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| **MAIN MESSAGES FROM THE PRESENTATION(S)** | |
|  | * Road traffic is the most important source of noise and is caused mainly by the rolling sound. * Means used to control the propagation path of noise (e.g. barriers) only have an impact in a limited area, especially in urban areas. * As reminder, +/-3 dB can just be perceived by human ear, while +/-10dB are perceived by humans as a doubling / halving of the noise level. * -3 dB corresponds to halving of the traffic volume * A low-noise road surface has an immediate impact on noise emissions up to 6dB and that for any vehicles (type, age, tyres, …)  🡪 road maintenance has also to be considered to keep benefits brought by a low-noise road surface.   With low-noise road surfaces, an initial noise reduction of -3 dB can be achieved. Nevertheless, a shortened service life on average -10 years must be accepted.   * Work on road surfaces brings a win-win deal with the community and promote the acceptance by citizens. In the future, the aim is to increase the initial noise reduction linked to the new layer. |

**(CH) LOW-NOISE ROAD SURFACES IN SWITZERLAND**

**ROAD SURFACE « itself”**

**Measurements**

**& Tests**

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| **SUMMARY** | |
|  | From the study in Switzerland led by FEDRO (FEDeral Roads Office) related to the low-noise road surfaces, have been considered:   * Current noise situation in Switzerland * Basic approaches to noise abatement: oppose the noise at the source (reduce the noise emissions, control the propagation path and the immission point) * Traffic noise and noise perception * Low-noise Road surfaces challenges * Research & development on low-noise road surfaces in urban areas (2009-2017) through 3 subprojects (research, test tracks and monitoring test tracks) * 8 research projects including test methods, operation & maintenance of roads, variability of surface production, innovations * 15 test sections with innovative asphalt mixtures * Long-term monitoring   Knowledge gained and initiated developments   * + Origin of rolling sound (vibrations, contact points, surface structure, cavities)   + Semi-dense Road surface (SDA) for noise reduction on urban roads   + Symposium in September 2017 🡪 see document TFVS-04-04 * Low-noise surface 2021 * Principles and service life of roads * International evaluation of StL86 surface in the Netherlands, Germany, France, USA, Japan, Sweden, Denmark * Practices & experiences through application of SDA surfaces with initial noise reduction -3dB(A) – up to -6dB(A) for SDA 4 and its evolution during service life   🡪 Challenge: optimization of acoustic and surface durability   * Additional research needed regarding the low-noise road surfaces * Summary: with low-noise road surfaces an initial noise reduction of -3 dB can be achieved * a shortened service life on average -10 years must be accepted |

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| **ADDITIONAL POINTS FROM DISCUSSIONS IN THE TF-VS** | |
|  | This study shows a very holistic approach regarding what can be done through the roads vs. noise.   * Cost for new low-noise road surfaces and their maintenance (durability of the surface vs. noise) has to be considered. * The cost can be reduced with a process to renew the road from the top layer and not fully from the ground. * Stl86/SMA 11 used according to Swiss calculation model (not a special surface) to compare roads worldwide with a gap up to 4dB(A) can be due to the potential different interpretations linked to the reference system definition of each country, * Low-noise mastic asphalt developed by FEDRO (dense pavement) has a good potential and started last year. Results from the Research project expected within 5-7 years. * For the time being, this project was looking for noise reduction in general, and not the type/source of noise. |

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