

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE PATENT TRIAL AND APPEAL BOARD

---

ASML NETHERLANDS B.V., EXCELITAS TECHNOLOGIES CORP., AND  
QIOPTIQ PHOTONICS GMBH & CO. KG,  
Petitioners

v.

ENERGETIQ TECHNOLOGY, INC.,  
Patent Owner

---

Cases IPR2015-01300 and  
IPR2015-01303  
U.S. Patent No. 7,435,982

---

**PATENT OWNER'S RESPONSE  
UNDER 37 C.F.R. § 42.120**

**TABLE OF CONTENTS**

	<b><u>Page</u></b>
I. INTRODUCTION .....	1
II. THE STATE OF THE ART AND THE CLAIMED INVENTION .....	2
A. State of the Art and Prior Arc Lamps.....	2
B. Energetiq’s Patented Laser Driven Light Source.....	3
III. CLAIM INTERPRETATION .....	4
A. “Light source” .....	5
B. “High brightness light” .....	7
C. “Sustained” .....	12
IV. THE DEFINITION OF AN ORDINARY ARTISAN IN THE FIELD.....	15
A. Active Workers In The Field And The Inventor.....	16
B. Problems In The Art, Prior Art Solutions, Rapidity with Which Innovations are Made, and Sophistication of the Technology.....	17
C. Petitioners Provide <i>No</i> Factual Support for their Definition and Do Not Rely on Any of the Relevant Factors .....	17
V. GROUND 1: ANTICIPATION UNDER § 102 BY GÄRTNER .....	18
A. Overview of Gärtner.....	18
B. Gärtner does not anticipate the challenged claims reciting a “high brightness light” because it does not enable the claims .....	19
1. Gärtner does not provide one skilled in the art with sufficient direction or guidance to obtain the claimed “high brightness light” without undue experimentation ( <i>Wands</i> factors 1, 2).....	20
2. Gärtner’s pulsed laser system would not enable an ordinary artisan to create a laser sustained plasma, because it does not provide a working example ( <i>Wands</i> factor 3).....	24
3. The state of the prior art (arc lamps) further supports a lack of enablement ( <i>Wands</i> factors 4, 5).....	24
C. Gärtner does not anticipate because it does not provide sufficient disclosure on “high brightness light” .....	25
VI. GROUND 2: OBVIOUSNESS UNDER § 103 BY GÄRTNER.....	26

VII. CONCLUSION.....28

## I. INTRODUCTION

This case is about a light source that generates a “high brightness light” that is so much brighter than what preceded it, that it has essentially replaced the arc lamps previously used in semiconductor wafer inspection, lithography, and metrology tools.

Energetiq’s invention solved a fundamental problem – how to generate a light *brighter* than arc lamps. Energetiq patented a novel approach that uses a laser that provides energy to a gas in a chamber to produce a “high brightness light.”

Petitioners allege that the challenged claims—almost all of which require a “high brightness light”—are anticipated (and rendered obvious) based on an incomplete system described in a 20 year old reference (Gärtner) that would be *incapable* of achieving the claimed “high brightness light.” But, Gärtner neither anticipates nor renders obvious the invention to a person of ordinary skill in the art at the time of the invention. Because Petitioners have not met their burden of proof, the claims must be confirmed.<sup>1</sup>

---

<sup>1</sup> This Response is supported by the declaration of Dr. Philip H. Bucksbaum, a professor in Physics, Applied Physics, and Photon Science at Stanford University.

## II. THE STATE OF THE ART AND THE CLAIMED INVENTION

### A. State of the Art and Prior Arc Lamps

For at least a decade prior to the invention, the semiconductor industry used xenon or mercury arc lamps to produce a light for use in wafer inspection and metrology systems. (*See* Smith Decl. at ¶ 8 (Ex. 2016); '982 Patent at 1:20-22 (Ex. 1101)<sup>2</sup> (“The state of the art in, for example, wafer inspection systems involves the use of xenon or mercury arc lamps to produce light.”).)

Arc lamps use an anode and cathode to provide an electrical discharge to a gas within the lamp that excites the gas, causing it to emit light. (*See* '982 Patent at 1:20-35 (Ex. 1101).) However, they suffer from a number of shortcomings that constrain the accuracy and efficiency of the equipment that uses them. These problems include instability of the arc, undesirably short time to failure, and limits on how bright such sources can get (the spectral brightness of arc lamps is limited by the maximum current density—if too high, it would melt the arc lamps' electrodes). (*See, e.g.*, '982 Patent at 1:20-35 (Ex. 1101); Smith Decl. at ¶ 8 (Ex. 2016).)

---

<sup>2</sup> All citations are to IPR '1300, unless otherwise noted.

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.