CrackGuard it's all in the name!

A new JIP will help ensure the structural integrity of marine structures. Report cracks the case open.

Different codes and regulations have been developed over the years to ensure that marine structures are designed, operated and maintained safely. And within these rules, allowances are made for defects that should be monitored but that do not jeopardise safe operations. Fatigue cracks, which are very common in welded marine structures due to the cyclical character of wave loading, are examples of such defects. Although there is a lot of effort being undertaken to avoid cracks, operators are obliged to periodically inspect structures for signs of fatigue.

Cracks, which are too long for a safe operation, clearly have to be repaired but those of an acceptable length have to be followed carefully during successive inspections. But growth rates are uncertain and it is not known when cracks will reach their critical length. Therefore, operators usually either increase the inspection frequency or reduce the crack's length, which leads to higher operational costs.

Affordable, simple system Interviews with operators revealed that they are seeking an affordable and simple monitoring system for guarding the length of cracks that have been detected. Such a system should only warn the operator when, and which crack has reached its allowable length and the overall cost of the system should be competitive with the cost of an additional visual inspection by a surveyor.

A three-year Joint Industry Project, CrackGuard is being launched, with the first meeting held during the last FPSO Forum & JIP Week in March.
The main goal of the project is to specify, develop and test the CrackGuard approach, based on recent achievements in wireless networking and micro/nano technology. The project will start with a review of potential applications. In addition, state-of-the-art crack sensing, wireless communication and networking will be reviewed. Current knowledge on crack propagation rates and directions will also be reviewed in order to provide input for the future shape and size of the CrackGuard sensor. Once the system specification has been developed as a prototype it will be tested under laboratory conditions and then on an FPSO.
Participants are welcome to join!

Source: PhD Thesis GauteStorhaug

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