Ukraine (4)



Track gauge changing facility (TSP) at the 1435/1520 mm interface at Mostiska-2 (UZ)

SUW 2000 - International cooperation - Ukraine (5)



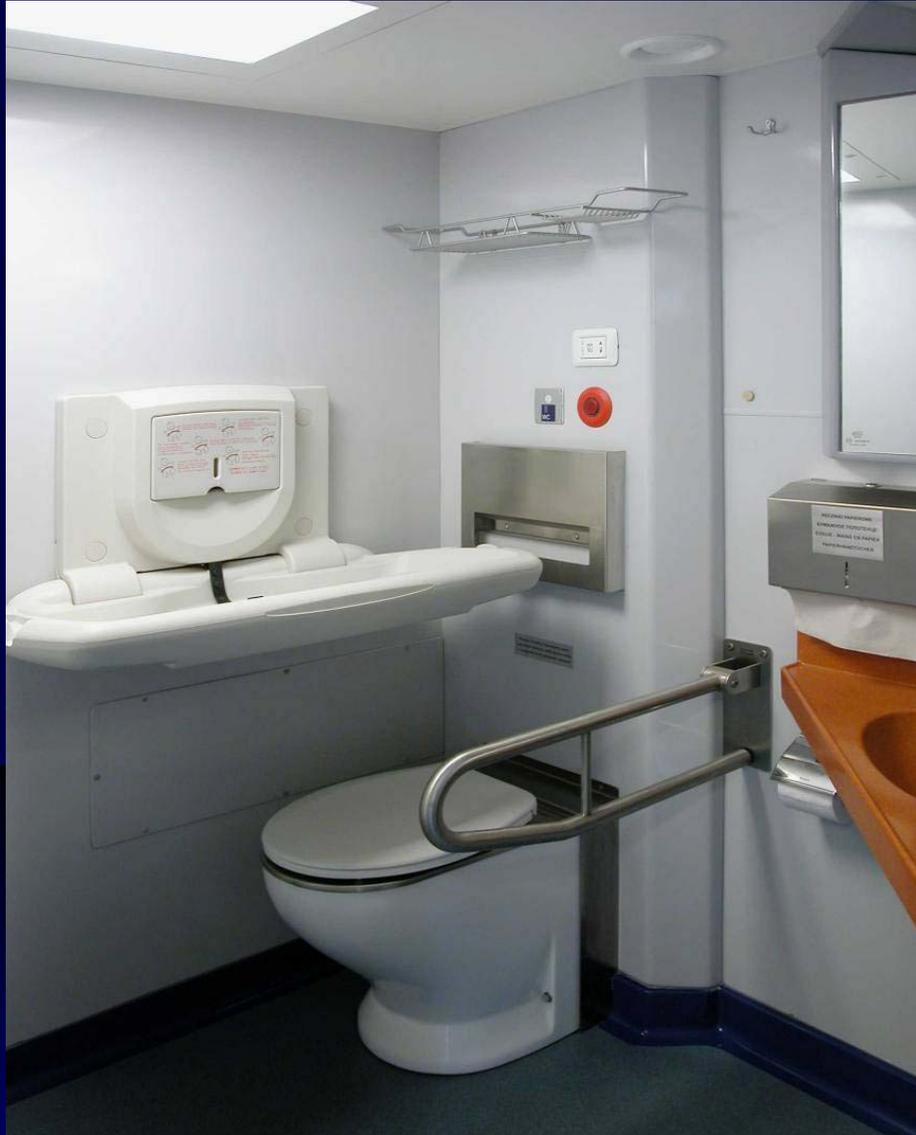
EuroNight standard - 306A sleeping car

SUW 2000 - International cooperation - Ukraine (6)



EuroNight standard - 306A sleeping car - interior

SUW 2000 - International cooperation - Ukraine (7)



EuroNight standard - 306A sleeping car interior

SUW 2000 - International cooperation - Ukraine (8)



„ SUW 2000 ” train at Mostiska-2 (UZ)

SUW 2000 - International cooperation - Ukraine (9)

❖ Journey time :

- Cracow – Kiev 15h 13m**
- Kiev – Cracow 15h 14m**

❖ Average Commercial speed :

- Cracow – Kiev 65,4 km/h**
- Kiev – Cracow 65,3 km/h**

❖ Maximum speed :

- PKP - 125 km/h**
- UZ - 120 km/h**

SUW 2000 - International cooperation - Ukraine (10)

- ❖ **Distance covered by particular PKP Intercity coaches equipped with SUW 2000 system:**
 - **from 204 200 km up to 223 000 km,**
- ❖ **Number of gauge changing on the TSP for particular coaches operated by PKP Intercity:**
 - **from 186 up to 216,**
- ❖ **Total number of gauge changes for PKP Intercity operated coaches on the TSP at Mostiska-2 station (UZ):**
 - **632,**
- ❖ **Total number of wheelsets of SUW 2000 system subjected to gauge change changed on TSP at Mostiska-2 station (UZ):**
 - **5 056.**

