502345995 05/14/2013

PATENT ASSIGNMENT

Electronic Version v1.1 Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Arvind U Raghunathan	04/29/2013

RECEIVING PARTY DATA

Name:	Mitsubishi Electric Research Laboratories, Inc.		
Street Address:	201 Broadway		
City:	Cambridge		
State/Country:	MASSACHUSETTS		
Postal Code:	02139		

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	13803857

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent via US Mail when the fax attempt is unsuccessful.

Phone: 617-621-7500 Email: peterson@merl.com Correspondent Name: Kristin Peterson Address Line 1: 201 Broadway

Address Line 4: Cambridge, MASSACHUSETTS 02139

ATTORNEY DOCKET NUMBER:	MERL-2558
NAME OF SUBMITTER:	Kristin Peterson
Signature:	/Kristin Peterson/
Date:	05/14/2013

Total Attachments: 4

source=MERL-2558-MERL-Assignment-Cvr#page1.tif source=MERL-2558-MERL-Assignment#page1.tif source=MERL-2558-MERL-Assignment#page2.tif source=MERL-2558-MERL-Assignment#page3.tif

REEL: 030408 FRAME: 0543

PATENT 502345995

RECORDATION FORM COVER SHEET

PATENTS ONLY

To the Assistant Commissioner for Patents: Please record the attached original documents or copy thereof.			
1. Name of conveying party(ies): Arvind U Raghunathan Additional name(s) of conveying party(ies) attached? []Yes [X]No 3. Nature of Conveyance: [X]Assignment []Merger []Security Agreement []Change of Name Execution Dates: April 29, 2013 4. Application number(s) or patent number(s)	2. Name and address of receiving party(ies): Name: Mitsubishi Electric Research Laboratories, Inc. Street Address: 201 Broadway City: Cambridge State: MA Zip: 02139 Additional name(s) and address(es) attached? []Yes [X]No : with a new application, the execution date		
of the application is: A. Patent Application No.(s) 13/803,857	B. Patent No.(s)		
Additional numbers at	tached? []Yes [X]No		
5. Name and address of party to whom correspondence concerning document should be mailed: Name: Mitsubishi Electric Research Laboratories, Inc. Street Address: 201 Broadway City: Cambridge State: MA Zip: 02139	6. Total number of applications and patents involved: [1] 7.Total fee (37CFR 3.41): \$40.00 [] Enclosed [X] Authorized to be charged to deposit account 8. Deposit account number: 50-0749		
DO NOT USE	THIS SPACE		
9. Statement and signature. To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document. Kristin Peterson/Kristin Peterson/ May 14, 2013			
Name of Person Signing Signature Total number of pages comprising cover sheet: [1]			

ASCVRLTR.FRM PLG 1/93

ASSIGNMENT

WHEREAS, We, <u>LISTED INVENTORS</u>, have made certain inventions or discoveries (or both) set forth in an Application for Utility Patent of the United States of America entitled "System and Method for Optimizing Energy Consumption in Railway Systems," the specification of which:

	was	executed by us	on	the date	indicated be	elow;
<u>x</u>		filed on March 13/803,857	14,	. 2013 as	Application	Serial
	was	patented under	U.S	S. Patent	No. on	;

WHEREAS, Mitsubishi Electric Research Laboratories, Inc., a corporation of the State of Delaware, whose address is 201 Broadway, Cambridge, Massachusetts 02139, and who, together with its successors and assigns is hereinafter called "Assignee", is desirous of acquiring the entire right, title, and interest together with the benefits and privileges hereinafter recited;

NOW, THEREFORE, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which we hereby acknowledge, we hereby, without reservation;

- Assign, transfer and convey to Assignee the entire right, title and interest together with the benefits and privileges in and to said inventions and discoveries, said Application for Letters Patent or similar forms of protection of the United States of America, and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation and convention applications based in whole or in part upon said inventions or discoveries, or upon said application, and any and all Letters Patent, reissues and extensions of Letters Patent or similar forms of protection granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications and said Letters Patent;
- 2. Authorize Assignee to file patent applications in any or all countries or groups of countries on any or all of

1

PLG 10/94 ASSIGNTE FRM said inventions and discoveries in our name or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or any other relevant convention or treaty or otherwise;

- 3. Authorize and request the Assistant Commissioner for Patents of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as Assignee of the entire right, title and interest therein or otherwise as Assignee may direct;
- 4. Warrant that we have not knowingly conveyed to others any rights in said inventions, discoveries, applications or patents or any license to use the same or to make, use or sell anything embodying or utilizing any of said inventions or discoveries; and that we have good right to assign the same to Assignee without encumbrance;
- Bind our heirs, legal representatives and assigns, as well as ourselves, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to us or them, all acts reasonable serving to assure that said inventions and discoveries, said patent applications and said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by us, our heirs, legal representatives and assigns if this assignment had not been made; and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to us relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples and other physical exhibits in our control or in the control of our heirs, legal representatives or assigns which may be useful for establishing any facts of our conceptions, disclosures, and reduction to practice of said inventions or discoveries.

IN WITNESS WHEREOF:

Inventor Signature: R. Asuid Uffil.
Arvind U Raghunathan

Today's Date: 04/29/2013

Date Inventor Signed Declaration: February 22, 2013

)ss
County of Middlesex)

Subscribed and sworn to before me by the above-named Arvind U Raghunathan this Qq Fin Day of April 2013.

Soft Public

My Commission Expires:

July 4, 2019

KRISTIN PETERSON

Notary Public, Commonwealth of Massachusetts
My Commission Expires on July 4, 2019

RECORDED: 05/14/2013