



VERIFYING FIRE ENGINEERED SOLUTIONS - DUTCH PERSPECTIVE

IRCC Workshop Edinburgh 10 June 2015 | IJsbrand van Straalen

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BUILDING REGULATORY SYSTEM GENERAL OBSERVATION

- › Current practice
 - › You have to fulfil requirements of Dutch Building Decree
- › Shift towards
 - › Perspective of building owner/user
 - › Resulting into a set of Key Performance Indicators
 - › Building Decree only minimum requirements safety, health and sustainability
 - › Additional set of requirement to get optimum solution

VERIFYING FIRE ENGINEERED SOLUTIONS

CURRENT PRACTICE

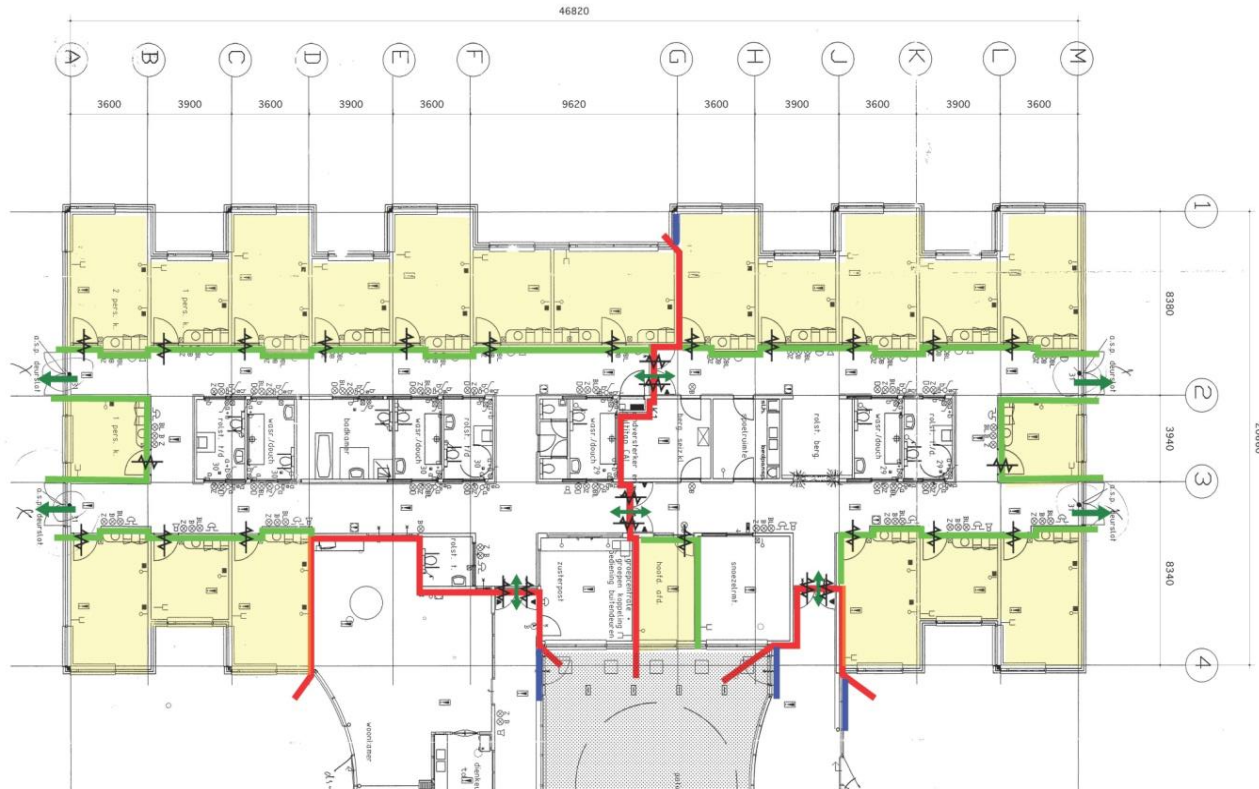
- › Building Decree
 - › No guidelines are given or referred to how to apply fire safety engineering
 - › Article 1.3 “Equivalence provision” gives the option “to apply alternative approaches under the condition the same level of safety as envisaged with the provision of the given rules”
 - › Consider both new as well as existing buildings with different levels of fire safety
- › Local authority is responsible to review proposed fire engineered solution
- › Acceptance of a fire engineered solution can be done by a independent committee
<http://www.adviescommissiebrand.nl>
- › Building owner/user responsible for maintenance of fire safety measures
- › There are no approved or licensed fire engineers in the Netherlands

