

# Microbially influenced corrosion on pipelines: A discussion of the influencing parameters based on the concepts of R. J. Kuhn

Markus Büchler , SGK

## Abstract

Kuhn introduced cathodic corrosion protection (CP) for pipelines in 1928, establishing a protection criterion of  $-0.85$  VCSE in relation to the on-potential based on empirical investigations and electrochemical considerations. In the following decades, CP with this on-potential criterion was successfully applied to largely all oil and gas pipelines worldwide. In the 1960s, however, corrosion damage occurred on buried gas pipelines despite compliance with this protection criterion, in which poor bedding and the involvement of sulphate-reducing bacteria in the corrosion process were identified. As a result, the IR-free potential with a limit value of  $-0.95$  VCSE was introduced as a protection criterion for anaerobic soils. Even today, the question often arises with regard to the protection criteria to be applied and the operational assessment of the effectiveness of CP. These aspects are discussed taking into account the current state of knowledge and the mechanisms involved.