



E. Pihl & Søn

Cleaning removes rust on the façade



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Division for materials og analysis

A report from FORCE Technology shows that the rust on the façade of the Opera can be removed and prevented through regular cleaning.

Famous Danish singers were not the only ones to take a deep breath at the Royal Danish Theatre in the late summer of 2005. Brown stains had appeared on the steel façade of the Opera and they gave rise to concern among many people outside the world of the Opera. Especially on the steel panels at the entrance of the Opera, many brown stains had appeared despite the fact that the panels were made of stainless steel.

Suspicion of rust in the construction was obvious, but why after only one year had the Opera begun to show these signs? And could the problems be solved? These were some of the questions that the Royal Danish Theatre wanted answered. Therefore, the main contractor – E. Pihl & Søn A.S –

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Martin Waldstrøm, Pihl

contacted FORCE Technology so that they could investigate the cause of the brown rust stains.

Neutral body

“The media had lots of different opinions of why the rust stains had appeared and not least what could be done to get rid of them. It was important for us to let an objective, neutral body look at the problem. It seemed natural to bring FORCE Technology into the picture as they have a lot of experience within the areas of corrosion and stainless steel”, says Martin Waldstrøm from Pihl.

Troels Mathiesen from FORCE Technology is a specialist in corrosion and stainless steel: “We made various tests of the corrosion on the façade of the

Opera, including a visual assessment and verification of materials to establish whether the right materials had been chosen and used. We made a chemical analysis of products from the surface and mapped the salt pollution on the surface of the materials. The façade of the opera is, of course, to some extent exposed to sea fog at its exquisite location at the waterfront”.

Regular cleaning

The conclusions of the investigation have taken the heat out of the worst notions of the consequences of the brownish stains on the façade of the Opera. The investigation established that the correct materials were used. The rust mainly originates from particles that have polluted the surface of the façade.

“Most of the stains can be removed fairly easily by cleaning. Basically, the stainless steel should be cleaned every six months to look nice just as the windows need to be cleaned. This is also stated in the supplier’s operation and maintenance manual for the components in question. Regular cleaning would also prevent problems with rust stains from occurring again”, says Troels Mathiesen.

Correct focus

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Further information

If you want further information on our services or if you need one of our addresses, you are welcome to visit www.forcetechnology.com. You can also contact Department Manager Peter Bo Mortensen, tel. (direct) +45 43 26 74 57, e-mail: pbm@force.dk

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