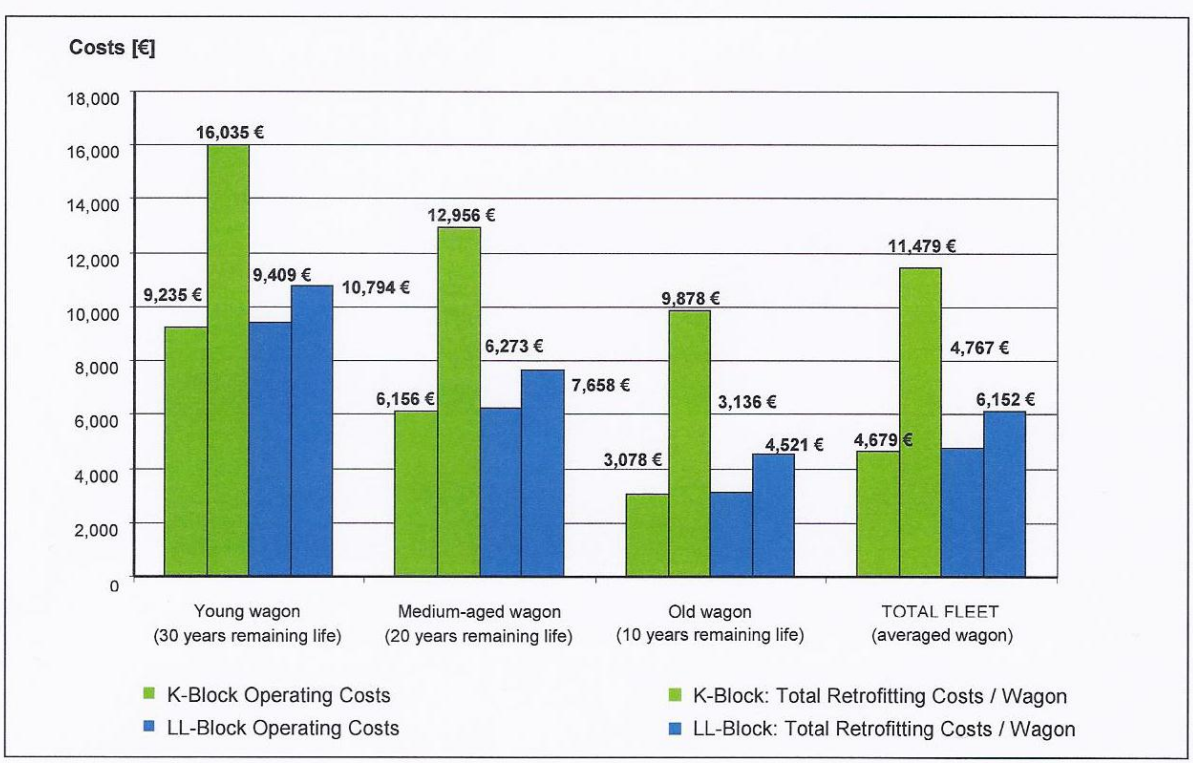
NOISE REDUCTION WITH K AND LL BLOCKS - COSTS

The problem of noise – and more specifically of noise created by freight wagons – has long been recognized by the European Commission. As a technical solution to overcome the problem of 'noisy' freight wagons, the industry developed several types of low-noise brakes which can reduce the perceived rolling noise. One type of such brakes is the so-called K-blocks and another is LL blocks.

K-blocks are the brake block solution which is used in practice and already contributes to the abatement of noise. But the usage of K-blocks requires a complex technical modification of the single wagon and, if applicable, for wheels. For using K-blocks the whole pneumatic braking system has to be changed and recalibrated. Depending on the type of wagon there are several options for doing this – all of them involve relatively high up-front costs. Additional costs are generated by new homologation of the whole wagon after the retrofitting. Stakeholders criticise this process stipulated by the responsible authority due to producing unneeded additional costs. One homologation of a brake block for a specific wagon type should be enough. Besides, the fixed up-front costs – as for any brake block – variable costs due to wear and tear occur. In total, the LCC of K-blocks are higher than the ones for CI brakes. Currently, K blocks are state-of-the-art for new wagons which are certified for TSI Noise. The relatively high up-front costs lead to higher uncertainty with regard to the return on investment and might cause WKs to refrain from retrofitting their wagons. Any incentive has to take the relation between fixed and operational costs into account: In case of K-blocks the incentive should be higher at the beginning to have an impact on the wagon keeper's decision to retrofit. Additionally opportunity costs occur if the wagon cannot be used during the retrofitting process. These costs can be lowered if retrofitting is done during revision of the wagons (at average every 6-7 years).

LL brake blocks are composite or sintered brake blocks, too. However, apart from that they differ essentially from K-blocks. LL brake blocks do not require technical modifications on the wagon. This implies a comparatively simple retrofitting with LL brake blocks. Only in some cases additional modifications on the wagons are necessary. For some wagons an additional specific valve is needed. In principle there are no fixed retrofitting costs apart from time and effort plus opportunity costs. The costs of retrofitting with LL-blocks consist therefore mainly of variable (material) costs. Pilot studies with LL-blocks suggest, they have a longer live time, but impose higher wear and tear costs on the wheels. Overall costs per axle-km are higher for LL- blocks.

Retrofitting costs per wagon dependent on remaining lifetime and brake type are presented in Figure1.



Source: http://ec.europa.eu/transport/modes/rail/studies/doc/2009_10_noise_charges.pdf