CURRICULUM VITAE – ALBERT RIJKEBOER

General

Surname	Rijkeboer
Given names	Albert (‘Ab’)
Year of Birth	1949
Nationality	Dutch
Marital Status	Married
Tertiary Education	B.Sc. Chemical Engineering (Univ. of Technology Twente, NL, 1973) M.Sc. Chemical Engineering (Univ. of Technology Delft, NL, 1976)

Employment Overview

Period	***Company***	***Last held position***
1976 – 1979	Stone & Webster Engineering, The Netherlands & UK	Process Engineer
1979 - 2004	(BHP)Billiton, as follows:	
1979 - 1982	Billiton International Metals BV, The Hague, The Netherlands	Process Engineer
1982 - 1986	Worsley Alumina Pty Ltd, Western Australia	Process Development Group Leader / (acting) Superintendent
1986 – 1991	Billiton Research BV, Arnhem, The Netherlands	Bauxite & Alumina Red Side R&D Section Head
1991 – 1995	Aughinish Alumina Ltd, Askeaton, Ireland	Process Design Leader of Plant Expansion & Co-generation Feasibility Study
1995 – 2004	(BHP)Billiton International Metals, The Hague, The Netherlands	Senior Process Consultant, Process Design Leader of Worsley DCP Expansion
2004 - present	Rinalco BV	Owner, director and employee

Experience Summary

Period	***Experience***
1976 – 1979	Stone & Webster Engineering: Process design, P&ID development, general and detailed process & systems engineering. Projects in the field of hydrocarbon processing, concerning the production of ethylene, propylene, polypropylene, PVC.
1979 - 1982	Billiton International Metals BV – central office: Processing studies and process economics evaluations. Projects in the field of hydro- and pyro-metallurgy, concerning the production of nickel, cobalt and gallium.
1982 - 1986	Worsley Alumina Pty Ltd: Process engineer involved in pre-commissioning, commissioning, start-up and first years of operation of the Worsley Alumina refinery. Process engineer, later team leader and finally acting group leader (superintendent) in the Process Development & Project Engineering Group, involved in trouble shooting, design, engineering and cost/benefit analyses of modifications to process and equipment, initially in Digestion and Clarification areas, later plant wide.
1986 – 1991	Billiton Research BV: Head of the Red Side R&D team. R&D projects and technical services for Billiton operating companies and Billiton alumina business sector. Responsibility included managing a Bayer pilot plant.
1991 - 1995	Aughinish Alumina Ltd: Supervisory engineer involved in plant debottlenecking and process development projects. Process design leader of a comprehensive plant expansion & co-generation feasibility study.
1995 – 2004	(BHP)Billiton International Metals BV – central office: Conceptual green field alumina refinery design. Process economics evaluations. Co-ordination Bayer process research laboratory. Participation in various due diligence studies: Bauxilum (CVG – Venezuela), CVRD (Brazil), Nalco (Damanjodi, India). Billiton representative to Worsley Alumina Technical Committee. As such closely involved in Worsley Alumina expansion to 3.1 Mtpa. Close involvement in the acquisition of Reynolds/Alcoa share in Worsley Alumina Pty Ltd. Process design leader Worsley Alumina DCP expansion to 3.5 Mtpa.

2004 - present	Rinalco BV: Provided consultancy services regarding the production of metallurgical grade alumina from bauxite pertaining to existing operations and new projects. Said services covered such fields as refinery trouble shooting, process design, technology selection and specification, laboratory testwork programming and co-ordination, process modelling (extensive experience with SysCAD) and due diligence assistance. Clients included: – BHP Billiton Aluminium Australia Pty Ltd; – BHP Billiton Worsley Alumina Pty Ltd (Australia); – Aughinish Alumina Ltd (Ireland); – West Indies Alumina Company (Jamaica); – SRK (UK); – Alcor International (The Netherlands); – Guinea Alumina Corporation (Australia); – SNC-Lavalin (Canada); – HPPE (USA, Dextran based chemicals producer); – KWA Kenwalt Australia Pty Ltd (SysCAD); – Aluminium Oxid Stade GmbH (Germany); – Jacobs / SKM (United Kingdom); – South32 Worsley Alumina Pty Ltd (Australia); – Century Aluminum Company (USA); – Valcon A/S (Denmark); – McKinsey & Company (Middle East); – Shenyang Aluminum & Magnesium Engineering & Research Institute (China); – Bechtel-Petrofac JV (Middle East); – Emirates Global Aluminium (UAE). Most recent experience (2014 – 2022) concerns: • Precipitation SysCAD simulation development support work for KWA Kenwalt Australia in 2021/2022; • Consultancy services for SAMI in 2022; • Consultancy services for an alumina refinery in Germany in 2022; • Consultancy services for an alumina refinery in the Middle East in 2020; • Consultancy work for Bechtel-Petrofac JV related to the same alumina refinery in the Middle East in 2020 and a short study for McKinsey & Company concerning the same refinery in 2019; • On-site data collection for building a SysCAD process simulation model of the Precipitation and Classification areas of an alumina refinery in Germany and involvement in the construction of this

