

03-17-2000

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RECORDATION FORM COVER SHEET
PATENTS ONLY

TO: The Commissioner of Patents and Trademarks: Please record the attached original document(s) or copy(ies).

Submission Type

New

Resubmission (Non-Recordation)
Document ID#

Correction of PTO Error
Reel # Frame #

Corrective Document
Reel # Frame #

Conveyance Type

Assignment Security Agreement

License Change of Name

Merger Other

U.S. Government
(For Use ONLY by U.S. Government Agencies)

Departmental File Secret File

Conveying Party(ies)

Mark if additional names of conveying parties attached

Name (line 1) Execution Date
Month Day Year

Name (line 2)

Second Party

Name (line 1) Execution Date
Month Day Year

Name (line 2)

Receiving Party

Mark if additional names of receiving parties attached

If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)

Name (line 1)

Name (line 2)

Address (line 1)

Address (line 2)

Address (line 3)
City State/Country Zip Code

Domestic Representative Name and Address

Enter for the first Receiving Party only.

Name

Address (line 1)

Address (line 2)

Address (line 3)

Address (line 4)

FOR OFFICE USE ONLY

03/14/2000 JSHARAZZ 00000172 06747581

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Public burden reporting for this collection of information is estimated to average approximately 30 minutes per Cover Sheet to be recorded, including time for reviewing the document and gathering the data needed to complete the Cover Sheet. Send comments regarding this burden estimate to the U.S. Patent and Trademark Office, Chief Information Officer, Washington, D.C. 20231 and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Paperwork Reduction Project (0651-0027), Washington, D.C. 20503. See OMB Information Collection Budget Package 0651-0027, Patent and Trademark Assignment Practice. DO NOT SEND REQUESTS TO RECORD ASSIGNMENT DOCUMENTS TO THIS ADDRESS.

Mail documents to be recorded with required cover sheet(s) information to:
Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231

Correspondent Name and Address

Area Code and Telephone Number

410/354-9890

Name General Counsel

Address (line 1) ThermoChem Recovery International, Inc.

Address (line 2) 6001 Chemical Road

Address (line 3) Baltimore, MD 21226

Address (line 4)

Pages Enter the total number of pages of the attached conveyance document including any attachments.

16

Application Number(s) or Patent Number(s)

Mark if additional numbers attached

Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

Patent Application Number(s)

Patent Number(s)

08747581

5059404

5536488

5211704

60149797

5637192

5133297

5205728

60149870

5306481

5255634

5366371

If this document is being filed together with a new Patent Application, enter the date the patent application was signed by the first named executing inventor.

Month Day Year

Patent Cooperation Treaty (PCT)

Enter PCT application number only if a U.S. Application Number has not been assigned.

PCT US9203254

PCT US9209740

PCT

PCT US9304715

PCT

PCT

Number of Properties

Enter the total number of properties involved.

17

Fee Amount

Fee Amount for Properties Listed (37 CFR 3.41): \$ 680

Method of Payment:
Deposit Account

Enclosed Deposit Account

(Enter for payment by deposit account or if additional fees can be charged to the account.)

Deposit Account Number:

08-2550

Authorization to charge additional fees:

Yes No

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. Charges to deposit account are authorized, as indicated herein.

Randall C. Stephens

Randall C. Stephens

February 7, 2000

Name of Person Signing

Signature

Date

RECORDATION FORM COVER SHEET
CONTINUATION
PATENTS ONLY

Conveying Party(ies)

Mark if additional names of conveying parties attached

Enter additional Conveying Parties

Execution Date
Month Day Year

Name (line 1)

Name (line 2)

Execution Date
Month Day Year

Name (line 1)

Name (line 2)

Execution Date
Month Day Year

Name (line 1)

Name (line 2)

Receiving Party(ies)

Mark if additional names of receiving parties attached

Enter additional Receiving Party(ies)

Name (line 1)

If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)

Name (line 2)

Address (line 1)

Address (line 2)

Address (line 3) City State/Country Zip Code

Name (line 1)

If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)

Name (line 2)

Address (line 1)

Address (line 2)

Address (line 3) City State/Country Zip Code

Application Number(s) or Patent Number(s)

Mark if additional numbers attached

Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

Patent Application Number(s)

Patent Number(s)

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**Amendment No. 1
to
International Pulp and Paper
Licensing Agreement
By And Among**

THERMOCHEM, INC.

