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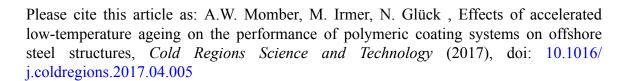
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Effects of accelerated low-temperature ageing on the performance of polymeric coating systems on

offshore steel structures

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**Abstract** 

Six polymeric coating systems are investigated according to the modification of their performance due to

accelerated offshore ageing. The systems featured different resins, hardeners, filler materials, number of layers,

and film thicknesses. The ageing procedure consisted of condensation, UV radiation, salt spray, and low-

temperature (-60°C) exposure. The following performance parameters were evaluated: chemical composition,

surface topography, static contact angle, specific surface energy, hoar frost accretion, pull-off strength, and

impact resistance. Ageing modified the performance of the coatings, and the change in performance is an

important coating qualification and assessment parameter. Spearman's rank correlations are estimated for all

performance parameters in order to assess their susceptibility to accelerated ageing. Some trends could not be

explained with aging models based on either UV radiation or NaCl exposure. The cyclic offshore aging

procedure is complex, and more systematic investigations are needed in order to fully understand the associated

phenomena.

**Keywords** 

Ageing; Coatings; Impact; Offshore

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