



Kritiske konstruktionsdetaljer, mv.



Project content

- Poker vibration
- Cold joints
- Spacers
- SCC
- SCC production



Conclusions

- Poker vibration

If the guidelines for poker vibration provide in the HETEK guidelines are followed no track from the vibrator can be observed in the concrete and the frost resistance and air void system is not adversely affected

- Cold joints

in NT Build 492 testing chloride penetrates deeper along the cold joint than in the bulk concrete – corresponding to the chloride migration coefficient being up to doubled

The cold joint does not appear to be susceptible to frost attack – no scaling in frost resistance test

The quality of the cold joint is the same for slump concrete and SCC



Conclusions

- Spacers

the interface between spacer and concrete is visibly more porous than the bulk concrete. By NT Build 492 testing chlorides are penetrating faster at the interface than in the bulk concrete itself

The interface between dry spacer and bulk concrete appear less porous than if the spacer is saturated surface dry

The quality of the bond between spacer and bulk concrete is the same for slump concrete and SCC

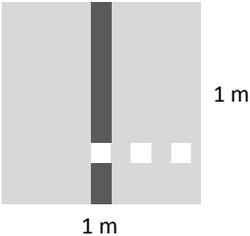
Conspacers R&D project initiated – the develop the ultimate spacer for civil engineering structures

- SCC

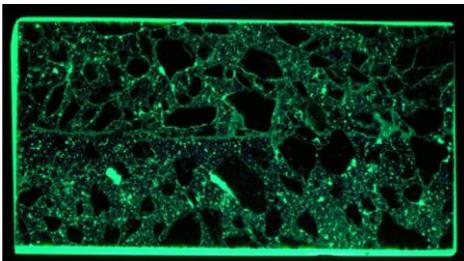
casting of two layers of SCC slowly on top of each other with two hours in between - layers did not result in a cold joint

when producing SCC the water content must be controlled within ± 5 l/m³ of water or the variations in flow properties will adversely affect execution

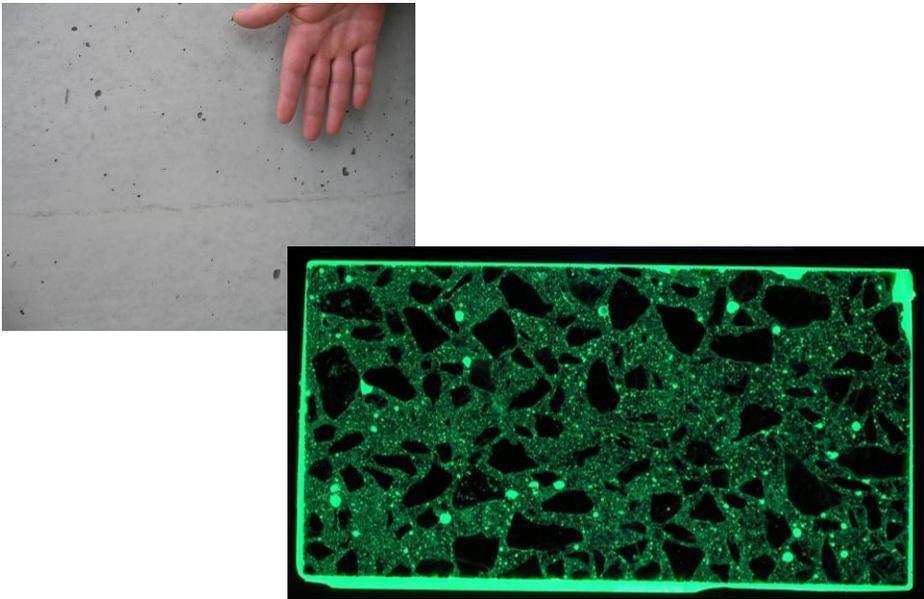
 Experimental program
- poker vibration



 Experimental program
- cold joints

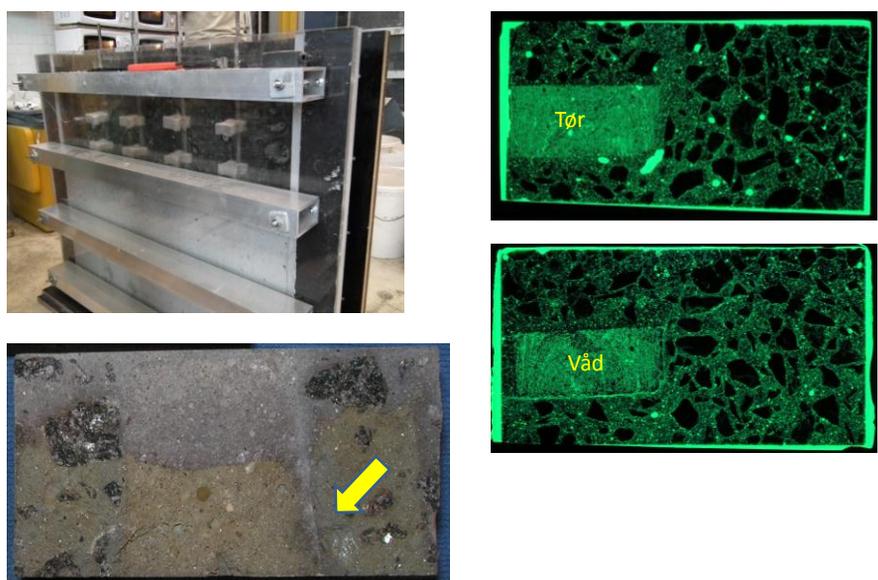


 Experimental program
- "warm" joints (SCC)



The top-left image shows a grey concrete surface with a horizontal joint line. A hand is placed on the surface to provide scale. The bottom-right image is a fluorescence image of the same concrete, showing a dense distribution of dark, irregularly shaped aggregate particles against a bright green background.

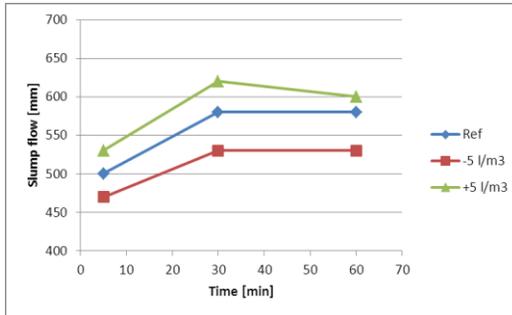
 Experimental program
- spacers



The top-left image shows a metal frame used for casting concrete with spacers. The bottom-left image is a cross-section of concrete showing a vertical joint with a yellow arrow pointing to a defect. The two fluorescence images on the right are labeled 'Tør' (top) and 'Våd' (bottom), showing the aggregate distribution in the concrete under different curing conditions.



Experimental program - SCC production



Concrete type	w/c	Air content [%]	Strength [MPa] *	$D_{\text{assm}} [\text{m}^2/\text{s}]$
Reference	0.401	3.2	60.7	7.4×10^{-12}
+5 l/m ³ water	0.388	4.8	63.5	6.3×10^{-12}
+5 l/m ³ water	0.412	3.5	56.0	8.0×10^{-12}

*Normalized to 4 % air content by assuming 1 % air reduces strength by 4 %.