THERMOCHEM RECOVERY INTERNATIONAL, INC.

and

MANUFACTURING TECHNOLOGY CONVERSION INTERNATIONAL, INC.

THIS AMENDMENT NO. 1 executed on this 7th day of February, 2000 ("AMENDMENT"), amends the International Pulp and Paper Licensing Agreement dated June 10, 1998 ("AGREEMENT") by and among ThermoChem, Inc., a Maryland corporation having its offices at 6001 Chemical Road, Baltimore, Maryland 21226 (hereinafter referred to as "LICENSOR"), ThermoChem Recovery International, Inc., a Maryland corporation, having its offices at 6001 Chemical Road, Baltimore, Maryland 21226 (hereinafter referred to as "LICENSEE"), and Manufacturing and Technology Conversion International, Inc., a Maryland corporation having its offices at 6001 Chemical Road, Baltimore, Maryland 21226 (hereinafter referred to as "MTCI").

RECITALS

WHEREAS, LICENSOR has licensed from MTCI the rights throughout the world, excluding the country of India in the case of spent liquor processing and paper mill sludge waste gasification, to a novel thermochemical conversion apparatus technology and novel processes for steam reforming, pyrolysis, mild gasification, chemical recovery, and other endothermic chemical reactions for the processing of spent liquor and other biomass feed-stocks for chemical and energy recovery in pulp and paper mills, which are proprietary to MTCI and LICENSOR and which contain and include certain technical information, know-how, trade secrets and processes and apparatus technology, and for a portion of which MTCI has been issued or applied for Letters Patent in the United States and other countries, hereinafter, together with other matter described in the two succeeding clauses, collectively designated as the MTCI PROPRIETARY TECHNOLOGY; and,

WHEREAS, LICENSOR has also licensed from MTCI the rights throughout the world to a novel hybrid coal combustion technology specifically referred to as a pulsed atmospheric fluidized bed technology and novel processes for the efficient and cost-effective combustion of coal in an environmentally acceptable manner that is proprietary to MTCI and to LICENSOR and which contains and includes certain technical information, know-how, trade secrets as well as process and apparatus technology, and for a portion of which MTCI has been issued or applied for Letters Patent in the United

States and other countries, hereinafter, together with other matter described in the immediately preceding clause and the immediately succeeding clause, collectively designated as the MTCI PROPRIETARY TECHNOLOGY; and,

WHEREAS, LICENSOR has also licensed from MTCI the rights throughout the world to certain technologies for heating, drying, concentrating, and atomizing liquids and slurries by means of pulse combustion and fluidized beds that are proprietary to MTCI and to LICENSOR and which contain and include certain technical information, know-how, trade secrets and process and apparatus technology, and for a portion of which MTCI has been issued or applied for Letters Patent in the United States and other countries, hereinafter, together with other matter described in the two immediately preceding clauses, collectively designated as the MTCI PROPRIETARY TECHNOLOGY; and

WHEREAS, LICENSOR has invested significant efforts in commercial project development and applications engineering and now desires to bring the commercially feasible portion of the MTCI PROPRIETARY TECHNOLOGY to the commercial market and receive equitable and sufficient economic return on its investment of time, effort, money and ingenuity into said technology; and

WHEREAS, LICENSOR has licensed the use of the LICENSED PATENTS to LICENSEE for the field of use in pulp and paper mills, with certain rights to sub-license to others, worldwide with the aforementioned exception of India, as follows:

Some of the definitions referenced below in the recital of the license grant are provided here to facilitate the reader's understanding of the recital of the license grant. The reader should refer to the AGREEMENT for the actual definitions of each of the terms.

