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Original

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Measures for limiting the disturbance of light current installations by electric traction (in particular thyristor apparatus)

Dispositions pour limiter les perturbations des installations à courants faibles par la traction électrique (en particulier organes à thyristors)

Maßnahmen zur Beschränkung der durch elektrische Traktion hervorgerufenen Störungen in Schwachstromanlagen (besonders bei Verwendung von Thyristoren)



UNION INTERNATIONALE DES CHEMINS DE FER
INTERNATIONALER EISENBAHNVERBAND
INTERNATIONAL UNION OF RAILWAYS

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V - Rolling Stock

VI - Traction

VII - Way and Works

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The person responsible for this leaflet is named in the UIC Code

Contents

Summary	1
1 - General.....	2
2 - Systems aimed at improving electromagnetic compatibility.....	3
2.1 - General.....	3
2.2 - Suppression at source	3
2.2.1 - On the traction vehicles	3
2.2.2 - In the sub-station	4
2.2.3 - Arrangement of the traction supply	4
2.2.4 - Systems other than traction	5
2.3 - Protection at the low power circuit.....	5
3 - Studies to be conducted during an electrification project or a modification scheme	7
3.1 - Studies related to the trackside residents.....	7
3.1.1 - Enquiries among the trackside residents	7
3.1.2 - Choice of supply system	8
3.1.3 - Determination of the disturbances and the choice of protection	8
3.2 - Studies related to railway installations.....	9
Appendix A - Example of the cost comparison between 1 x 25 kV and 2 x 25 kV traction systems	10
A.1 - Study by SNCF (values in MF - 1986)	10
A.2 - Study by DSB (values in MDK - 1986).....	10
A.3 - Study by VR (values in 1000 FIM per km of line - 1986)	11
Bibliography	12

Summary

Thyristors are used in converters or rectifiers, which are used in traction vehicles and sub-stations. These converters and rectifiers form important sources of harmonics, which may cause disturbances in light current installations.

From A.C. traction vehicles, the disturbance is reduced if the number of sequentially controlled thyristor bridges is increased. Also, filters on the traction vehicle reduce the harmonic content of the traction current.

In D.C. or A.C. sub-stations, filters may be used to reduce the disturbing current.

In the A.C. contact line, booster-transformers or auto-transformers may be used to limit the disturbances.

Light current cables along the railway line should have a metallic sheath. Steel tape armouring around the sheath reduces the disturbances further. Also, the circuits in the cable should be well balanced to earth.

In the second half of the leaflet, studies to be conducted during an electrification project are dealt with.

1 - General

Field of application

This leaflet is intended to describe the remedies and formulate the recommendations which will limit the problems, and avoid consequent malfunction due to these disturbances.

In light current installations, disturbances are caused by electric traction equipment, especially where thyristors are used.

Thyristors are used in the construction of converters which are used:

- on traction vehicles,
- on coaches, to supply electrical apparatus,
- in electric traction sub-stations for frequency conversion.

These converters, in which thyristors are controlled by phase-angle switching, by pulsed operation or used in half-controlled circuits, form important sources of harmonics which are capable of disturbing light current installations.