



KTC KIEPE TRACTION CONTROL

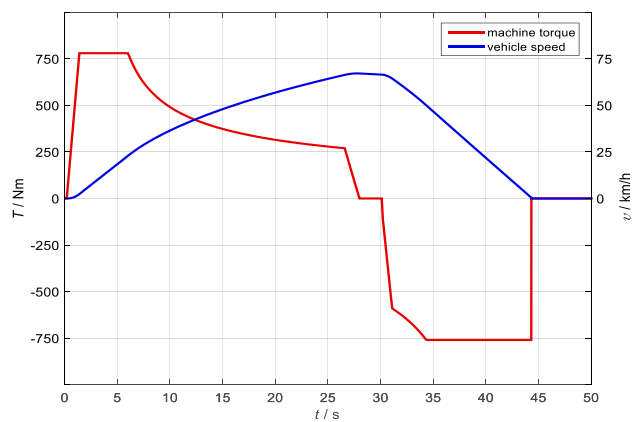
The Kiepe Traction Control KTC software was developed to optimize the drive control in electric trolleybuses and offers the following advantages:

- Fast torque control in every operating situation
- Gentle driving characteristics due to highly dynamic damping of torsional drivetrain oscillations
- Active damping of drivetrain oscillations even during passing a line-insulator with high traction effort torque
- Reduction of wear on mechanical components such as axles and gears by actively damping of mechanical oscillations
- Optimized balancing during sliding and slipping
- Improved efficiency by using synchronous pulse patterns in the upper speed range.
This increases the overall efficiency of the traction motor and traction converter
- Reduction of noise and energy through optimized magnetic flux rate in the traction motor
- Reduction of acoustic resonances in motor and gear box by speed-dependent switching frequency specification
- Optimized driving characteristics in condition of icy overhead line
- Reliable and stable start on very high inclines (tested on slopes up to 22 %)
- Highest priority on electrical braking capability, even if the overhead line voltage fails

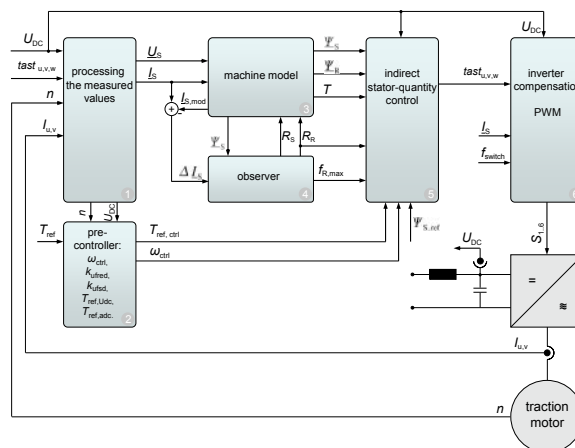
DRIVE CONTROL FEATURES OF KTC

- Active damping of torsional oscillations in a drivetrain of electric buses (Patent pending)
- Very dynamic electronic ASR (inside of inverter control)
- Variable switching frequency (frequency band modulation)
 - Reduction of subjective and objective acoustic noise perception
 - Optimized system noise
- Special control algorithm for acceleration at very high inclines (up to 22%)
- HighPriority on electrical Brake capability (until zero speed)
- Overmodulation with synchronous pulses
 - (+15 % machine voltage), lower energy consumption
- Energy optimized drive mode (optimal machine flux at lower torque)
- Acceleration Control

TRACTION CONTROL INNOVATIONS – ENERGY SAVING POTENTIALS



ISR DIAGRAM



Subject to change without notice

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