VERIFYING FIRE ENGINEERED SOLUTIONS TOWARDS A BUILDING MODEL

- › Observations
 - › IRCC strong focus on building regulations and responsibility of regulator
 - › Shift towards building owner / user (optimum fire safety and acceptable costs)
 - › > 95% standard solutions and < 5% fire safety engineering design
- › Proposed solution
 - › Automatic rule checker
 - › Integral comparison sets of fire safety measures: need for risk-based approach
 - › Alternative solutions: need for risk-based approach
- › Practice
 - › 3D building model
 - › Quantified target and integral check of fire safety solution (risk-based approach)
 - › Also applicable for fire safety engineering

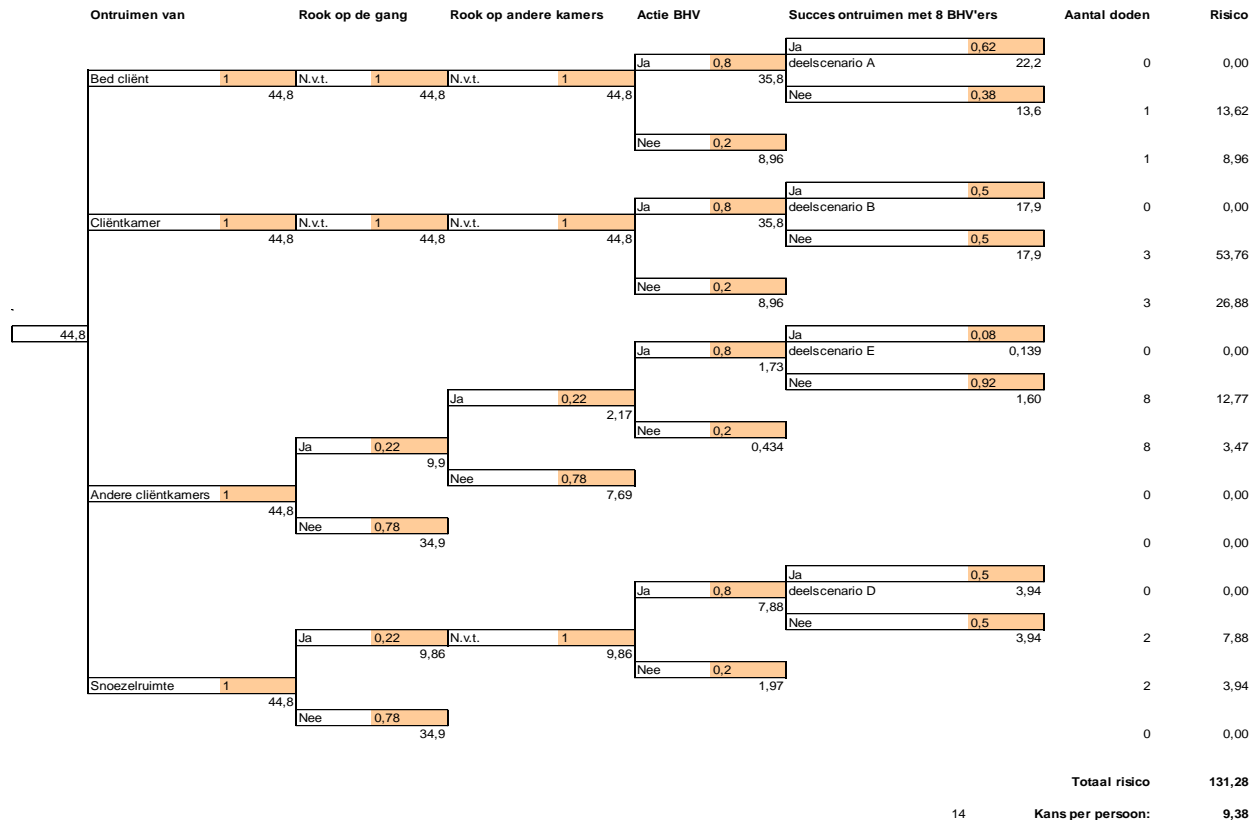
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- › Building for health cure with varies fire safety measures



