Society of Petroleum Engineers
Italian Section

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SALA CONFERENZE
5° Palazzo Uffici - Eni Divisione E&P
Via Emilia , 1
SAN DONATO MILANESE

16:00 – 16:45

PETROLEUM ENGINEERING FOR ENVIRONMENTAL SUSTAINABILITY: WASTE INJECTION INTO THE DEEP UNDERGROUND

By F. Sanfilippo – Geomec AS

➢ ABSTRACT

During the last decades, waste generation has become a serious problem for our highly industrialised societies. Waste volumes have persistently grown faster than Gross Domestic Product. On the other hand, traditional waste disposal techniques, such as landfilling, incineration, or land spreading, have become increasingly expensive and difficult because of the stricter regulations approved in every developed country for protection of the environment and because of the consequent problems in finding suitable sites.

This presentation deals with recent developments in the technology called Slurry Fracture Injection, by which huge amounts of waste can be injected into deep geological layers through wells. Within the petroleum industry it has been applied for about 15 years, and in 2006 the first plant for disposing of municipal water treatment sludges will start in Los Angeles.

Slurry Fracture Injection is a promising technique in terms of both environmental suitability and cost effectiveness. On one hand, injecting solid and liquid waste in a secure way into depleted reservoirs where hydrocarbons were kept in place for millions years eliminates environmental risks and reduces liability for operators and waste-producers; on the other, it will be shown that costs associated with this technique are significantly lower than traditional techniques, especially when dealing with hazardous waste. Moreover, using depleted reservoirs as underground landfills, the oil industry could exploit old onshore facilities and to-be-decommissioned offshore platforms, thus delaying and paying back their decommissioning costs.

The presentation will briefly discuss the potential for application of this technique in Europe and in Italy in particular. It will focus on the most suitable waste streams that can be disposed, on the technical and economical performances of average disposal sites, on the geological areas that are suitable for this approach, on the body of law in the European Union that regulates such operations. Examples will be shown of highly polluted areas where Slurry Fracture Injection could be an effective mean to restore good living conditions and to preserve the environment for the future.

➢ BIOGRAPHY

Francesco Sanfilippo has 15 years experience in petroleum geomechanics, mainly on sand production and management, wellbore and casing stability, and large-scale fracture injection. He has focused his interests in field data interpretation and modeling and he developed numerous original methodologies to help suggesting the best operative strategies with respect to issues related to rock mechanics. He first joined ENI/Agip, where he worked as production engineer, and then was co-founder of Geomec AS, a Norway-based consulting company dedicated to rock mechanics in petroleum engineering. He holds a master degree in Physics from the University of Parma.