Lab Bridge
IP Bundling Project

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Presentation to TTWG

Project Statement of Work

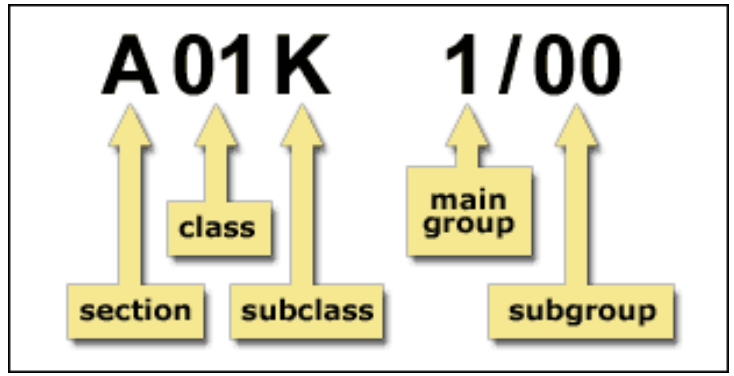
Participants: ANL, BNL, LBNL, ORNL, NREL and SLAC

- Task 1: Multi-Lab IP portfolio generation (NREL)
- Task 2: Development of common agreements (SLAC)
- Task 3: Selection of tech packages (ORNL)
- Task 4: Outreach to industry (ANL)

	Task Name	Q4			Q1			Q2			Q3			Q4		
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	IP portfolio generation			NREL												
2	Common Agreements													SLAC		
3	Selection of technology packages							ORNL								
4	Industry Outreach											ANL				
5	Outreach Metrics and evaluation											BNL				
6	Montioring and Evaluation													LBNL		
7	Reporting													ALL		

Task 1: Develop a multi-lab IP portfolio

- Create an inventory of U.S. patent records
  - >3,100 distinct U.S. patent applications & patents
- Normalize patent records to look for similar assets
  - Develop a syntax array of patent classification codes
  - Multi-parametric analysis: keywords and IPC codes
  - Soft cosine similarity to assess overlap between vectors



12/459,623	C	23	C	14	82
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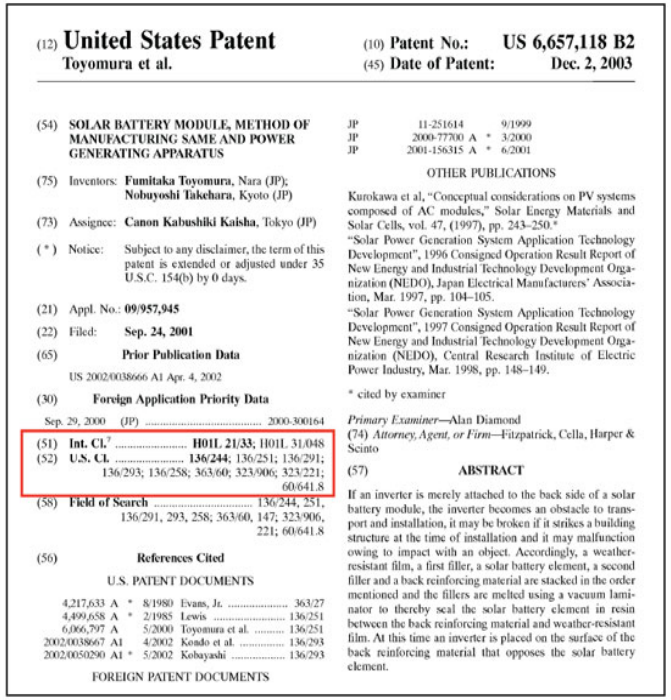
	C	23	C	14	61
	C	23	B	9	256
13/251,123	C	12	F	5	411
	C	23	C	18	45
	H	6	D	31	152
	H	5	D	23	5



(12) **United States Patent**
Toyomura et al.