SUW 2000 - International cooperation - Ukraine (11)

❖ Effects:

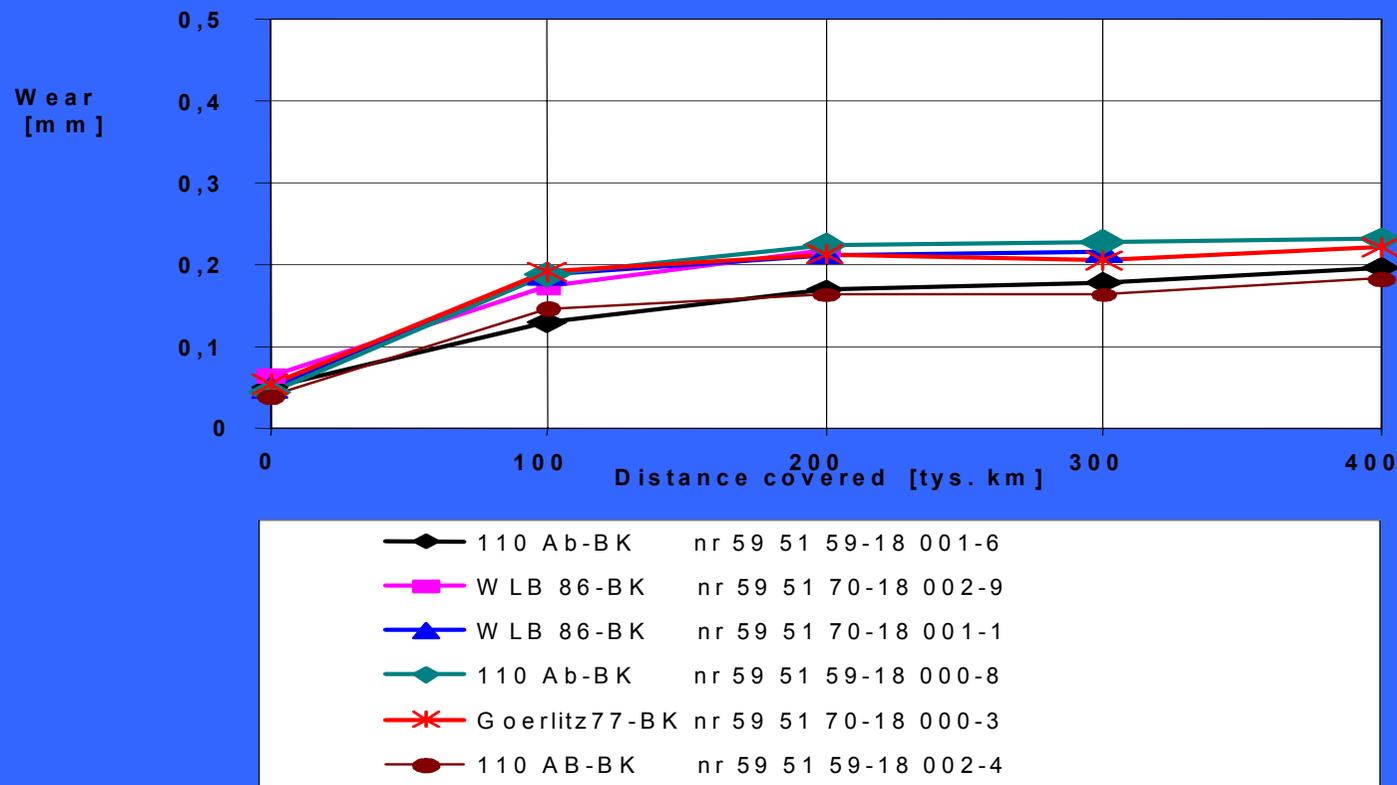
- ✓ **direct connection Cracow – Kiev,**
- ✓ **reduction of journey time by 2h 30min,**
- ✓ **competition with road transport,**
- ✓ **Reduction of the necessary infrastructure at the border crossing.**

❖ Plans:

- **introduction of the second passenger train set connecting Lviv – Cracow – (Warsaw),**
- **implementation of Lviv – Cracow - Prague - (Vienna),**
- **further reduction of journey time.**

Supervised operation results

Average increase of radial wear of INA sliding slave as a function of distance covered for coaches equipped with SUW 2000 system



Evaluation of the operation - conclusions

- ❖ Conclusions from operation trials of coaches equipped with SUW 2000 system, on completion of 400 000 km of distance covered confirmed all design principles of the system.**
- ❖ Operation of SUW 2000 system in winter conditions that low temperature (down to - 35°C) as well as snow and ice accumulation on the bogies do not affect the system.**

Development plans for implementation of SUW 2000 system



SUW 2000 - International cooperation - Belarus , Russia

II PanEuropean transport corridor (1)

