

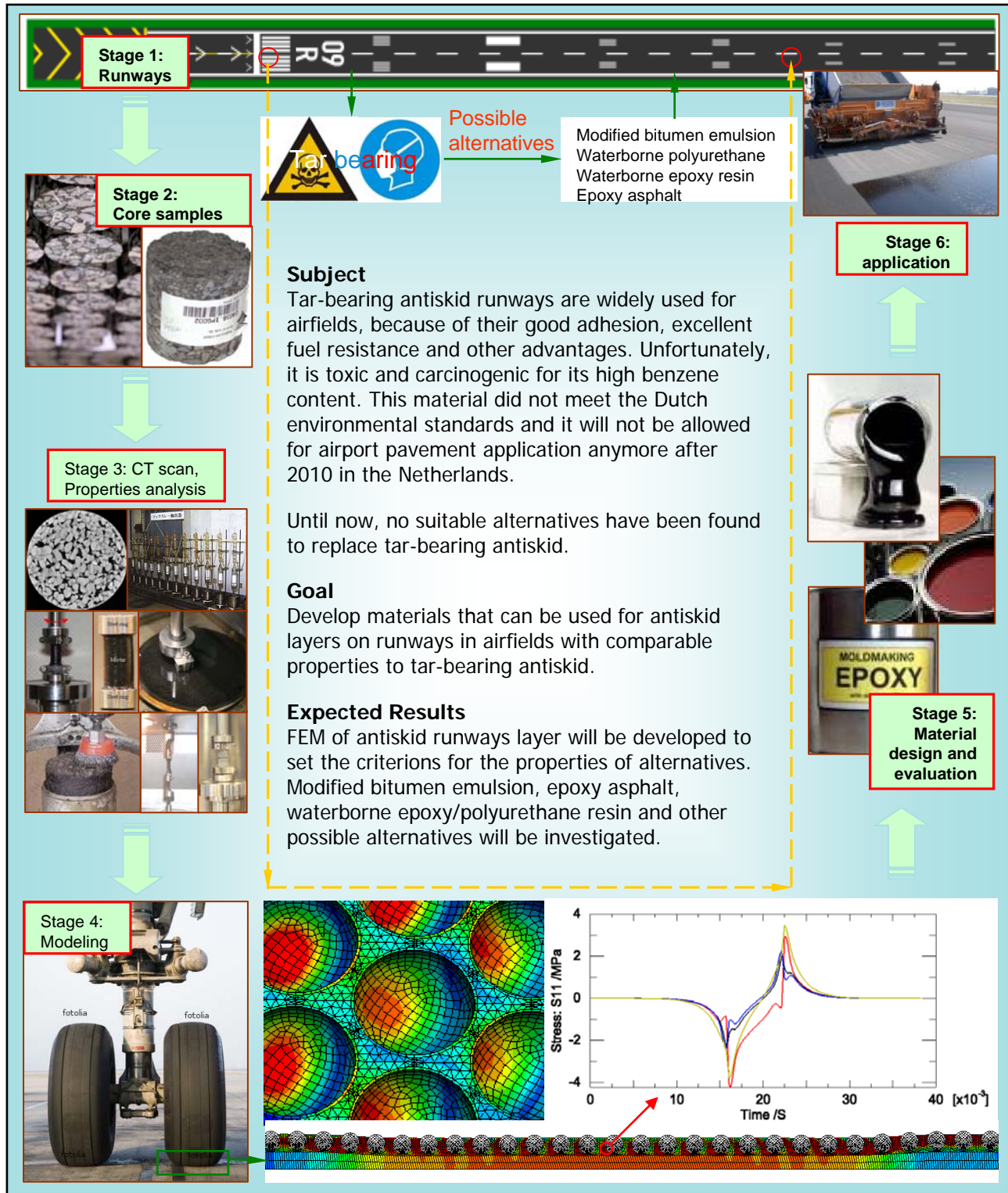
Alternatives to Tar-Bearing Antiskid Runways



Speerpunt
BOUW

Modeling and Material Design

RESEARCH SCHOOL
INTEGRAL DESIGN OF STRUCTURES



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Alternatives to Tar-Bearing Antiskid Runways Modeling and Material Design

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Subject

Tar, because of its good adhesion, excellent fuel resistance and other advantages, is widely used for airfields, especially for the tar-bearing antiskid runways. Unfortunately, it is toxic and carcinogenic for of its high benzene content. This material did not meet the Dutch environmental standards and it will not be allowed for airport pavement application anymore after 2010 in the Netherlands.

Until now, no suitable alternatives have been found to replace tar-bearing antiskid. Former researches showed that none of the available materials can achieve the same properties of tar-bearing antiskid.

Goals

Develop materials that can be used for antiskid layers on runways in airfields with comparable properties to tar-bearing antiskid.

Research Question

What are the requirements for antiskid runways surface treatment? How can we find alternatives that can satisfy those requirements? How to prove the suitability of alternatives?

Strategy

Literature review will focus on the material design and application of some possible alternatives. At the same time, several properties of core samples from four airports will be investigated for understanding the antiskid layers. Then a modelling of the antiskid surface layer will be developed to find out the inner stresses and strains, especially at the adhesion zone. Properties of the possible alternatives will be used with this modelling to determine if they can resist the loading by airplanes and outside damage. The modelling and material design is the main part of this research.

Expected Results

FEM of antiskid runways layer will be developed to set the criteria for the properties of alternatives. Modified bitumen emulsion, epoxy asphalt, waterborne epoxy/polyurethane resin and other possible alternatives will be investigated.

Preferred Partners Applications / Sponsors

Airfield authorities/contractors/binder producers/CROW

Prime Publication / Prototyping

Research Period

From 2008-10 to 2012-10