(10) **Patent No.: US 6,657,118 B2**
(45) **Date of Patent: Dec. 2, 2003**

(54) **SOLAR BATTERY MODULE, METHOD OF MANUFACTURING SAME AND POWER GENERATING APPARATUS**

(75) Inventors: **Fumitaka Toyomura**, Nara (JP); **Nobuyoshi Takehara**, Kyoto (JP)

(73) Assignee: **Canon Kabushiki Kaisha**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/957,945**

(22) Filed: **Sep. 24, 2001**

(65) **Prior Publication Data**

US 2002/0038666 A1 Apr. 4, 2002

(30) **Foreign Application Priority Data**

Sep. 29, 2000 (JP) 2000-300164

(51) **Int. Cl.**[7] **H01L 21/33**; H01L 31/048

(52) **U.S. Cl.** **136/244**; 136/251; 136/291; 136/293; 136/258; 363/60; 323/906; 323/221; 60/641.8

(58) **Field of Search** 136/244, 251, 136/291, 293, 258; 363/60, 147; 323/906, 221; 60/641.8

(56) **References Cited**

U.S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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OTHER PUBLICATIONS

Kurokawa et al, "Conceptual considerations on PV systems composed of AC modules," Solar Energy Materials and Solar Cells, vol. 47, (1997), pp. 243–250.*

"Solar Power Generation System Application Technology Development", 1996 Consigned Operation Result Report of New Energy and Industrial Technology Development Organization (NEDO), Japan Electrical Manufacturers' Association, Mar. 1997, pp. 104–105.

"Solar Power Generation System Application Technology Development", 1997 Consigned Operation Result Report of New Energy and Industrial Technology Development Organization (NEDO), Central Research Institute of Electric Power Industry, Mar. 1998, pp. 148–149.

* cited by examiner

Primary Examiner—Alan Diamond
(74) *Attorney, Agent, or Firm*—Fitzpatrick, Cella, Harper & Scinto

(57) **ABSTRACT**

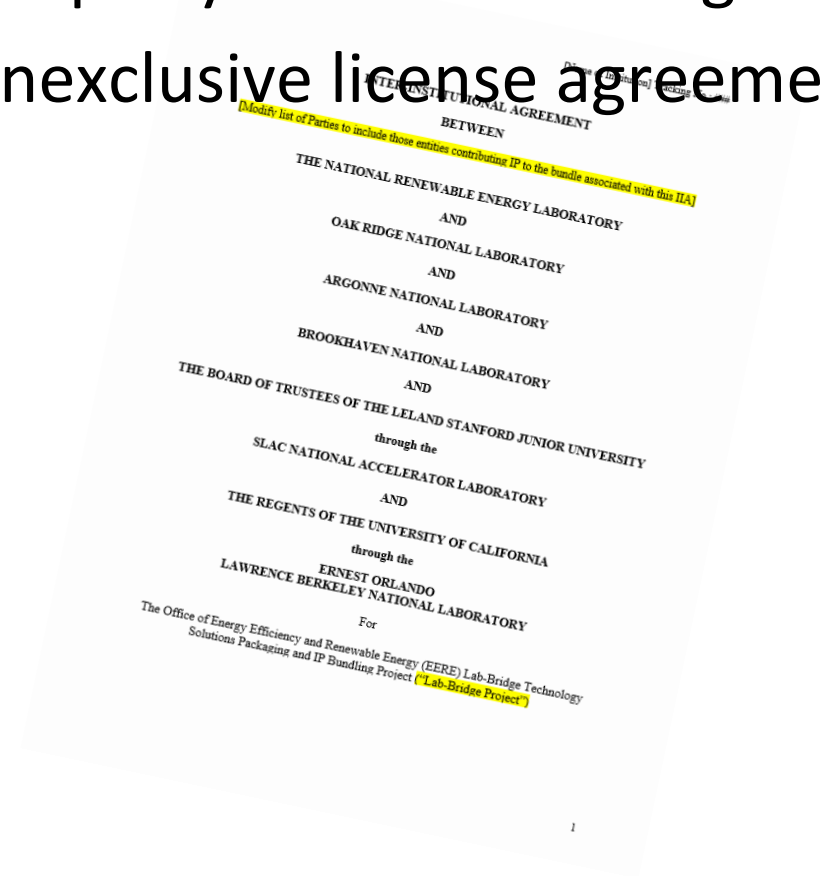
If an inverter is merely attached to the back side of a solar battery module, the inverter becomes an obstacle to transport and installation, it may be broken if it strikes a building structure at the time of installation and it may malfunction owing to impact with an object. Accordingly, a weather-resistant film, a first filler, a solar battery element, a second filler and a back reinforcing material are stacked in the order mentioned and the fillers are melted using a vacuum laminator to thereby seal the solar battery element in resin between the back reinforcing material and weather-resistant film. At this time an inverter is placed on the surface of the back reinforcing material that opposes the solar battery element.

