

Why are some paving teams just better than other teams?

A study of asphalt team performances from the 'high-reliability organization' perspective

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Languages: Dutch, English

Problem domain

Traditional practice of asphalt paving companies leans heavily on the experience and craftsmanship (tacit knowledge) of the asphalt paving teams on site. This results in individual implicit learning. Therefore it is difficult to understand the quality of operations at the construction site employed by the asphalt team. To develop a deeper insight in the paving and compaction process this tacit knowledge needs to be made explicit to change towards explicit quality control and organisational learning.

Companies and location:

Due to various changes in the business environment, the asphalt paving process requires professionalization. Therefore, a conglomerate of Dutch asphalt contractors established ASPARi to bundle the ongoing activities and to confirm the network structure. ASPARi is short for Asphalt Paving Research & Innovation. It is a cooperative network of organizations that work together in research projects and technology development to improve the performance of the asphalt road construction industry. To see more about the ASPARi approach and projects: www.aspari.nl.

The challenge

The challenge in this research is to understand why certain asphalt teams perform better than other teams, and in particular why they perform better. In organizational research 'high-reliability organizations' is already a widespread and accepted term to describe organisations such as aircraft carriers and nuclear power plants that function extremely reliable under very uncertain conditions. Weick (1999) developed 5 principles to create such high-reliable (mindful) organizations. Mitropoulos and Cupido (2007) use this organizational theory and applied this to construction work, specifically to residential framing and intro-

duced the term 'high reliable crews' – defined as 'Construction crews who consistently achieve very high levels of both production and safety performance, higher than most other crews performing similar work'.

In the context of the paving industry we see some similarities. Some paving crews perform significantly better in certain circumstances than other paving crews. The objective of this research is to increase understanding about work practices of asphalt teams that increase both production and quality. Based on this understanding, we search for 'guiding principles' that high-reliability crews in the paving industry use.

Research methodology

The contractor BAM has a system that provides an overview of the performance per asphalt team.



Based on that, the first step is to categorize the asphalt teams based on their performances in certain conditions. Variables for this categorization can be: Production (speed/time), quality (density and quality characteristics of the asphalt pavement) and safety (number of incidents). From that categorization, the asphalt teams can be studied more in detail and search for the guiding principles that asphalt teams use to conduct their work. Variables that can be studied within the asphalt teams may be: The focus of the foreman, work planning and organization, moments for checking and control, identification of risk areas

and the prevention of errors in high-risk tasks, the crew stability and reliability and how the team handle the unexpected, etc.

Qualifications and more information

To support the ASPARi network in their search for professionalization of the asphalt paving process, we are looking for interested students with curiosity for asphalt paving and want to do their Master or Bachelor project in this field. If you are interested please contact Prof. Andre Doree (a.g.doree@utwente.nl) directly by mail.

For more information:

- www.aspari.nl
- Weick, K.E., Sutcliffe, K.M., Obstfeld, D. (1999). Organizing for high-reliability: Processes of collective mindfulness. *Research in organizational behaviour, volume 1, pp. 81-123.*
- Mitropoulos, P. and Cupido, G. (2009). Safety as an emergent property: Investigation into the work practices of high-reliability framing crews. *Journal of Construction Engineering and Management, Vol. 135, No. 5, May 1, 2009.*