

ANTONIO VALERO,

Professor at the University of Zaragoza. Chair in Thermal Systems. General Director of CIRCE, Research Center for Energy Resources and Consumption. A research foundation established by the University of Zaragoza, the Government of Aragon, Spain, and the largest energy companies in Spain. CIRCE is a research group composed of 180 researchers devoted to Renewables, Energy efficiency and CO₂ Sequestration, among other fields of activity.

Main contributor to Thermoeconomics. ASME James H. Potter Gold Medal '96 Award *“for advancing the theory of thermoeconomics to a new level, and clarifying the basic concepts of exergetic costs, as well as providing methods that integrate costing with system simulation to optimize design and operation of energy-conversion and processing plants, including numerous real world applications”*. Also he has been awarded with 4 Edward F. Obert ASME Awards, 1987, 1988, 1989 and 2003 for the Best Paper in Thermodynamics and Energy Systems presented in the yearly ASME International Mechanical Engineering Congress and Exhibition. ASME Fellow from 2007.

Best paper award (320 papers from 55 countries) in 5th Conference on Sustainable Development of Energy Water and Environment Systems '09, Dubrovnik with the paper *“A prediction of the exergy loss of world's mineral reserves in the 21st century”*

His key contributions since 1986 to date are related to 1) Thermoeconomics: A General Theory of Exergy Saving, the Structural Theory of Thermoeconomics, and Application of Thermoeconomics to the Diagnosis of Complex Energy Plants. 2) Exergoecology: Application Exergy Analysis to assess the Natural Exergy Resources of the Earth, including fossil fuels, minerals, water and biomass. And 3) Physical Hydromonics: an application of Thermoeconomics to assess the physical and economic costs of water as an objective basis for pricing.

He has directed 30 p.H.D. students on these themes. (Jul, 2011)

Main Research Scientist of more than 40 European Union projects on Energy Efficiency, Optimization of powerplants and Renewable Energy Systems.

National Spanish Representative at the European Union for VII R&D Framework Program in the Energy Theme to date.

Honorary professor of the North China Electric Power University of Beijing.

Former coordinator of the Research Commission for planning the contents of the National Spanish Research Institute of Climate Change (Nov 2007- Sept 2008).

Former National Manager of the National R&D Program of Energy in Spain from (2004- Feb. 2008).

Vice chairman of the “Zero Emissions Fossil Fuels Power Plants” European Technology Platform, and Secretary of the Spanish CO₂ Technology Platform (2005-2009).

Former President of the Energy Council of Aragon (1996-1999).

First signatory and main promoter of the Krakow Declaration, a worldwide Declaration for a better Energy Efficiency in Process Industries and a dialogue among scientists, industry and policy makers. More than 60 experts from Academia, Industry, and Policy makers, including members of the EU Parliament support this initiative.

Selected publications

1. A. Valero, M.A. Lozano, M. Muñoz, "A general theory of exergy saving: I. On the exergetic cost". COMPUTER-AIDED ENGINEERING AND ENERGY SYSTEMS: SECOND LAW ANALYSIS AND MODELLING, Vol. 2-3, ASME Book H0341C, pp. 1-8 (1986) New York.
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4. Valero, M.A. Lozano, J.A. Alconchel, M. Muñoz, C. Torres, "GAUDEAMO: A system for energetic/exergetic optimization of coal power plants". COMPUTER-AIDED ENGINEERING AND ENERGY SYSTEMS: OPTIMIZATION, AES Vol. 2-1, ASME Book H0341A, pp. 43-49 (1986).
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10. "Methodology for Calculating Exergy in Chemical Process". THERMODYNAMIC ANALYSIS OF CHEMICALLY REACTIVE SYSTEMS. W.J. Wepfer, G. Tsatsaronis, R.A. Bajura, ASME Book no. I00236, pp. 77-86 (1988) New York.
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