UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VOLTAGE, LLC,
NINGBO VOLTAGE SMART PRODUCTION CO.
Petitioners

v.

SHOALS TECHNOLOGIES GROUP, LLC
Patent Owner

Inter Partes Review No.: IPR2025-01443
U.S. Patent No. 12,015,375

PETITIONERS' SEARCH DISCLOSURE DECLARATION

BY JUNHAO MA

I, Junhao Ma, hereby declare and state as follows:

1. I am over eighteen (18) years of age and competent to make this declaration. I have personal knowledge of the facts set forth herein and, if called as a witness, could and would testify competently thereto.
2. I am an IP senior consultant with the law firm of King & Wood Mallesons with a business address at 17F, ICC I, 999 Huai Hai Middle Road, Shanghai, China.
3. In my capacity as an IP senior consultant of King & Wood Mallesons, I lead a team of patent searchers who focus on prior search and patent landscape analysis, among other things.
4. Upon Petitioners' instruction to file an *inter partes* review, our search team starts to conduct prior search related to U.S. Patent No. 12,015,375 (the '375 Patent). Our in-house team worked with an outside search firm to identify relevant prior art to the '375 Patent.
5. We located JP 1998135499A ("Machida") in the databases and repositories of Patsnap (https://www.patsnap.com/). The general search approach, search terms, filters, queries, or classification pathways employed, was as follows:

   First Round Search

   Considering that the photovoltaic field has a large number of patents and leading technologies in Asian, we prioritized searching in jurisdictions such as China, Japan, and South Korea.

   After developing a set of keywords related to "DROP LINE", we conducted a search requiring that "drop line" and "parallel", along with their respective synonyms, appear within the same sentence. The search was further restricted by the classification number H01R4. The search

history is provided below:

(PBD:[* TO 20140909] AND AUTHORITY:(cn OR jp OR kr OR wo)) AND (TAC_ALL:((引下线 OR 引线 OR 引入线 OR 引出线 OR 分支线 OR 导线 OR 馈线电缆 OR "DROP LINE" OR "DROP LINES" OR "FEEDER CABLE" OR WIRE# OR 馈线 OR LINE# OR DOWNLEAD* OR CABLE# OR FEEDER#) $SEN(平行 OR PARALLEL#))) AND (TAC_ALL:(太阳能 OR 光伏 OR SOLAR OR PHOTOVOLTA* OR RENEWABLE ENERGY OR CLEAN ENERGY OR 可再生能源 OR 清洁能源 OR "PV")) AND (IPC_CPC:(H01R4))

Second Round Search

We expanded the search for the keyword "PARALLEL" to a full-text search, while simultaneously applying restrictions based on classification code, jurisdiction, and photovoltaic-related terms. The search history is provided below:

(PBD:[* TO 20140909] AND AUTHORITY:(cn OR jp OR kr OR wo)) AND (TAC_ALL:(太阳能 OR 光伏 OR SOLAR OR PHOTOVOLTA* OR RENEWABLE ENERGY OR CLEAN ENERGY OR 可再生能源 OR 清洁能源 OR "PV")) AND (IPC_CPC:(H01R4)) AND (TACD_ALL:(平行 OR PARALLEL#))

Third Round Search

We conducted a full-text search requiring that "DROP LINE" (and its synonyms) and "PARALLEL"(and its synonyms) appear in the same sentence, while also restricting the search by classification codes and jurisdiction. The search history is provided below:

(PBD:[* TO 20140909] AND AUTHORITY:(cn OR jp OR kr OR

wo)) AND (TACD_ALL:((引下线 OR 引线 OR 引入线 OR 引出线 OR 分支线 OR 导线 OR 馈线电缆 OR "DROP LINE" OR "DROP LINES" OR "FEEDER CABLE" OR WIRE# OR 馈线 OR LINE# OR DOWNLEAD* OR CABLE# OR FEEDER#) $SEN (平行 OR PARALLEL#))) AND (IPC_CPC:(H01L31/04)) AND (IPC_CPC:(H01R))

In addition, we used other analytics or publicly accessible resources, such as the official website of the Japan Patent Office (JPO, https://www.jpo.go.jp/). The amount of time spent on the search is estimated to be 1-2 working days, and the amount of time spent reviewing the search results 5-8 working days.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made herein on information and belief are believed to be true. Further, these statements were made with the knowledge that willful false statements and the lie so made are punishable by fine, imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on November 21, 2025 in Shanghai, China.

By:

Junhao Ma

Senior Consultant