

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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STMICROELECTRONICS, INC.  
Petitioner,

v.

OCEAN SEMICONDUCTOR LLC,  
Patent Owner.

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IPR2022-00681  
Patent 6,968,248 B1

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Before MIRIAM L. QUINN, JOHN D. HAMANN, and DAVID COTTA,  
*Administrative Patent Judges.*

QUINN, *Administrative Patent Judge.*

DECISION  
Granting Institution of *Inter Partes* Review  
*35 U.S.C. § 314*  
Granting Motion for Joinder  
*35 U.S.C § 315(c); 37 C.F.R. § 42.122*

## I. INTRODUCTION

Petitioner STMicroelectronics, Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–22 of U.S. Patent No. 6,968,248 B1 (“the ’248 patent”). Paper 1 (“Pet.”). Petitioner also filed a Motion for Joinder seeking joinder as a petitioner with Applied Materials, Inc. in *Applied Materials, Inc v. Ocean Semiconductor LLC*, IPR2021-01342 (the “Applied Materials IPR”). Paper 3 (“Joinder Motion”). Ocean Semiconductor (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). With authorization of the Board, Petitioner filed a Reply to Patent Owner’s Preliminary Response. Paper 8 (“Reply”). And Patent Owner filed a Sur-Reply to Petitioner’s Reply. Paper 9 (“Sur-Reply”). Patent Owner did not file an opposition to the Motion for Joinder.

We have authority under 35 U.S.C. § 314. Upon considering the information presented in the parties’ papers, for reasons discussed below, we institute *inter partes* review of claims 1–22 of the ’248 patent and grant Petitioner’s Motion for Joinder.

### A. Related Matters

The parties indicate that the ’248 patent has been asserted in ten pending litigations: *Ocean Semiconductor LLC v. Analog Devices, Inc.*, No. 1:20-cv-12310 (D. Mass.); *Ocean Semiconductor LLC v. Infineon Techs. AG*, No. 1:20-cv-12311 (D. Mass.); *Ocean Semiconductor LLC v. Huawei Devices USA, Inc.*, No. 4:20-cv-991 (E.D. Tex.); *Ocean Semiconductor LLC v. MediaTek Inc.*, No. 6:20-cv-1210 (W.D. Tex.); *Ocean Semiconductor LLC v. NVIDIA Corp.*, No. 6:20-cv-1211 (W.D. Tex.); *Ocean Semiconductor LLC v. NXP Semiconductors N.V.*, No. 6:20-cv-1212 (W.D. Tex.); *Ocean Semiconductor LLC v. Renesas Electronics Corp.*, No. 6:20-cv-1213 (W.D. Tex.); *Ocean Semiconductor LLC v. Silicon*

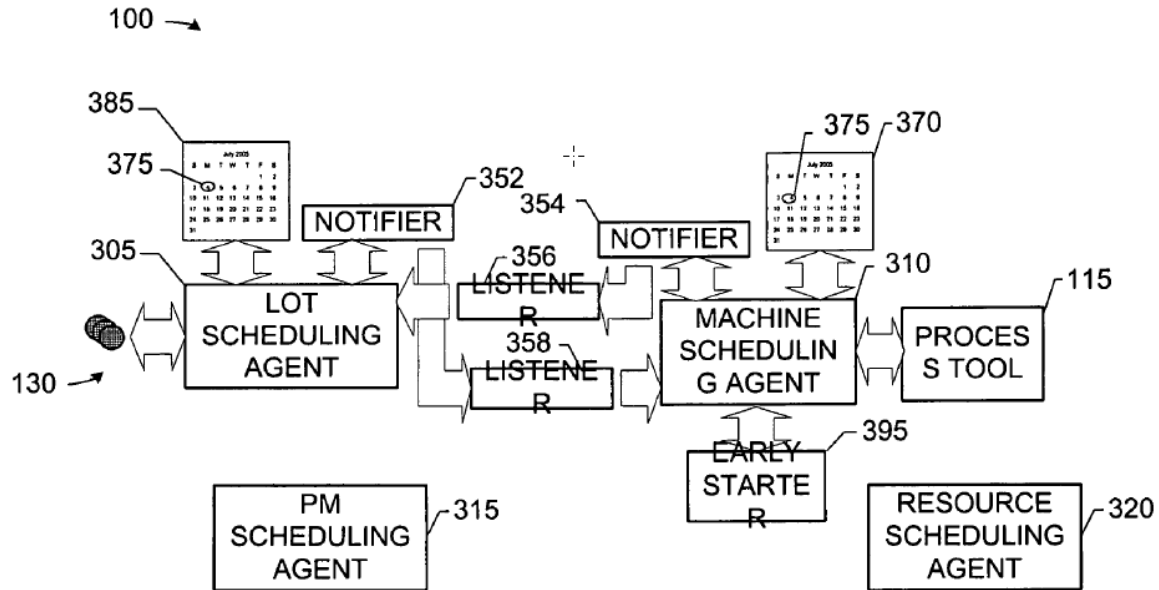
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*Labs. Inc.*, No. 6:20-cv-1214 (W.D. Tex.); *Ocean Semiconductor LLC v. STMicroelectronics, Inc.*, No. 6:20-cv-1215 (W.D. Tex.); and *Ocean Semiconductor LLC v. Western Digital Techs., Inc.*, No. 6:20-cv-1216 (W.D. Tex.). Pet. 1–2; Paper 5 (Patent Owner’s Mandatory Notices), 2. In addition, Petitioner has filed another petition for *inter partes* review (IPR2022-00680) of related patent U.S. Patent No. 6,907,305 B2. Pet 2.

