

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

Case IPR2015-01368
U.S. Patent No. 8,525,138

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

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	STATE OF THE ART	2
	A. Arc Lamp Technology.....	2
	B. Energetiq’s Laser Sustained Plasmas	3
III.	CLAIM INTERPRETATION	4
	A. “Light source”	5
	B. “Sustain”	6
IV.	THE DEFINITION OF AN ORDINARY ARTISAN IN THE FIELD.....	8
	A. Active Workers In The Field And The Inventor.....	9
	B. Problems In The Art, Prior Art Solutions, Rapidity with Which Innovations are Made, and Sophistication of the Technology.....	10
	C. Petitioners Provide No Factual Support for their Definition and Do Not Rely On Any Of The Relevant Factors	10
V.	OBVIOUSNESS UNDER § 103 BY GÄRTNER IN VIEW OF BETEROV	11
	A. Overview Of Gärtner.....	11
	B. Overview of Beterov	12
	C. An Ordinary Artisan Would Not Have Redesigned Gärtner By Replacing Its Continuous Long Wavelength Laser With A Short Wavelength Laser Such As Disclosed In Beterov Or As Otherwise Available At The Time Of The Invention	14
	1. At the time of the invention, it was believed that a short wavelength laser would have led to energy being absorbed less efficiently, resulting in lower brightness light	14
	2. At the time of the invention, it was believed that a short wavelength laser would have led to larger plasma, resulting in lower brightness light.....	21
	3. Energetiq’s recognition of an unexpected physical result led to the claimed invention	23

D.	Petitioners Fail To Demonstrate <i>Why</i> An Ordinary Artisan Would Have Combined Gärtner With Beterov	25
1.	Petitioners do not demonstrate why no one combined Gartner with a short wavelength laser, despite the wide availability of such lasers at least as early as Gärtner	25
a.	Suitable short wavelength lasers existed long before the '138 priority date	26
b.	The years-long commercial availability of suitable short wavelength lasers before the invention, coupled with the teachings away from the use of such, shows that the invention was not obvious when made.....	27
2.	Petitioners have failed to demonstrate that an ordinary artisan would have been motivated to replace Gärtner's long wavelength laser with a short wavelength laser.....	28
3.	Replacing Gärtner's long wavelength laser with a short wavelength laser would not have been a "simple substitution".....	30
a.	There would have been no expectation of success.....	30
b.	The resulting device would have been inoperative for its intended purpose.....	30
4.	Beterov Undermines Petitioners' Suggestion That One Having Ordinary Skill Would Find Any Teaching, Suggestion Or Motivation To Combine Gärtner With Beterov.....	31
VI.	CONCLUSION.....	34

I. INTRODUCTION

This case is about a light source so much brighter than anything that preceded it that it has essentially replaced its predecessors in the semiconductor manufacturing field. Previously, state of the art light sources for semiconductor wafer inspection, lithography, and metrology tools were arc lamps – e.g., Xenon or Mercury arc lamps. Energetiq patented a fundamentally new approach that uses a *laser* to provide energy to a gas in a chamber—at a wavelength within 10 nanometers of a strong absorption line of the gas—to produce a light that was brighter than any previous technology could achieve.

Critically, Petitioners concede that the invention was novel. They advance *no anticipation arguments* in this proceeding, instead relying on factually incorrect and legally insufficient obviousness arguments that are guided by hindsight reconstruction and undermined by the very references upon which they rely. For the reasons set forth below, the ‘138 claims are not obvious over Gärtner in view of Beterov, at least because there would have been no motivation to combine Gärtner and Beterov, and because contemporaneous references taught away from such a combination.¹

¹ Energetiq does not discuss Petitioners’ other proposed rejection—obviousness over Gartner in view of Wolfram—because the Board denied institution on this basis.

Because Petitioners have not met their burden of proof, the '138 patent claims must be confirmed.²

II. STATE OF THE ART

A. Arc Lamp Technology

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 Declaration at ¶ 8 (Ex. 2016); '138 patent (Ex. 1001), 1:33-35 (“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* '138 patent (Ex. 1101), 1:33-49.) However, they suffer from a number of shortcomings that constrain the accuracy and efficiency of the equipment that uses them, including instability of the arc, undesirable 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.*, Smith Decl. at ¶ 8 (Ex. 2016).)

² This response is supported by the Declaration of Dr. Donald K. Smith. Patent Owner did not submit a preliminary response in this proceeding.

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.