

Contribution of Connectivity to Effective BAT* Operation

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Motivation

Today availability and cost efficiency are the most important aspects using exhaust aftertreatment devices in on-road and non-road applications. Regarding measurement and modelling a reliable database is essential for system operators. Data analysis and remote maintenance are the features needed to guarantee fast and efficient processes using aftertreatment devices. Fast and inexpensive bidirectional data transfer as well as 24/7 availability are additional requirements to meet customer's needs.

A solution will be presented, that gives operators and service contractors the opportunity to ensure the availability of the machines and simultaneously fulfill their service- and monitoring-contracts efficiently. With regard to the modular platform the presented solution is also transferable to any further technologies and applications in the field of exhaust aftertreatment.



Field trials in China with Showcase System:

- Nanjing: 10 coaches
- Xiamen: 10 city buses
- Beijing: 7 construction machines

Methodology

During Sino-Swiss program "Black carbon emission of Mobile Sources" *THE BEST AVAILABLE TECHNOLOGY under real operating conditions was identified. Therefore vehicles were equipped with Diesel Particulate Filters (DPF's) and CPK Showcase systems for datalogging and remote monitoring.

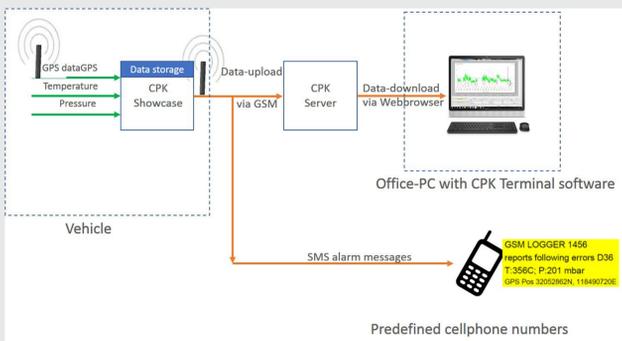
Experience: Vehicle users often ignore alarms coming from the exhaust aftertreatment system

Result: DPF is damaged by uncontrolled regeneration or needs to be regenerated externally

⇒ DPF damages and malfunctions are causing additional costs and downtimes!

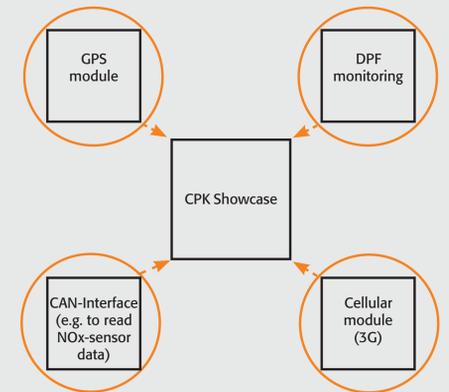
RemCo® Technology:

- Wireless Data Transfer (SIM Data Card needed)
- Gateway for:
 - temperature upstream DPF
 - Pressure upstream DPF
- Log driving routes via GPS
- Data-upload via 3G cellular net
- Send alarm SMS