The FIELD OF USE by LICENSEE of the LICENSED TECHNOLOGY, as provided by the AGREEMENT, means all applications of the LICENSED TECHNOLOGY in pulp and paper mills, including but not limited to processing or recovery of SPENT PULPING LIQUOR, steam reforming of bark and other biomass materials, primary and ancillary sludge, toxic waste streams including, but not limited to, dioxin laden and chlorinated hydrocarbon containing streams, fossil or other fuels; generation of steam and/or electricity; drying or concentration of spent liquor or other fluids; causticization; or other energy generation, chemical processing, environmental remediation, or other processes in pulp and paper mills.

IMPROVEMENTS are any changes, improvements, or modifications in the LICENSED TECHNOLOGY affecting form, fit or function and relating to any improvements in fabrication, processes, assembly and installation or operation but not including any changes that are cosmetic in nature, as compared to the LICENSED TECHNOLOGY described in the AGREEMENT as of the date of the AGREEMENT, and

which are or could be the subject of continuations, continuations-in-part, or divisional applications stemming from any of the LICENSED PATENTS.

KNOW-HOW means proprietary and confidential technical information that LICENSOR has developed or acquired relating to the design, manufacture, maintenance and operation of equipment and/or processes or components or portions thereof according to MTCI PROPRIETARY TECHNOLOGY, LICENSED PATENTS, LICENSED EQUIPMENT and LICENSED PROCESS, whether patentable or not, including without limitation, operating procedures, plant shakedown and commissioning, engineering methods, production methods, performance data, test data, drawings, plans, specifications, techniques, methods, manufacturing drawings, processes, reports, pending proposals and other information as developed by or for or licensed to LICENSOR.

LICENSED EQUIPMENT means any and all products the manufacture of which would, but for the license granted herein, infringe one or more valid claims of an unexpired patent included in the LICENSED PATENTS, or which are covered by one or more claims of a pending patent application included in the LICENSED PATENTS.

LICENSED EQUIPMENT SYSTEM means the LICENSED EQUIPMENT and balance of plant, in assembled form, necessary to effect a LICENSED PROCESS. "Balance of plant" are those components of a LICENSED EQUIPMENT SYSTEM which are not LICENSED EQUIPMENT, but which are essential to practice the LICENSED PROCESS.

LICENSED PATENTS means those patents and applications for letters patent directed to any part of the MTCI PROPRIETARY TECHNOLOGY which are listed in *Exhibit A* to the AGREEMENT and any other patents and applications for letters patent covering IMPROVEMENTS, including continuations, continuations-in-part and divisional applications stemming therefrom and all U.S. and foreign patents which may be issued thereon; but limited to the FIELD OF USE in the LICENSED TERRITORY.

LICENSED PROCESS means any and all processes the practice of which would, but for the license granted herein, infringe one or more valid claims of an unexpired patent included in the LICENSED PATENTS, or which are covered by one or more claims of a pending patent application included in the LICENSED PATENTS.

LICENSED TECHNOLOGY includes LICENSED EQUIPMENT, LICENSED PROCESS, and KNOW-HOW and IMPROVEMENTS, in the FIELD OF USE in the LICENSED TERRITORY.

The LICENSED TERRITORY, which is the geographic territory within which the LICENSEE is licensed the rights to the LICENSED TECHNOLOGY under the AGREEMENT, is worldwide, with the exception of India where the FIELD OF USE shall exclude energy and chemical recovery from spent liquor by means of steam reforming and paper mill sludge waste gasification.

SPENT PULPING LIQUOR is defined as the process stream containing both organic and inorganic material extracted from the cooking of wood, bagasse, straw and other suitable vegetation as a source of fiber for paper making. SPENT PULPING LIQUORS include, but are not limited to, those resulting from the Kraft, Soda, Sulfite, Semi-chemical and other pulping processes and chemistries.

