Sayyad Zahid Qamar, J Ind Environ Chem, Volume:3
DOI: 10.35841/2591-7331-C3-013

2nd International Conference and Expo on

Oil & Gas

December 02-03, 2019 | Dubai, UAE

Sayyad Zahid Qamar

Sultan Qaboos University, Sultanate of Oman

Integrity assessment of polymer pipes in petroleum drilling applications

In oil wells where viscosity of the crude is very high (heavy oil), steam is injected to increase the fluidity and mobility of the oil. This steam injection requires large quantities of water, generally transported from nearby fields. In some oilfields in the Gulf region, and around the world, the water-bearing sandstone is highly fragmented. Sand screens made of carbon-steel do not provide reliable sand control, as they quickly undergo quite serious corrosion. Some oilfields have started to try out non-metallic materials (such as strengthened polymers) because of their non-corroding nature. Based on a hit-and-trial approach, around 15% wells have reported failure due to screen collapse. In collaboration with a regional petroleum development company, an experimental testing facility was designed and developed at Sultan Qaboos University for integrity assessment of large-diameter hard polymeric pipes. This included design and construction of the test setup and jigs and fixtures, together with a compatible testing scheme. Following procedures set forth by international standards, polymer pipes had to go through a 2-3-month ageing process before mechanical testing, in brine solution matching the salinity of the water field. For testing under compressive loads, a fixture was developed for the pipes to be tested on a heavy-duty universal testing machine, using several sets of strain gages to record dynamic behavior in axial and hoop directions. A full-scale test facility was designed and constructed to determine collapse strengths of polymer pipes of around 6-m length, using steel pipes of 16-in diameter as outer casings. Apart from the scientific contribution, findings from this work can serve as prequalification of polymer pipes for appropriate fields, and result in major savings in cost and time.

Speaker Biography

Sayyad Zahid Qamar is currently associated with the Mechanical and Industrial Engineering Department, Sultan Qaboos University (SQU), Muscat, Oman. He has over 25 years of academic and research experience in different international universities. He has also worked as a professional mechanical engineer in the field for over 6 years in the heavy engineering and fabrication industry. He has also been actively involved in research and accreditation work related to engineering education. His research areas are Applied materials and manufacturing, Applied mechanics and design, Reliability engineering and Engineering education. As part of the Applied Mechanics and Advanced Materials Research group (AM2R) at SQU, he has been involved in different applied research funded projects in excess of 4 million dollars. He has over 200 research/technical publications to his credit (2 research monographs/books, 2 edited book volumes, 6 book chapters, 160 publications in refereed international journals and conferences, and 36 technical reports). He is currently editing one volume (Renewability of Synthetic Materials) for the Elsevier Encyclopaedia of Renewable and Sustainable Materials. He has served as Associate editor, Guest editor, and Member editorial board for different research journals (including Materials and Manufacturing Processes, Journal of Elastomers and Plastics, The Journal of Engineering Research, etc).

e: sayyad@squ.edu.om

Notes: