GAS USAGE & VALUE

THE TECHNOLOGY AND ECONOMICS OF NATURAL GAS USE IN THE PROCESS INDUSTRIES

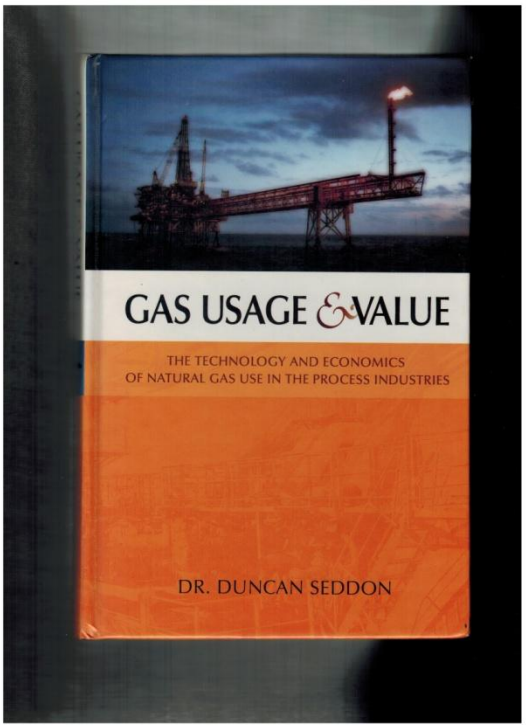
PennWell Corporation, Tulsa, OK, USA (2006): ISBN 1-59370-073-3

Gas Uage and Value addresses issues concerning the development and sale of natural gas resources. The text overviews the world's gas reserves and outlines the principal issues of composition and the cost of producing well head gas to make a specification product or extract particular components ; operation and cost of gas plants and the cost of transporting the gas to an end user. Separate chapters deal with the use of gas in the proces industries. Gas usage for various technologies are described and alternatives are critically compared. Costs for the downstream process inductries are described on a self-consistent basis that allows comparison of alternatives. Estimates are presented for each technology on the cost of production as the gas price changes . Case studies are included to illustrate variations or specific points of relevance.

Reader Benefits:

Provides an handbook for performing cost-benefit estimates for gas usage and for the procing of gas to downdtream users.
Deascribes all of the principal uses of gas and the quantity and quality of gas required, descriptions of the major issues .
Can be used as a teaching text for gas development and usage.

Update: The cost analysis is on a self consistant basis so that the lessons and comparisons are independent of the prevailing crude oil price. The content (cost updated to current time) is available as a course (2 days face-to-face or Internet).



PETROCHEMICAL ECONOMICS

TECHNOLOGY SELECTION IN A CARBON CONSTRAINED WORLD

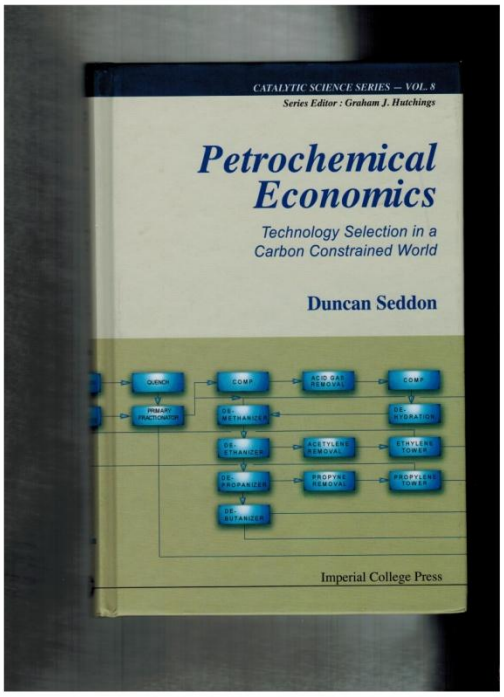
Imperial College Press, London (2010): ISBN-13 978-1-84816-534-2

This compendium gives an overview of the technologies and economics in the production of olefins in the petrochemical industries. Ir highlights the options and costs for producing olefins using different technologies and different feed stocks at a time when the cost of carbon dioxide emissions is set to be included in the production cost. Industry professionals, engineers, research scientists and financiers will find this title a valuable resource.