Subject to the terms and conditions of this AGREEMENT and subject to the rights of the U.S. Government, if any, in the LICENSED TECHNOLOGY, LICENSOR hereby grants to LICENSEE the following rights pertaining to the LICENSED TECHNOLOGY and IMPROVEMENTS thereto:

a) The sole and exclusive right and license to engineer, apply, manufacture, have manufactured for it by others, fabricate, assemble, sell, lease or lease to others the use of, sublicense (subject to Article 8 of the AGREEMENT), erect, install, service, maintain, and use the LICENSED TECHNOLOGY in the FIELD OF USE within the LICENSED TERRITORY, provided that LICENSOR retains the right to develop and engineer IMPROVEMENTS to and to otherwise meet its obligations to maintain and improve the LICENSED TECHNOLOGY.

b) The sole and exclusive right and license (with the right to sublicense) and obligation to use and display the legend: "Manufactured under License from Manufacturing and Technology Conversion International, Inc. (MTCITM) of Baltimore, Maryland, U.S.A." on every LICENSED EQUIPMENT and LICENSED EQUIPMENT SYSTEM nameplate, in a form and manner approved in writing by LICENSOR in advance of such use and display in the FIELD OF USE. LICENSEE shall be further obligated to use and display, and to require its sublicensees to use and display, an appropriate notice or legend identifying any applicable LICENSED PATENTS, in a form approved by LICENSOR. The use of the trademark referred to herein inures to the benefit of MTCI.

c) LICENSEE has the exclusive right to make any arrangements with third parties for the manufacture, fabrication, assembly, use, service, sale or applications of the LICENSED EQUIPMENT SYSTEMS and LICENSED EQUIPMENT in the FIELD OF USE in the LICENSED TERRITORY and to grant, subject to the limitations prescribed in Article 8 of the AGREEMENT, exclusive or non-exclusive sublicenses to

use the LICENSED PROCESS and the LICENSED EQUIPMENT and LICENSED EQUIPMENT SYSTEM or various identification legends or trademarks associated with the LICENSED EQUIPMENT and LICENSED EQUIPMENT SYSTEM in the FIELD OF USE in the LICENSED TERRITORY in connection with the use, application, sale, manufacture, fabrication or installation of the LICENSED EQUIPMENT and LICENSED EQUIPMENT SYSTEMS.

d) LICENSEE agrees that any products for use or sale within the United States embodying the LICENSED TECHNOLOGY or produced for use or sale within the United States through the use of the LICENSED TECHNOLOGY will be manufactured substantially in the United States, unless LICENSOR waives this requirement in writing upon a showing by LICENSEE that under the circumstances domestic manufacture is not commercially feasible. Any sublicenses to MANUFACTURING SUBLICENSES granted by LICENSEE that include the right to manufacture for use or sale within the United States will include this requirement unless LICENSOR waives this requirement in writing upon a showing by LICENSEE that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture in the United States.

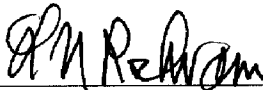
NOW IN CONSIDERATION OF THE MUTUAL COVENANTS of the parties hereto, and for good and valuable consideration the receipt of which is hereby acknowledged, it is hereby agreed as follows:

1. All terms not defined in this AMENDMENT, have the meanings given in the AGREEMENT.
2. The parties agree to file this AMENDMENT with the United States Patent and Trademark Office to record this AMENDMENT in order to give notice to the world that the LICENSED PATENTS are encumbered by the AGREEMENT and its grant of the license which is substantially recited above in the Recitals. Nothing in the Recitals, Section 1, and this Section 2 shall be interpreted as amending or otherwise altering the terms of the AGREEMENT.
3. The parties hereby agree to correct certain errors and update information in Exhibit A to the AGREEMENT by deleting Exhibit A and inserting therefor Exhibit A to this Amendment.

~~3.2. On page 4 of Exhibit A replace the entry "003913" under the column titled "NUMBER (Application Serial and/or Patent)" corresponding to patent identified as "MTC-28-P" with "_____".~~

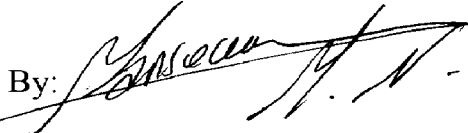
IN WITNESS WHEREOF the parties have executed this AMENDMENT in two (2) duplicate documents bearing the original signature to be effective on the day and year first above set forth.

WITNESS:

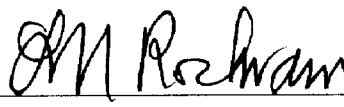


(SEAL)
Name: Leland N. Rocknam

LICENSOR
ThermoChem, Inc.