Pilot Lab IP Asset Syntax Array

Title	Abstract	Application Date	Assignee(s)	All IPC	Patent Maintained?	Available to License?	Exclusive or Nonexlcusive?
Passive safety device and internal short tested method	A passive safety device for an energy storage cell	2010-10-27	NREL	H01M2/34 | H01M10/48 | H01M10/42	Yes	Yes	Both
High-Rate Overcharge-Protection	This invention relates to low-cost, electroactive-	2013-05-14	LBNL	H01M2/16	yes	Yes	both
Self-Regulating, Nonflamable Rechargeable	Berkeley Lab researchers created the first	10/30/2012	LBNL		yes	Yes	both
Self-healing compos	A battery electrode i	11/9/2012	SLAC		Active	Yes	Both
METHOD AND STRATEGY FOR MULTIPLEXING	A method and apparatus for receiving a	2014-06-06	ANL	H01H47/00 | G01R31/36	Yes	Yes	Both
Devices For Electrochemical System Analysis	have developed a device to measure quantitatively the	9/16/2015	NREL		Yes	Yes	Both
Passive safety device and internal short tested method	A passive safety device for an energy storage cell	2010-10-27	NREL	H01M2/34 | H01M10/48 | H01M10/42	Yes	Yes	Both
Fail-safe designs for large capacity battery systems	Fail-safe systems and design methodologies for	2012-09-27	NREL	G01N27/27 | H01M10/48 | H01M10/42 |	Yes	Yes	Both

Task 2: Common Agreements

- SLAC led the development of a common inter-institutional agreement that appoints a single party to lead licensing.
- IIA contemplates a common nonexclusive license agreement.



INTERINSTITUTIONAL AGREEMENT
BETWEEN
[Modify list of Parties to include those entities contributing IP to the bundle associated with this IIA]
THE NATIONAL RENEWABLE ENERGY LABORATORY
AND
OAK RIDGE NATIONAL LABORATORY
AND
ARGONNE NATIONAL LABORATORY
AND
BROOKHAVEN NATIONAL LABORATORY
AND
THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY
through the
SLAC NATIONAL ACCELERATOR LABORATORY
AND
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
through the
ERNEST ORLANDO
LAWRENCE BERKELEY NATIONAL LABORATORY
For
The Office of Energy Efficiency and Renewable Energy (EERE) Lab-Bridge Technology Solutions Packaging and IP Bundling Project ("Lab-Bridge Project")

Task 3: Selection and Development of Technology Solutions Packages

- ORNL managed the down-selection and identification of five bundle prospects.
- White paper summaries of bundle composition, market info, IP, capabilities, key inventors.
- Lab technology experts continuing to refine details of bundles.

