Energy efficiency simulation – Smart auxiliary systems

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In today's global environment, the need to conserve energy has never been greater. Rising fuel prices, Europe-wide legislation and increased pro-environmental public awareness are all factors contributing to a drive for greater efficiencies in transportation systems.
Bombardier is at the forefront of initiatives to ensure that rail transportation – already an ecologically leading mode of transport – can further improve its performance.

In the trains nowadays the optimization towards low energy consumption has changed subsystems a lot. All systems are designed to reduce their energy demand.
The "low fruits" are numbered. One left is the usage of a smart auxiliary system.
HVAC and air compressor for brakes, which are main auxiliary consumers, can be designed to work mostly when there is energy available which comes for "free".

Regenerative brakes in electric trains or auxiliary generators in diesel trains recuperate energy while braking. With simple changes in the controller of the auxiliaries energy saving is possible.

The Train Energy Performance – TEP tool calculates the energy consumption of any train on a specified track. This tool provides information for all components of the train. The benefit of smart auxiliary systems is shown easily with TEP. The tool includes the driver assistance system *EBI* Drive 50 which is a key element in the smart auxiliary system. The *EBI* Drive 50 provides the smart aux system with information about the braking points and the duration of each braking. Inside TEP the optimization can take into account the system constraints such as allowed number of on/off switches and minimum working times of the auxiliary systems.

TEP together with the *EBI* Drive 50 are optimizing the subsystems – making smart auxiliary systems possible.