

Publications and Patents of Dr. Isaac Ray

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Field of expertise:

1. Interaction of solid and liquid particles suspended in the stationary or moving gas streams with the gravitational, magnetic and electrostatic fields.
2. Design and development of the solid and liquid particulate air pollution control devices based on the bench scale, pilot test and finally in the industrial setting with demonstration of high efficiency during the performance tests.
3. Design and development of highly efficient High Velocity Wet Electrostatic Precipitators (WESP) in combination with low energy Scrubbers and with continuous self-cleaning of collecting surfaces from sticky organic particulate based on the condensing effect in saturated conditions.

Professional Membership: American Air Pollution Control Association

Awards/Honors:

1999 Engineering Excellence award Nomination form DuPont Engineering

1999 Valor awards in Environmental field from Chemical Processing Magazine

Publications and Patents: *Partial List for publications in English*

1. Tubular Electrostatic Precipitators of 2-stage design Iron and Steel Engineer, December 1980
2. Tubular ESP of 2-stage; Environment International, Vol. 6, pp.239-244, Pergamon Press 1981
3. Control of Volatile Organic Compound (VOC) Emissions; Plastic Industry Conference, July 13,1992
4. ESP-Design and application for the HVAC industry. Plant Services, January 1996.
5. Innovations in Particulate Collection Technology. Has Mat International Conference, June 18-20, 1996, Atlantic City, NJ.
6. The Quest for a Better Submicron Particle Trap. Environmental Technology, vol.7 issue 3, May/June 1997.
7. Air-Pollution Control Ready for the 21st Century Textile world, November 1998, Atlanta, GA.
8. Incineration Facility Employs WESP. 8th International Conference on Electrostatic Precipitation May 14-17, 2001, Birmingham, AL.

9. Wet electrostatic precipitation demonstrating multiple pollutant control in industrial applications holds promise for coal-fired utility emission reduction of acid mist, PM2.5 and mercury.
10. Wet electrostatic precipitator technology and MACT. Ray, Isaac; Buckley, Wayne P. Croll-Reynolds Clean Air Technologies, Westfield, NJ, USA. Proceedings of the International Conference on Incineration and Thermal Treatment Technologies, Portland, OR
11. Particulate emissions: evaluating removal methods. Ray, Isaac. Croll-Reynolds Co., USA. Chemical Engineering (New York) (1997)
12. Isaac Ray
“Electrostatic Precipitation based Aerosol Collector “2005 Scientific Conference on Obscuration and Aerosol Research, 20 – 22 June 2005, Aberdeen Maryland.
13. Ray Isaac, “ Entrance Dust Arrester “ U.S. Patent 4,551,879 October 1984
14. Ray Isaac, “ Universal Alignment Indicator” U.S. Patent 5,597,304 July 1995
15. Ray Isaac “Apparatus and Method for removing Particulates and corrosive gases...”
U.S. Patent 6,110, 256 June 1998
16. Ray Isaac “Universal Alignment Indicator” U.S. Patent 6,000,939 February 1999
17. Ray Isaac “Modular Condensing Wet Electrostatic Precipitators and Method “
U.S.Patent 6,193,782 March 1999
18. Ray Isaac “Distribution of Corona Discharge activated reagent fluid...”
U.S. Patent 6,365,112 August 2000
19. Ray Isaac “Modular Condensing WESP “U.S. Patent 6,294,003 February 2001
20. Ray Isaac “Integrated Single- Pass Dual- Field ESP and Method “October 2001
U.S. Patent 6,508,861
21. Ray Isaac “Aerosol Collection Apparatus and Method”
U.S.Patent 7,767,150 August 2004
22. Ray Isaac “Dual Flow wet electrostatic precipitator”
U.S.Patent 7,318,857 March 2006
23. Ray Isaac “Method and Apparatus for flue gas Desulphurization”
U.S. Patent 7,459,009 April 2006

24. Ray Isaac “Wet electrostatic precipitator for treating oxidized biomass effluent”
U.S. Patent 7,297,182 June 2006
25. Ray Isaac “Method and apparatus for particulate removal and undesirable vapor
Scrubbing from a moving gas stream” Publication number US 2007/0009411 A1
July 7, 2006
26. Ray Isaac “Wet electrostatic liquid film oxidizing reactor apparatus and method...”
Publication number US 2007/0128090 A1, December 6, 2008
27. Ray Isaac “Aerosol collection Apparatus and Methods”
U.S. Patent 7,767,150 B1, August 3, 2010
28. Ray Isaac “Electrostatic filter and non-thermal plasma system for air pollution
control of hydrocarbon combustion engines” U.S. Patent 8,771,600 B2 July 8, 2014
29. Ray Isaac “Apparatus and Method for removing Mercury from a gas stream”
US Patent 9,533,311 B2, January 3, 2017
30. Ray Isaac “Wet electrostatic gas cleaning system with non-thermal plasma for NO_x
Reduction in exhaust “US Patent 10,744,456 B2, August 18, 2020