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Energy-return-on-energy-invested (EROEI) for crude oil

J C Jones
University of Aberdeen, UK

Abstract

The term energy-return-on-energy-invested (EROEI) is self-explanatory, and this topic has been the author's primary research interest since about 2007. Many publications in journals including 'Fuel' (an Elsevier journal) have resulted. All of it will be summarized at the presentation in San Antonio. The first part of the work is concerned with development of an equation for EROEI as a function of well depth, drawing both on basic Newtonian mechanics and on field data from the oil industry. A subsequent part is concerned with particular operations, including injection of steam in enhanced oil recovery, and their effects on EROEI. Perhaps the most potentially important side of the work is a quantitatively reasoned argument that if isothermally generated electricity were used at oilfields instead of thermally generated the EROEI would rise by about a factor of three. This has been published in full in 'Fuel'. The obvious example of 'isothermally generated electricity' is wind farms. If the practice of interfacing wind farms with oilfields could become internationally adopted the consequences for oil production would be far-reaching. The most recent part of the work has so to speak moved downstream, from production to refining. It is shown that once a crude oil is obtained at a particular EROEI, that EROEI is hardly affected if at all by fractionation. The EROEI of gasoline from a pump at a gas station is therefore the same as that for the crude oil from which it is derived. This too is closely reasoned in an article in 'Fuel'.

Biography

J.C. Jones holds the 'blue ribbon' degree of Doctor of Science from the University of Leeds, from which he also obtained a BSc and a PhD. He worked in Australia for over seventeen years, latterly at the University of New South Wales. He has over 700 publications including fifteen books. He also has extensive broadcasting experience having, for example, recently spoken on Marketplace about the Keystone pipeline. The trip to San Antonio will be his twelfth visit to the USA.