Reader Benefits:

Highlights unique treatment of the cost of production on a consistent basis
Describes a consistent method ology for estimating olefin production costs from any facility in any location
Facilitates business development and investment decisions in the chemical industry

Update: The cost analysis is on a self consistant basis so that the lessons and comparisons are independent of the prevailing crude oil price. The content (cost updated to current time) is available as a course (2 days face-to-face or Internet).



THE HYDROGEN ECONOMY

FUNDAMENTALS, TECHNOLOGY, ECONOMICS

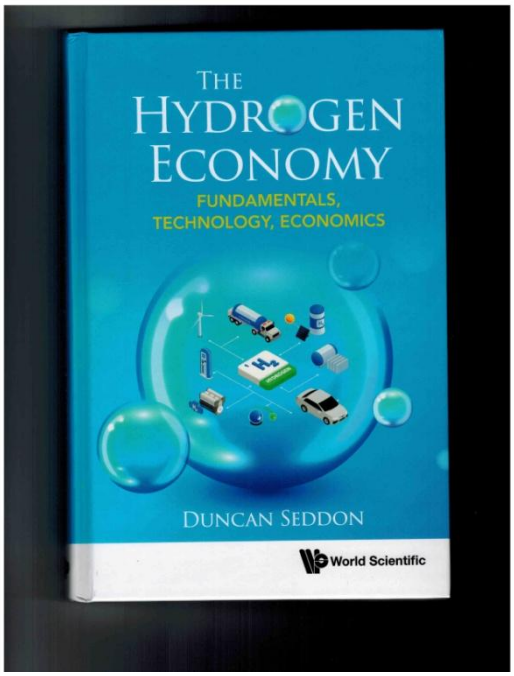
World Scientific Publishing (2022): ISBN 978-981-124-854-2

The “Hydrogen Economy” is a very broad subject ranging from the potential use of hydrogen for domestic use to the mass production of hydrogen replacing coal, natural gas (LNG) and conventional transport fuels.

For any given project there are many alternatives to consider for each stage of making, storing and transporting hydrogen. The book aims to assist proponents and financiers of hydrogen projects to identify the optimum alternatives and identify hurdles and approaches to overcome them. This book describes an optimum approach to implement hydrogen use and its cost. It sets out to identify hurdles to implementation which may not be apparent to those entering the field for the first time.

The book covers the various means and costs of production from fossil fuels (with carbon capture) – blue hydrogen - electrolysis – green hydrogen – or biomass. The book covers hydrogen storage as liquid or compressed gas and transport, through pipelines as liquid or by intermediary fluid such as ammonia or a hydrocarbon. The book also discusses the production and costs of hydrogen delivery at the user end of the logistics train. It also compares the relative energy value of energy delivered hydrogen versus the current suite of conventional fuels.

Update: The cost analysis is on a self consistant basis so that the lessons and comparisons are independent of the prevailing crude oil price. The content (cost updated to current time) is available as a course (2 days face-to-face or Internet).



SAF AND BIOFUELS

WORLD SCIENTIFIC PUBLISHING (IN PRINT) - 2025

Aviation fuel (jet-fuel) is proving to be difficult to replace by renewable alternatives. To-date the substitution of alternatives is almost insignificant compared to the world demand for jet-fuel. This is in contrast to gasoline and diesel fuel where there is tangible substitution in whole or in part by renewable alternatives.

The book aims to provide a description of the various technologies and production economics of sustainable aviation fuel (SAF) and biofuels. The book describes the various technical approaches and the underlying economics and costs for SAF and biofuels and the limits and hurdles faced by competing approaches.

The production of SAF via ethanol, which can be produced by fermentation of sugars is described. This route goes by ethylene as an intermediate which is polymerised into SAF.

The production of SAF via vegetable oils and fats is now producing most of the SAF currently used but this route is limited by the nature and limited availability of the feedstock.

Biomass is a favoured feedstock by some proponents. This can be gasified and converted to methanol and then on to SAF or by the Fischer-Tropsch process which is commercially proven for converting natural gas into transport fuels including jet-fuel.

Pyrolysis of biomass has increasing interest as this can produce a high density synthetic kerosene which is key to developing a drop-in SAF.

The book also describes the limits to current technology and the prospects for further development and describes the fundamental issues which prevent widespread substitution of jet-fuel with renewable alternatives.

The cost analysis is on a self consistant basis so that the lessons and comparisons are independent of the prevailing crude oil price. The content (cost updated to current time) is available as a course (2 days face-to-face or Internet).