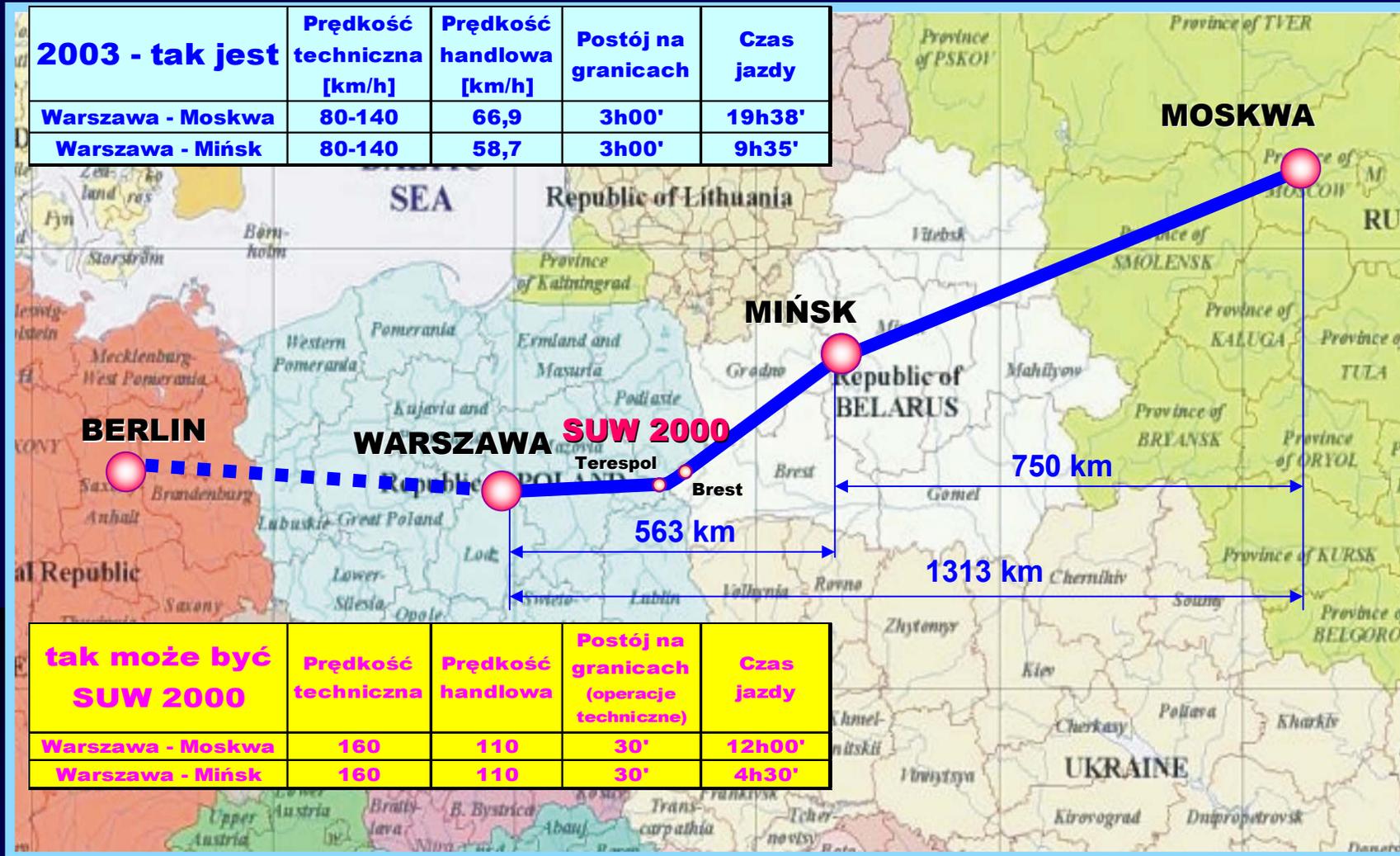
The next important transport corridor for implementation of SUW 2000 system is the II Pan-European Corridor, to which EU attaches special attention.

Certification procedure in the Certification Register of the Federal ministry of Transport of Russia is currently in progress.

80% of foreseen tests of the Polish coach equipped with SUW 2000 system have been so far were carried out by Russian railway research institute - WNIIZT.

SUW 2000 – International cooperation - Belarus , Russia

II PanEuropean transport corridor (2)



PKP plans to implement new product with Belarusian and Russian railways in 2006.

SUW 2000 - International cooperation – Czech Republic

Cooperation with Czech Railways (ČD)

SUW 2000 system has a potential for implementation in passenger traffic on the route Lviv – Cracow – Prague.

SUW 2000 – International cooperation

Other future implementations

PKP S.A. conducts European promotion of the SUW 2000 system.

New partners confirmed interest in the SUW 2000 system.



**THANK YOU FOR
YOUR ATTENTION**