	model, in 2019, through KWA Kenwalt Australia; • Reviewing aspects of projects and process simulation models for SAMI (2019/20) through KWA Kenwalt Australia; • Consultancy work regarding an alumina project in the Middle East during 2nd and 3rd quarter of 2014 through Jacobs/SKM and again in August 2017 through McKinsey & Company; • Involvement in an improvement project of a specialty alumina refinery in the USA in early 2017 through Valcon A/S; • Evaluation of a plan for a complex plant trial in an alumina refinery in Australia in 2016; • Involvement in a due diligence of another alumina refinery in the USA and associated bauxite mine in Jamaica in 2016; • Reviewing and improving a SysCAD based alumina refinery full plant simulation model of an alumina refinery in Australia and performing case studies with this model in 2015.

Publications

- Ab Rijkeboer, John McFeaters and Daniel Manché, *Advances in Process Simulation of Agglomeration in Bayer Precipitation*, Travaux 51, ICSOBA (2022), 399-416 (Received the best alumina paper award at the ICSOBA conference in Athens, 2022)

- D Lawson, A Rijkeboer, D Dajkovich, M Jackson and H Lawrence, *Approaches to the Processing of Jamaican Bauxite with High Goethite content*, Light Metals (2014)

- KA Powell, LJ Kirwan, K Hodnett, D Lawson, A Rijkeboer, *Characterisation of Alumina and Soda Losses Associated with the Processing of Goethitic Rich Jamaican Bauxite,* Light Metals (2009)

- L Kirwan, D Lawson, A Rijkeboer, K Hodnett, A Mooney and R Walker, *Characterisation of Iron Mineralogy in Jamaican Bauxite and Associated Aspects of Alumina and Soda Losses*, Light Metals (2009)

- D Lawson, A Rijkeboer, L Andermann and A Mooney, *Impact of Jamaican Bauxite Mineralogy on Plant Operations*, Light Metals (2008) 113-118

- R den Hond, IDK Hiralal and A Rijkeboer, *Alumina Yield in the Bayer Process – Past, Present and Prospects*, Light Metals (2007) 37-42

- A Rijkeboer and AP van der Meer, *Bauxite Roasting – An Option to Reduce the Organics Input to Bayer Plant Liquor*, Alumina Quality Workshop (1993) 254-269

- C Sweegers, WJP van Enckevort, H Meekes, P Bennema, IDK Hiralal, A Rijkeboer, *The impact of twinning on the morphology of γ-Al(OH)$_3$ crystals*, J. of Crystal Growth 197 (1999) 244-253

- C Sweegers, HC de Coninck, H Meekes, WJP van Enckevort, IDK Hiralal, A Rijkeboer, *Morphology, evolution and other characteristics of gibbsite crystals*

grown from pure and impure aqueous sodium aluminate solutions, J. of Crystal Growth 233 (2001) 567-582

- C Sweegers, SXM Boerrigter, RFP Grimbergen, H Meekes, S Fleming, IDK Hiralal, A Rijkeboer, *Morphology Prediction of Gibbsite Crystals – An Explanation for the Lozenge-shaped Growth Morphology*, J. of Physical Chemistry B, Vol. 106 No. 5 (2002) 1004-1012

- C Sweegers, M Plomp, HC de Coninck, H Meekes, WJP van Enckevort, IDK Hiralal, A Rijkeboer, *Surface topography of gibbsite crystals grown from aqueous sodium aluminate solutions*, Applied Surface Science, Vol. 187 No. 3-4 (2002) 218-234

- C Sweegers, H Meekes, WJP Enckevort, IDK Hiralal, A Rijkeboer, *Growth Rate Analysis of Gibbsite Single Crystals Growing from Aqueous Sodium Aluminate Solutions*, Crystal Growth & Design, Vol. 4, No. 1 (2004) 185-198

Patents

- A Rijkeboer, *Bauxite Processing* (patent on bauxite roasting), US patent no. 5,279,645. 18 January 1994 (also patented in other countries)

- A Rijkeboer and R den Hond, *Process for the production of aluminium hydroxide from bauxite* (patent on atmospheric pre-digestion), US patent no. 5,869,020. 9 February 1999 (also patented in other countries)

Contact Details

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