1.5.19. THERMAL AND THERMOGRAPHICAL MODELING OF THE RUST EFFECT IN OIL CONDUITS

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The design and the maintenance of the conduits and the pipelines is a challenge for oil industry seen the serious consequences which can occur because of several reasons, example: defects of the cracks types, rust… etc Which can cause escapes of the transported matter or ruptures of these conduits with all that involves like economic loss and pollution of the environment.

In this article, a thermal method of non destructive testing of these conduits, based on numerical modeling in three dimensions is presented.

The goal of this article is to show the thermal and the thermographical behavior of these conduits in the presence of defects of the corrosion type. For that defect of the rust type of different size and positions in the structure are considered and simulated.

For these various simulated configurations, the thermographical images, as well as the space evolution of the temperature on the external face of these structures, are presented and analyzed. The numerical resolution of this problem was carried out using a numerical computation software based on the finite element method.