Criteria	Remarks
Is there a clear commercial opportunity?	i.e. must be able to develop a clear value proposition for industry
Is it a patent only deal? Are the patents all unencumbered?	i.e. the IP portfolio is ready and enabling for an option or license agreement
Does it need further development and knowhow?	i.e. do we need a partnership agreement with one or more labs in order to access expertise?
Does it need software or technical drawings in order to maximize its value?	i.e. do we need hybrid patent/software licenses? Does Open source play a role?
Does it require the use of user facilities to develop further	i.e. do we need to discuss user facility capabilities in the package?

Task 4: Industry Outreach

- ANL: Developing a Marketing Roadmap
- TechConnect:
  - Two IP Bundle Oral Presentations
    - Solid-State Li-Ion Battery IP bundle
    - PEM Fuel Cell IP bundle
- Obtain industry feedback


National Renewable Energy Laboratory
www.nrel.gov
TechConnect Innovation Showcase Entries
Lab Resource Introduction
From its start in 1977 to today, the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) has pushed the boundaries of what's possible. For 40 years, NREL has expanded American prosperity and security through world-class research. The laboratory is poised to lead America into the future—for the next 40 years and beyond. NREL is the only federal laboratory dedicated to the research, development, commercialization, and deployment of renewable energy and energy efficiency technologies.
Furthermore, NREL is collaborating with other national laboratories such as ANL, BNL, LBNL, ORNL, and SLAC under a pilot program called LabBridge funded by DOE Office of Technology Transitions to bundle related pilot lab intellectual property (IP) that are of higher value to industry and potential licensees. The ultimate objective of this pilot program is to develop a selection of industry ready, multi-lab technology packages that have a larger value proposition than a single lab patent license in association with effective multi-lab agreement mechanisms to ensure timely access to the technology package. Below highlights the Proton Exchange Membrane (PEM) Fuel Cell Bundle and the Carbon Fiber Bundle that were developed under the LabBridge pilot program.
PEM Fuel Cell Bundle
Proton Exchange Membrane (PEM) fuel cells are increasingly used in applications such as material handling equipment or backup power, but many PEM fuel cells are still under development. Current research and development activities to further fuel cell commercialization are focused on improving the performance of fuel cell catalysts and to reduce the amount of platinum group metals (PGMs) required in production. Thus, ANL, BNL, LBNL, NREL, and ORNL have contributed individual technologies to form a PEM Fuel Cell Bundle, which can be further divided into two subcategories. These subcategories include: catalysts with PGMs combined with membrane electrode assemblies (MEAs) and catalysts with non-PGMs combined with MEAs. The technologies within this PEM Fuel Cell Bundle have the potential to significantly improve fuel cell performance, cost-effectiveness, and durability.
For more information please contact:
Erin Beaumont, Licensing Executive
erin.beaumont@nrel.gov | (303) 275-4353
Carbon Fiber Bundle
While there is little knowledge regarding the process of transforming lignin into carbon fiber, lignin has a significant cost advantage over other carbon fiber precursor materials (e.g., PAN) as lignin is independent of oil prices. Thus, to further the commercialization of lignin-based carbon fiber and to deepen the knowledge regarding lignin's transformation into carbon fiber, NREL and ORNL have contributed individually developed IP to form this Carbon Fiber Bundle. The technologies contributed include NREL's biological utilization of lignin and metabolic funneling to carbon fiber and ORNL's chemical approach to lignin separation and downstream processing into carbon fiber.
For more information please contact:
Erin Beaumont, Licensing Executive
erin.beaumont@nrel.gov | (303) 275-4353
NREL
NATIONAL INNOVATION SUMMIT & SHOWCASE

Goals/Metrics

- Number of IP portfolios that are generated.
- Successful development of common agreements.
- Identification of supporting capabilities from other labs.
- Number of in-person industry presentations.
- Number of license, option or collaborative research projects generated.
- Final Analysis of the pilot program, including effectiveness of the technology solution packages selection process, the feedback from industry meetings, and recommendation on refinement opportunities.