

<b>Research theme</b>	Risk analysis / Maintenance
<b>Research title</b>	Introduction of a Risk Analysis standard for the Manufacturing industry
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<b>Research period</b>	From 8-9-2014 to 27-5-2015
<b>Company</b>	Koninklijke Grolsch N.V.
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## *Background*

In 2008, the Dutch beer brewery *Koninklijke Grolsch N.V.* was taken over by the world's second-largest brewer, SABMiller. The takeover has resulted, and still results, in many changes within the Grolsch brewery. This master thesis is part of one of these changes.

## *Assignment*

The packaging department of the Grolsch brewery is constantly improving the reliability of its machines by carrying out maintenance and solving failures. Currently, failures are only analyzed once they have occurred (reactive) because there is no method available by which potential failures of the machines can be identified and evaluated before they occur (proactive).

The introduction of a Failure Mode, Effect and Criticality Analysis (FMECA) provides opportunities. A standard FMECA method evaluates failures with respect to only one risk scenario. To ensure that all risks related to a potential failure are taken into account, the standard method is modified.

## *Results*

The result of this modification is a FMECA method that evaluates failure with respect to three risk scenarios: machine performance, production loss and customer satisfaction. For each risk scenario, scoring criteria are defined for the occurrence, detectability and severity of a failure. These criteria are based on available information and historical data. Subsequently, the outcome of the three risk scenarios are combined into one Risk Priority Number. The importance of the different risk scenarios are weighted, whereafter different weighting factors are compared. Finally, certain scoring criteria are emphasized by the use of IF-statements.

The usability and validity of the modified FMECA method are proven on a machine of the packaging department of Grolsch. The three risk scenarios that have been identified for the packaging department are also broader applicable in the manufacturing industry. The defined FMECA model can, therefore, be used for risk evaluation of other manufacturing systems.

## *Personal experience*

Grolsch is a great company with a good mix of enthusiastic and experienced people. Therefore, my time at the Engineering department was both educational and fun.