

# Author checklist: technical articles

## Hints for the creation of manuscripts

Please write your article with a program that produces MS Word documents (doc or docx files). Please submit separate Word documents for each language, containing all the text elements but WITHOUT inserting any figures or tables. Please do not include any manual hyphenation or line breaks.

Please e-mail the complete documentation (article in German and English, figures, tables, etc. and authors' details) to the appropriate chief editor or specialist editor by the agreed deadline (see publication programme).

- **SIGNAL+DRAHT is published in two languages, German and English. The structure and contents of both language versions should generally be the same. Please therefore deliver manuscripts in both languages. If you need assistance in producing a good, readable quality in one of the languages, the Publisher would be happy to recommend a professional translator.**
- **The total length of the article should not exceed 18 000 characters (including spaces) per language.**
- **Use only MS DOS system fonts, for instance Arial, Times New Roman, Calibri, Courier New and Georgia.**



Überschrift (max. 80 Zeichen inkl. Leerzeichen):  
**Elektromagnetische Beeinflussung durch elektrische Leiter in Eisenbahntunneln**

Autorenname(n) :  
Henning Olsen

Einleitungstext/Zusammenfassung (max. 600 Zeichen inkl. Leerzeichen):  
Elektrifizierte Tunnelbauwerke sind sehr komplex. Vielfältige Einzelgewerke befinden sich hier auf engstem Raum. Jedes dieser Gewerke folgt seinen ganz speziellen Designbestimmungen und Standards. Bei der Konstruktion solcher Bauwerke sind mehr oder minder offensichtliche Schnittstellen zwischen den Gewerken in Übereinstimmung zu bringen, damit am Ende ein funktionierendes Gesamtsystem entsteht. Offensichtliche Schnittstellen betreffen räumliche Gegebenheiten. Minder offensichtlich zeigen sich die Wirkung elektrischer Stromflüsse und damit verbundener Abhängigkeiten für das Design.

Zwischenüberschrift (max. 110 Zeichen inkl. Leerzeichen):  
**Einführung**  
Zu Zeiten, als es sehr mechanisch bei der Eisenbahn zugeht, war alles noch „einfach“. Solange die Dinge nicht miteinander kollidierten (Einhaltung des Lichtausmaßes) und Signale und Weichen sich noch per Hand bedienen ließen, war alles gut. Auch modernere, elektrisch betriebene Signale und Weichen hatten weiterhin dieselben Schnittstellen zur Eisenbahn wie ihre Vorgänger. Das alles änderte sich, als die elektrische Traktion Einzug hielt.  
Bei der Eisenbahn kommen heute generellen Stromarten zum Einsatz: der Gleich- und der Wechselstrom. Dessen Wirkungen auf andere Systeme unterscheiden sich zwar, sind aber nicht unbedingt voneinander getrennt. Der Einsatz von Wechselstrom erfolgt mit unterschiedlichen Frequenzen. Üblich sind 16<sup>1/3</sup> Hz, 50 Hz und 60 Hz.  
Für alle offensichtlichen Fälle der Traktionströme über die Fahrschienen, um den Triebfahrzeugen, Zurück fließt er dann wohl durch die Fahrschienen. Um den Widerstand oder die Impedanz des Stromkreises klein zu halten, werden zusätzlich auch noch Spalte- und Rückführungskabel eingesetzt.  
Ein weiterer nicht unwesentlicher Bestandteil der Rückleitung des Bahnstromes ist die Erde.  
Beim Gleichstrom möchte man den Einfluss der Erde so klein wie möglich halten. Gleichstrom fließt zu Korrosion an metallenen Strukturen, wenn die Ströme aus diesen Strukturen in das Erdreich entweichen. Man versucht diesen sogenannten Streuströmen durch die Isolation der Schienen gegen das Erdreich zu begegnen und diese auf ein geringes Maß zu reduzieren.  
Der Wechselstrom lässt sich leider auch nicht aus der Erde verdrängen. Führt eine Fahrlinie Wechselstrom, so werden durch sein wechselndes Magnetfeld in parallelen Leitern Spannungen induziert. Die Höhe der Spannungen hängt direkt von der Stromstärke und der geometrischen Lage der von der Induktion beeinflussten Leiter ab.

Literatur in Listenform:  
[1] John R. Carson, NAPS, University of Waterloo, Canada, October 23-24, 2000 "Wave Propagation in Overhead Wires with Ground Return"  
[2] Prof. Dr.-Ing. Gerhard Hofmann, Skript EMV-Schulung FB ELBAS, November 2014  
[3] Richtlinie 2004/40/EG des Europäischen Parlaments und des Rates vom 29. April 2004 über Mindestvorschriften zum Schutz von Sicherheit und Gesundheit der Arbeitnehmer vor der Gefährdung durch physikalische Einwirkungen (elektromagnetische Felder) (18. Einzelrichtlinie im Sinne des Anhangs 16 Absatz 1 der Richtlinie 89/391/EGW)  
[4] Richtlinie 2004/108/EG des Europäischen Parlaments und des Rates vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/330/EGW, Stand 28. Februar 2014

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Bild- und Tabellenunterschriften:  
Bild 1: Magnetfeld eines konzentrischen Leiters  
Bild 2: Zusammenhang von Magnetfeld und Induktion  
Tabelle 1: Erdstrominduzierte für eine Erdbebenhaftigkeit von 0,01 Sm

→ Refer whenever possible to figures, tables and references in the text and number them consecutively.

References in the form of a list:  
Example: [1] Braband, J.: Evidence of safety at least equal to reference systems, SIGNAL+DRAHT 12/2008

Web sources:  
with URL, date and time  
(Ex.: <http://www.eurailpress.de/verlag/zeit-schriften/signal-draht/archiv.html>, 16 April 2015 at 13:30)

Your author's details with title and / or academic degrees, postal and email addresses

Summarise table and figure captions (citing sources) in the form of a list at the end of the Word document

## Illustrations / formulae

- Up to eight figures, tables, etc. in both German and English.
- Provide figures, etc. as separate files (DO NOT insert figures, etc. in the text).
- Figures should be submitted in jpg, tif, eps or pdf format (minimum resolution of 300 dpi and minimum width of 9 cm). Set your digital camera to a high resolution when taking photographs.
- Create figures, etc. with Microsoft products\*: (Word, PowerPoint, or Excel)
- Please deliver drawings from AutoCAD or Visio in eps or ai format, using one of the fonts mentioned above. If possible, convert fonts into vector graphics.
- Minimum resolution of scanned diagrams: 1200 dpi, photos 300 dpi.
- Please create equations and symbols with a word processing system so that they are clear and unambiguous (for example, using a formula editor).
- Please mark subscripts and superscripts clearly.

\* Hinweis: Be prepared for some colours to look different when printed compared with your computer screen.

## Style guide

- Avoid complicated sentences (especially ones with convoluted subordinate clauses).
- Use only common abbreviations and acronyms.
- Avoid special abbreviations. In exceptional cases, write the term in full the first time it occurs followed by the abbreviation in brackets.
- Avoid verbatim quotations of individuals' opinions.
- Numbers up to twelve should be written out in full, except in combination with units.
- Use only the "SI" international system for abbreviating weights and measures.
- Currencies: use the standard international abbreviations (e.g. EUR) and „mn“, „bn“, etc. or "million", "billion", etc. instead of strings of zeros.

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