IMpact of seasonal Fluctuations and provenience of bitumen on lifetime of asphalt pavement

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Abstract
Twelve bitumen samples (70/100 and 30/45) were taken from three different refineries in three years. In common, Refinery A uses mostly crude oil from the North See and the Refinery C uses exclusively crude oil from Russia. The Refinery B gets the crude oil from all over the world. Conventional and performance oriented bitumen characteristics in three different ageing states (virgin, RTFOT and PAV aged) and asphalt parameter (temperature dependent stiffness and/or fatigue behavior) have been determined for all of the 12 bitumen samples in the laboratory of TPA. The determined conventional binder properties meet the requirement of standard. The results of the analytical pavement calculation method by means of the asphalt parameter show significant effect on lifetime. The influence of provenience and the seasonal fluctuations causes a range of 4 cm at necessary thicknesses for an asphalt pavement loaded with 100 mio. 10 t-ESAL.