### *B. The '248 Patent*

The '248 patent relates to “scheduling in an automated manufacturing environment.” Ex. 1001, 1:20–21. The '248 patent describes the manufacture of integrated circuits for modern semiconductor devices containing numerous structures or features, typically the size of a few micrometers. *Id.* at 1:38–41. The '248 patent further describes that the fabrication of integrated circuits generally involves processing a number of wafers through a series of fabrication tools, where layers of material are added to, removed from, and/or treated on a semiconducting substrate. *Id.* at 1:41–45. According to the '248 patent, controlling a semiconductor factory (“fab”) that fabricates such integrated circuits is a challenging task, where the fab is a complex environment where numerous parts (typically 40,000 wafers or more) and numerous part types (typically 100 part types or more) are simultaneously being manufactured. *Id.* at 1:65–2:3. As each wafer moves through the fab, it may undergo more than 300 processing steps, many of which use the same machines, where a large factory may contain approximately 500 computer-controlled machines to perform this wafer processing. *Id.* at 2:3–8. As described in the '248 patent, routing, scheduling, and tracking material through the fab is a difficult and complicated task, even with the assistance of a computerized factory control system. *Id.* at 2:8–11.

Figure 3 illustrates an implementation of reactive scheduling of activities of a process flow for a semiconductor fabrication facility and is reproduced below.



**FIG. 3**

Figure 3 shows a portion of process flow 100 from a semiconductor fabrication facility, and the manner in which it schedules appointments for the consumption of resources. *Id.* at 4:28–32. Process flow 100 includes stations 105, each station 105 including computing device 110 communicating with process tool 115. *Id.* at 5:17–19. Process tools 115 are processing lots 130 of wafers 135 that will eventually become integrated circuit devices, where process tool 115 may be a fabrication tool used to fabricate some portion of wafers 135. *Id.* at 5:24–26, 6:43–45.

Each computing device 110 includes software agent 265, where software agents 265, collectively, are responsible for efficiently scheduling and controlling lots 130 of wafers 135 through the fabrication process. *Id.* at 6:24–26, 47–50. Collectively, software agents 265 reactively and

proactively schedule activities for each lot 130 for operations on a specific qualified process tool 115. *Id.* at 6:63–7:3. More specifically, the software agents (or scheduling agents) 265 include: Lot Scheduling Agent (“LSA”) 305 that schedules activities on behalf of lots 130 of wafers 135; Machine Scheduling Agent (“MSA”) 310 that schedules activities on behalf of process tools 115; PM Scheduling Agent (“PMSA”) 315 that schedules activities on behalf of preventative maintenance (“PMs”) and equipment qualification (“Quals”) (not shown in Figure 3); and Resource Scheduling Agent (“RSA”) that schedules activities on behalf of resources (not shown in Figure 3). *Id.* at 7:20–30. Some of these activities are scheduled reactively (i.e., in response to events occurring in process flow 100). *Id.* at 7:36–37. For example, the ’248 patent describes the process as detecting an occurrence of a predetermined event in the process flow 100; notifying a subscribing software scheduling agent (e.g., LSA 305, MSA 310, PMAS 315, or RSA 320) of the occurrence; and reactively scheduling an action responsive to the detection of the predetermined event. *Id.* at 7:38–46.

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