Additional Requirements

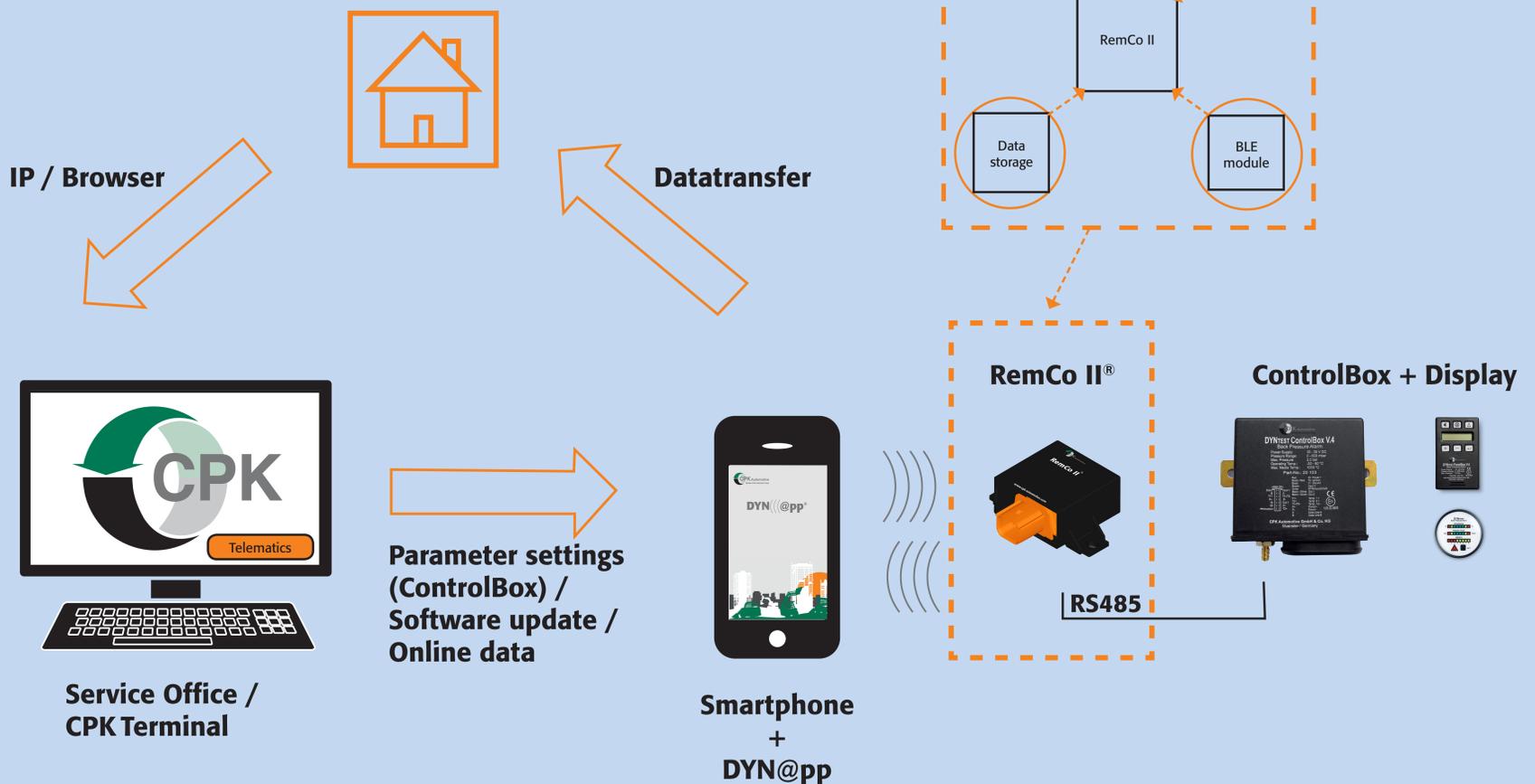
- Remote access from office to ControlBox to change parameter settings or software versions beneath the remote monitoring (Bidirectional communication)
- Use existing communication infrastructure
- Already installed monitoring systems can be upgraded to remote systems
- Transfer data in small blocks to overcome cellular interrupts
- Consider that machines operate underground without cellular connectivity
- Fulfill protection grade IP67 to ensure proper installation robustness



Results

RemCo II® Technology:

- informs the experts in charge about alarms via SMS/email or reminds on upcoming maintenance
- offers data analysis from any place in the world by remote access
- enables the expert to give the right advises (troubleshooting)
- enables the expert to upgrade software or modify parameter settings remotely
- avoids needless service actions onsite



Summary

RemCo II® is a valuable contribution to achieve a healthy urban and suburban air quality worldwide. The successful application of RemCo® in Sino-Swiss program for datalogging and data handling and lessons learned as well as several discussions with customers lead to RemCo II® development requirements.

With DYN@pp® CPK entered a new field of connectivity! Connectivity will be more and more essential for datalogging products in the future as it is cost saving and efficient. Applications are not limited to the exhaust aftertreatment market.