VERIFYING FIRE ENGINEERED SOLUTIONS TOWARDS A BUILDING MODEL

› Risk-based approach



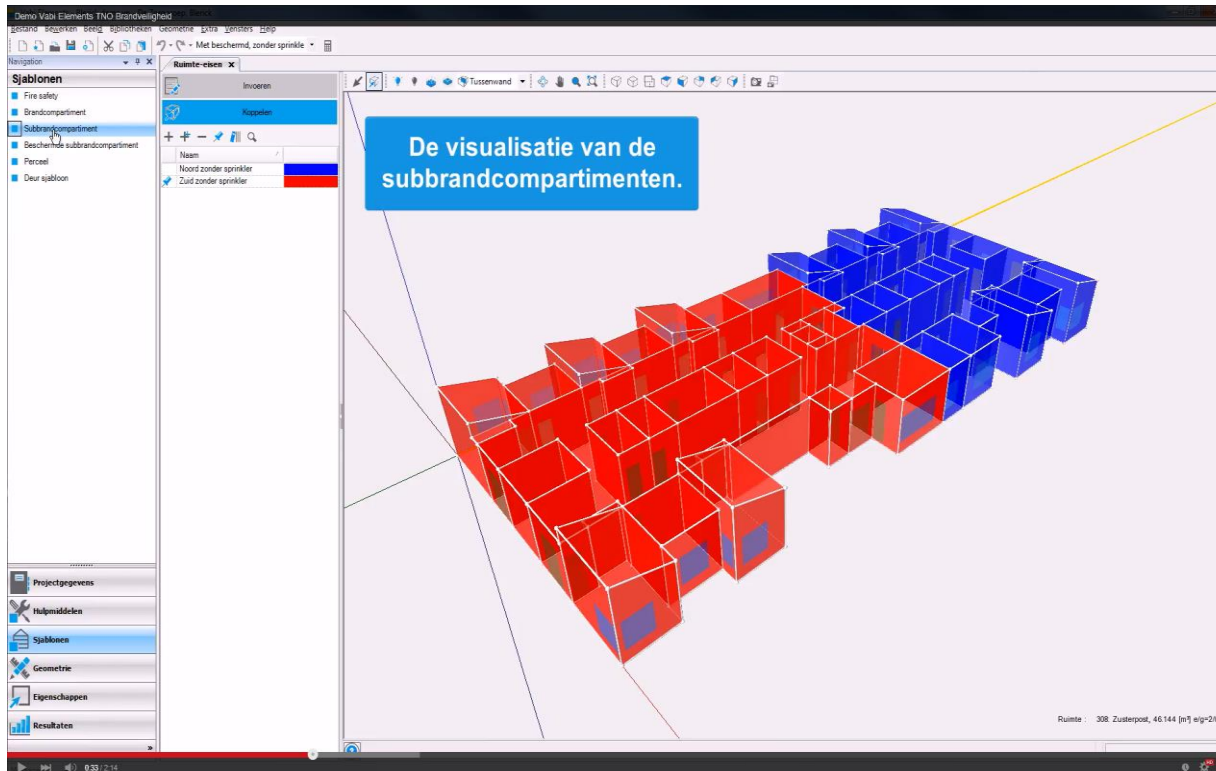
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› Probability of fatalities (10⁻⁶)

Compartment		Active extinguishing		Evacuation									
				WARR		Level of education	Time of the day		Numbre of assistants				
Standard	Not standard	None	Sprinkler	W: Warning	A: Asistance	Standard	Day	Night	1	2	4	6	8
x		x			x	x	x		17	15	14	13	13
	x	x			x	x	x		77	67	59	54	54
x			x		x	x	x		2,8	2,3	1,9	1,8	1,8
	x		x		x	x	x		14	11	8,4	7,3	7,3
x		x			x	x		x	14	13	12	12	12
	x	x			x	x		x	86	76	65	63	63
x			x		x	x		x	2,3	2,0	1,8	1,7	1,7
	x		x		x	x		x	13	9,9	8,0	7,6	7,6

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› Proof-of-concept: movie





THANK YOU FOR YOUR ATTENTION

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