

الآية

بسم الله الرحمن الرحيم

قال تعالى:

لَمْ يَلْمِ السَّالَةَ وَيُنْزِلُ الْغَيْثَ وَيَعْلَمُ مَا فِي الْأَرْحَامِ
يَنْفُسُ مَا أَذَاتَكَ سَبْغَدًا وَنَفْتَلِي رِيَّايَّ أَرْضَالَتَهُمْ وَتَلِيمُ خَبِيرٌ (

صدق الله العظيم

(سورة لقمان آية رقم: 34)

DEDICATION

With satisfaction heart this humbled work is dedicated to:

The men who were burned even bring us to where we are ... Fathers

The women who were sacrificed by their bodies and exhausted their hearts in our upbringing and our education... Mothers

I deeply thank my father Hassan Abdalla and my mother SalwaTabidi;they haveencouraged me to overcome the many difficulties faced during my life generally and this research particularly, and have supported me with their unshakeable confidence. Only with their support I always keep on the progress on the way of success.

I would give great appreciation to my family. They always gave me unquestioning faith and encouraged me in every time.

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ABSTRACT

Leak detection system in transmission pipelines is important for safe operation of pipelines. The probability of leaks may be occurred at any time and location. Therefore, pipeline leak detection systems play a key role in minimization of the occurrence of leaks probability and their impacts.

Today there are many available assortments of modern technologies in the domain of leak detection. This study provides the proper methodology to facilitate the choice of leak-detection system. The study deals with external methods based on external measurements such as acoustic emissions, cable sensors, liquid sensing and vapor sensing and with some internal methods based on flow and pressure measurements in the pipeline: volume or mass balance method, pressure wave detection method, and real time modeling were described. Additionally, the discussion of error sources and final conclusions are presented.

This study is provided by simulation for one of leak detection method which is pressure wave detection by using CitecSCADA from Schneider Electric.

المستخلص

يعتبر نظام كشف التسريب في خطوط الأنابيب في غاية الأهمية للتشغيل الآمن لخطوط الأنابيب. من المحتمل ظهور تسريب في أي وقت وأي موقع في الخط، لذلك فإن نظام كشف التسريب يلعب دوراً كبيراً في تقليل احتمالية ظهور التسريب وآثاره.

اليوم هنالك العديد من الدراسات في التقنيات الحديثة في مجال كشف التسريب. وتقدم هذه الدراسات المنهجية المناسبة لتسهيل اختيار نظام كشف التسريب. وتناولت الدراسة طرق الكشف الخارجي بناءً على أجهزة القياس الخارجية مثل انبعاثات الصوت، أجهزة استشعار الكابلات، أجهزة استشعار السوائل وأجهزة استشعار البخار، وطرق الكشف الداخلي بناءً على قراءة أجهزة قياس التدفق والضغط في خطوط الأنابيب وهي: طريقة إتران الكتلة أو الحجم، طريقة الكشف عن طريق موجات الضغط وطريقة النمذجة في الوقت الحقيقي. بالإضافة لذلك تم مناقشة مصادر الأخطاء، وأخيراً تم عرض الخاتمة.

في هذه الدراسة تم تناول نظام محاكاة بتطبيق واحدة من طرق أنظمة الكشف والتي هي طريقة

الكشف عن طريق موجات الضغط وذلك باستخدام برنامج ساينك اسكادا من شركة إشنايدر اليكتروك.