By: 
Name: Momtaz N. Mansour
Title: Chief Executive Officer

WITNESS

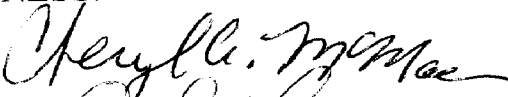
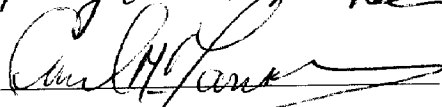


(SEAL)
Name: Leland N. Rocknam

LICENSEE
ThermoChem Recovery International, Inc.

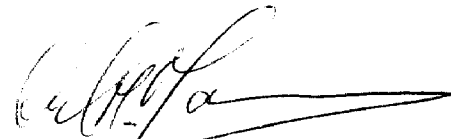
By: 
Name: Randall C. Stephens
Title: Vice President

WITNESS:

(SEAL)
Name: Cheryl A. McManes

MTCI
Manufacturing and Technology Conversion
International, Inc.

By: 
Name: Amal M. Mansour
Title: Chairman of the Board and
Chief Executive Officer

State of Maryland, Baltimore County, to wit:

I hereby certify, that on this 7th day of February, in the year 2000, before the subscriber, a Notary Public of the State of Maryland, in and for Howard County, personally appeared Momtaz N. Mansour, who represents that he has both the power and authority as Chief Executive Officer to execute this AMENDMENT on behalf of ThermoChem, Inc., A Maryland corporation, as its duly authorized and recognized representative and agent, and Randall C. Stephens, who represents ThermoChem Recovery International, Inc., and that he has both the power and authority as Vice President to execute this AMENDMENT on behalf of ThermoChem Recovery International, Inc., a Maryland corporation, as its duly authorized and recognized representative and agent, and Amal M. Mansour, who represents that she has both the power and authority as Chairman of the Board and Chief Executive Officer to execute this AMENDMENT on behalf of Manufacturing and Technology Conversion International, Inc., a Maryland corporation, as its duly authorized and recognized representative and agent, and acknowledge the foregoing AMENDMENT to be the respective acts of ThermoChem Recovery International, Inc., ThermoChem Inc., and Manufacturing and Technology Conversion International, Inc.

Notary Public
(SEAL)

Deborah Brewer

My Commission expires: 12/21/02

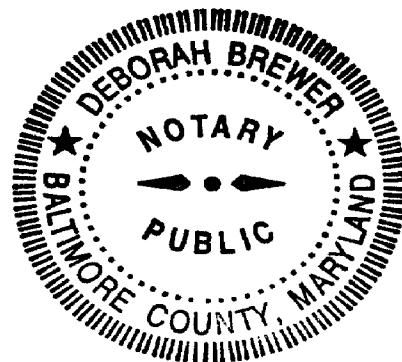


EXHIBIT A:**LICENSED PATENTS**

PATENT	COUNTRY	NUMBER	STATUS
MTCI-1 Indirectly Heated Thermochemical Reactor and Apparatus (omnibus patent)	United States of America	5,059,404	Issued 10/22/91
	Austria	ATE105.327T1	Issued 5/4/94
	Brazil	9000675-5	Pending
	Canada	1339018	Issued 3/25/97
	Denmark	DK/EPO383565	Issued 5/4/97
	EPO	EPO383565	Issued 5/4/97
	Finland	94462	Issued 9/11/95
	France	EPO383565	Issued 5/4/95
	Germany	P69008572.9-08	Issued 5/4/95
	Greece	3012801	Issued 5/4/95
	India	176028	Issued 12/23/95
	Italy	26121BE/94	Issued 5/4/95
	Japan	2.680.157	Issued 1/12/98
	Kazakhstan	5639	Issued 12/15/97
	Mexico	180256	Issued 11/29/95
	Netherlands	EPO383565	Issued 5/4/95
	Norway	178100	Issued 1/24/96
	Russia	2073064	Issued 9/18/97
	Spain	EPO383565	Issued 5/4/95
	Sweden	EPO383565	Issued 5/4/95
Switzerland	EPO383565	Issued 5/4/95	
United Kingdom	EPO383565	Issued 5/4/95	
Ukraine	93003238	Pending	

