

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GLOBAL FOUNDRIES U.S., INC., GLOBALFOUNDRIES DRESDEN
MODULE ONE LLC & CO. KG, GLOBALFOUNDRIES DRESDEN
MODULE TWO LLC & CO. KG, and
THE GILLETTE COMPANY

Petitioners

v.

ZOND, LLC
Patent Owner

Case IPR2014-01086¹
Patent 7,147,759 B2

ZOND LLC'S PATENT OWNER RESPONSE

¹ Case IPR2014-00981 has been joined with the instant proceeding.

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 a. Kudryavtsev – A. A. Kudryavtsev and V.N. Skerbov, Ionization relaxation in a plasma produced by a pulsed inert-gas discharge, Sov. Phys. Tech. Phys. 28(1), pp. 30-35, January 1983 (Ex. 1004), 17

 b. Wang – U.S. Patent No. 6,413,382 (Exhibit 1005)..... 20

 2. The Petitioners Failed To Show That It Would Have Been Obvious To Combine The Cylindrical Tube System Without A Magnet Of Kudryavtsev With The Wang Magnetron System. 22

 B. The Petition fails to demonstrate how the alleged combinations teach every element of the challenged claims. 34

 1. The cited references do not teach generating “the voltage pulse with an amplitude and a rise time that increases an excitation rate of ground state atoms that are present in the weakly-ionized plasma to create a multi-step

ionization process that generates a strongly-ionized plasma,” as recited in independent claim 135

2. The cited references do not teach a “multi-step ionization process comprising exciting the ground state atoms to generate excited atoms, and then ionizing the excited atoms within the weakly-ionized plasma without forming an arc discharge,” as recited in claim 145

3. The Cited References Do Not Teach “a temperature controller that controls the temperature of the substrate support,” As Recited In Claim 11.....51

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C. The Petitioners Failed To Establish That The Mozgrin Thesis Is Prior Art.59

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Exhibit List

Exhibit No.	Description
Ex. 2004	U.S. Patent 6,398,929 to Chiang
Ex. 2005	Declaration of Dr. Hartsough, Patent Owner's expert.
Ex. 2006	Sinha, Naresh, K., Control Systems, Holt, Rinehart and Winston, 1986.
Ex. 2007	Eronini Umez-Eronini, System Dynamics and Control, Brooks Cole Publishing Co., CA, 1999, pp. 10-13.
Ex. 2008	Excerpts from Weyrick, Fundamentals of Automatic Control, McGraw-Hill Book Company, 1975.
Ex. 2009	Excerpts from Kua, Automatic Control, Prentice Hall Inc., 1987.
Ex. 2010	Transcript of deposition of Dr. Kortshagen, Petitioners' expert, for the '759 patent
Ex. 2011	Transcript of deposition of Dr. Kortshagen, Petitioners' expert, for the '142 patent

I. INTRODUCTION

The Petitioners' arguments hinge on fanciful misreadings of the prior art by their proffered expert, Dr. Uwe Kortshagen. As will be shown below, neither Wang nor Kudryavtsev teaches choosing *the amplitude and rise time of a voltage pulse* in order to increase the "excitation rate of ground state atoms . . . to create a multi-step ionization process that generates a strongly-ionized plasma. . . the multi-step ionization process comprising exciting the ground state atoms to generate excited atoms and then ionizing the excited atoms within the weakly-ionized plasma *without forming an arc discharge*," as required by the claims of the '759 patent. Once the Board recognizes that Dr. Kortshagen essentially invented some of the alleged "teachings" in Wang and Kudryavtsev to suit the Petitioners' objectives, the Board should agree to confirm the challenged claims.

Neither Wang nor Kudryavtsev teaches the claimed voltage pulse. The '759 patent discloses carefully designing the amplitude and rise time of a voltage pulse. The patent shows that, with proper control of the voltage amplitude and rise time, the inventor, Dr. Chistyakov, was able to ignite a plasma *without arcing*, rapidly grow that plasma to a high density, and sustain

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