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W

WAN

Abbreviation for <**w**ide **a**rea **n**etwork>
A technical communications system that connects terminal equipment with communication partners that are far away and also connects several LANs with each other. A WAN exhibits a spatial spread of many hundreds of kilometres. The data transmission rates are relatively low and lie in the range of several $kBit/s$ up to several hundred Bit/s. The failure rates are higher than for a LAN.
Circuit-switched as well as packet-switched transmission technology is used. Legally, WANs fall into the responsibility range of the long distance telephone companies. Because of the mostly interstate character of WANs, there are tighter standards for them than for a LAN.

Warmstart

<warm boot>

The restart of a computer after stopping it without shutting off the current (e.g. after a system failure). It is carried out by pressing the CTRL, ALT, and DEL keys simultaneously. The operating system and the application program must then have to be loaded anew into working memory. However, the data present in working memory before the warm boot is lost. The internal test routines that are automatically carried out after a cold boot, are not carried out after a warm boot.

Waterfall diagram; waterfall plot

Similar to a cascade diagram, only time is usually substituted for rpm on the z-axis.

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Watt

<watt>

Abbreviation: *W*

Unit of measurement for power

Wave

Change in the physical condition of a medium that is identified by a field and spreads with a speed determined at every point and in every direction by the properties of the medium.

Wavelet-Transformation

<wavelet transform>

Abbreviation: WT

Wavelet transformation is the latest procedure for analysing time signals. Founded mathematically in the ‘80s, it has been applied to signal processing since the late ‘80s [82, 83, 86]. Wavelet transformation opens up possibilities for analysing time signals that cannot be matched by traditional signal analysis. It involves a process that makes it possible to perform a combined analysis in the time and frequency domain, especially on transient signals. The wavelet transformation is, like the Fourier transformation, a spectral transformation that depends on the decomposition of a time signal into basic functions. Currently, it is finding application primarily in speech analysis and data compression.

A principle problem with Fourier transformations applied to transient processes is that the base functions (sinus functions) extend over infinite time. Temporally limited or short signal changes (e.g. the shock-type impulses in roller and gear box damages) have only a weak effect on the spectrum or stretch across the entire frequency band. However, the base functions of the wavelet transformation – the wavelets – are temporally limited functions that are localised, both in their frequency and in time. A time signal can be put

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together from wavelets of one class. In contrast to Fourier transformations, an adaptation to the particular problem is possible.
A further difference of the wavelet transformation compared to the Fourier transformation is that they operate with a fixed time window. Slow events (low frequencies) are investigated with a wide time window, fast events (high frequencies) with a narrow time window. This is what makes it possible to "zoom into" a time signal with various scaling factors whereby an uncertain relationship between time and frequency is taken into account. This is why the wavelet transformation is well suited for signals in which fast events and slower events are superimposed on one another. That applies, for example, not just to speech and music but also to a variety of signals that arise as a result of damage to machine components.

The properties of the wavelet transformation can be summarised as follows:

- The wavelet transformation makes it possible to separate precisely the impact-like high frequency bearing damage signals from the remaining machine vibrations
- The repetition frequency of the event or in this case, damage can be determined precisely
- Thanks to good time resolution, different damages can be separated from one another
- In time signals, certain signs of damage can be searched for in a targeted manner
- The wavelet transformation provides a frequency response similar to human hearing
- The wavelet transformation requires lower computational costs and can be carried out in real time.

Wear component; wearing part

From a maintenance standpoint, a unit on which operationally unavoidable wear has occurred locally that is deployed in order to protect other units from wear and for which, from a design standpoint, such exchange is foreseen (Wear, see DIN 50320).

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White noise; nat random noise

See Noise, white

Wide Area Network

Abbreviation: WAN
Networking of computers or local networks across public or private long distance communication networks (e.g. leased digital wired connections, ISDN, etc.) to a super-regional long range data network. A WAN can be limited to one location, one city or one state but it can also take on international dimensions.

Window

A display window or portion of a display window.

Wire-wrap connection

Wire wrap technology

Wire-Wrap-Technik
<wire-wrap technique>

Hard-wiring. Modern solder-less connection technique in electronics. A special wire is wrapped around a post with a wire wrap tool, whereby the wire and post become “welded” in spots. The advantages of the

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wire-wrap technique are the high reliability that the connection produced is electrically conducting and that semi-skilled labour can carry out the wiring of wrap cards. The wiring can also be carried out by numerically controlled machines (small batches).

Wiring

The totality of electrical connections in a vessel. The connections consist of (hookup) wire, cable (coaxial or ribbon) and conductors applied on insulating layers (printed wiring, circuit board).

Wiring field

A unit built of several wiring frames in one plane. The wiring here is connected as flatter wiring.

Wiring frame

Back wiring

Wobulator

A mechanical arrangement designed to produce a dynamic signal with a known (adjustable) wave amplitude that can be used with a vibration displacement sensor to dynamically calibrate control devices or to calibrate displacement transducers themselves.

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WORM

Abbreviation for <**w**rite **o**nce, **r**ead **m**any>

The technology for recordable optical storage.

Wort

<word>

An ultimate result of signs that are viewed in a particular connection as a unit.

Note: In the worst case, a word can be empty.

WT

Abbreviation for **W**avelet **T**ransformation