



McNetiq Controlock Safety Review

In order to evaluate safety aspects of the McNetiq Controlock (model no. SAV 551.01-1400) a team of specialists was formed. These specialists were selected, based on their background, to make sure that safety aspects would be regarded from different perspectives. In preparation of the safety review team members studied the following documents:

- 14 09 03 Veiligheids document McNetiq Controlock v02
- Handleiding McNetiq steigerankerpunt v1.1

The evaluation team consisted of the following members

Name	Company	Background
Henk Polinder	Technical University Delft	Magnet knowledge
Peter Fokkema	Lloyds Register Energy	Process industry
Nelis Luijten	SAV Walker Hagou	Manufacturer
Michel van der Gracht	Bilfinger Industrial Services	End user
Wout de Leeuw	DNV-GL	Independent safety review
Chris Pluym	Lloyds Register Energy	Facilitator

In order to give structure to the safety review session the so-called MUOP method was used. This method focusses on 4 key factors; Mens (Human factor), Uitrustig (Equipment), Omgeving (Surroundings), Product (Product). These factors are reviewed in order to identify potential hazardous situations. Once these situations are identified technical and organisational measures can be implemented to minimise these hazards.

The safety review session was held on the 26th of November 2014. A sample of the Controlock was present and as there was also a steel plate present the working of the Controlock could be reviewed step by step. Among others the following key words were used to evaluate the Controlock and facilitate an open discussion.

Human factor (H)	Equipment (E)	Surroundings (S)	Product (P)
Level of education	Personal protective equipment	Climate	Weight
Experience	Work equipment/tools	Noise	Installation
Manual, instructions	Clothing	Access control	Measuring equipment
Training	Means of access	Lighting	Failure of components
Supervision	Means of communication	Procedure	
		Explosion area	



The findings of the review session are noted in the table below.

Ref.		Latent hazardous situation	Consequences	Action
1.	H	Mounting magnet upside down	Water causes damage to product	Improve marking on product
2.	P	Not very clear if magnet is locked	Magnet can fall	Improve status indication
3.	H	Sliding test is not performed on every magnet, but only sample wise	Magnet is mounted on surface where adhesion is less and this is not detected because measurement is not done	None. Clear instruction to complete testing is stated in user manual under bullet 18 of the safety instructions
4.	H	User determines which eye-bolt to use	Incorrect bolt is selected.	Provide explanation to scaffolding installer on selection of bolts
5.	S	Surface area is too vaulted	Magnet does not have sufficient holding force	Restriction in user manual
6.	H	Testing is not performed due to human laziness	Complete breakdown of safety	Instruction in user manual, recommendation to provide installer with checklist where not only the fact that the magnet has been checked should be filled out, but also the <u>exact value</u> of the measurement must be filled out See bullet 7e. on page 7 and bullet 17 on page 8 in user manual
7.	S	Min-max temperatures for different components vary (magnet, loadcell, measuring device)		Provide for 1 clear minimum and maximum operating temperature in user manual.
8.	P	Manual varies in Kg or Newton		Use 1 standard measuring unit
9.	P	Manual advises to use placement console on page 9 (bullet 25)		Do not advise, but prescribe
10.	P	Ensure ratchet used secures the key unit	Key unit can fall from height	Prescribe correct ratchet
11.	H	Magnet can be used as hoisting tool		Prohibit in manual
12.	H	Magnet is turned on	Crushing between magnet and	Warning in manual and/or on



		before placing on a surface	surface	product
13.	P	Dangers caused by magnetic field	Disruption of pace maker	None. Warning in manual is given
14.	P	Temperature effects on loadcell and measuring unit		Give clear temperature restrictions in manual
15.	P	Overloaded loadcell becomes untrustworthy	Breakdown of safety	Choose correct loadcell so overload is not possible
16.	P	Gland to loadcell is not suitable	Cable failure	Improve design
17.	S	Equipment is used in ATEX environment. Components are not ATEX certified		Prohibit use in ATEX environment
18.	P	No EU declaration of conformity measuring unit (CE marking)		Request DoC from supplier
19.	P	Placement console does not secure magnet from falling before magnet is activated	Personal injury	Improve design of placement console

Conclusion

No major issues were found during the review session. The most critical failures would be due to human factors, e.g. not following the correct measuring procedures and therefore not being able to guarantee the holding force of the magnet.

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