PATENT	COUNTRY	NUMBER	STATUS
MTC-1.Div.1 Indirectly Heated Thermochemical Reactor Apparatus and Method (Black Liquor)	EPO India Norway	93102400.4 735/DEL/93 95.1409	Pending Pending Pending
MTC-1.Div.1-FWC	United States of America	5,637,192	Issued 6/10/97
MTC-1.Div.2 (Steam Reformation)	United States of America India	5,306,481 736/DEL/93	Issued 4/26/94 Pending
MTC-1.Div.2cont. (General)	United States of America	5,536,488	Issued 7/16/96
MTC-1-Div.3	United States of America	08/747,581	Pending

atent	COUNTRY	NUMBER	STATUS
MTC-12 Pulsed Atmospheric Fluidized Bed Combustor Apparatus and Process	United States of America Australia Austria Belgium Bulgaria Canada Czech Republic Denmark EPO France Germany Greece Hungary India Italy Japan Mexico Poland Romania Russian Federation South Korea Spain Ukraine United Kingdom	5,133,297 661692 EPO581869 EPO581869 60725 2,108,893 2,898,843 EPO581869 EPO581869 EPO581869 P69205161.9 EPO581869 P9302974 P9302974 EPO581869 04.511415/92 183125 NR169798 9301417 2413111901/54 234782 EPO581869 93002336 EPO581869	Issued 7/28/92 Issued 11/21/95 Issued 9/27/95 Issued 9/27/95 Issued 2/13/97 Issued 9/30/97 Issued 1/19/99 Issued 9/27/95 Issued 9/27/95 Issued 9/27/95 Issued 9/27/95 Issued 9/27/95 Pending Pending Issued 9/27/95 Pending Issued 10/30/96 Issued 1/30/96 Pending Issued 1/27/97 Issued 9/18/99 Issued 9/27/95 Pending Issued 9/27/95
MTC-12-CIP	United States of America	5,255,634	Issued 10/26/93

atent	COUNTRY	NUMBER	STATUS
MTC-13 Process and Apparatus for Heating Fluids Employing a Pulse Combustor	United States of America	5,211,704	Issued 5/18/93
MTC-13-EPO	EPO Austria Belgium Denmark France Great Britain Germany Greece Ireland Italy Spain	93915114.8	Issued 12/8/99 (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid) (If all fees paid)

PATENT	COUNTRY	NUMBER	STATUS
MTC-14 Process and Apparatus for Utilizing a Pulse Combustor for Atomizing Liquids and Slurries	USA Brazil Canada Czech Republic Russian Federation EPO	5,205,728 P19206767.0 2,122,829 283728 2126114 92925167-6	Issued 4/27/93 Issued 11/25/97 Pending Issued 4/9/98 Issued 2/10/99 Abandoned 8/31/94
MTC-14-CIP T-Burner Atomizer	United States of America	5,366,371	Issued 11/22/94
MTC-25 Process and Apparatus for Drying and Heating	United States of America India Australia Brazil Canada China Czech Republic EPO Indonesia Japan Mexico New Zealand Poland Russian Federation Slovenia Turkey Ukraine	5,638,609 2474/DEL/96 705548 9611713 2237593 96199620.x PCT/US96/18193 96940781.6 P-980679 519037/1997 983763 323739 P326607 PCT/US96/18193 96940781.6 TRL199800846B 98062902	Issued 6/17/97 Pending Pending Pending Pending Pending Pending Pending Pending Pending Issued 3/19/99 Pending Pending Pending Issued 12/17/98 Pending
MTC-25-DIV	United States of America	5842289	Issued 12/1/98

PATENT	COUNTRY	NUMBER	STATUS
MTC-28-P Waste Conversion Process Using a Two Stage Steam Reformer	United States of America		Abandoned
MTC-38-P Thermoelectrical Process & Apparatus	United States of America	60/149797	Pending
MTC-39-P Pulse Combustor and Gas Turbine Combination	United States of America	60/149870	Pending