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2007 R&D 100 Early Bird Entry

Acoustic Door Latch Detector (Smart Latch™)

Robert F. Eakle, Jr., Principal Investigator

Acoustic Door Latch Detector (Smart Latch™)

Robert F. Eakle, Jr., Principal Investigator

On the cover:
The Smart Latch™ uses neural network technology to acoustically monitor lock performance, providing an immediate alert if a door malfunctions or is not closed and latched within a set time.

1. **Organization Name:** Washington Savannah River Company
   Address: Savannah River National Laboratory, Building 723-A
   City/State/Zip/Country: Aiken, SC 29808 (USA)
   Submitter's name: Robert F. Eakle, Jr.
   Phone: 803-725-8764
   Fax: 803-725-9753
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   Affirmation: I affirm that all information submitted as a part of, or supplemental to, this entry is a fair and accurate representation of this product.

   Submitter's signature: _____

2. **Joint entry with:**
   Address:
   City/State/Zip/Country:
   Submitter's name:
   Phone:
   Fax:
   Email:

3. **Product Name:** Acoustic Door Latch Detector (Smart Latch™)

4. **Briefly describe (25 words or less) what the entry is.**

   Smart Latch™ is an inexpensive, electronically enhanced door lockset utilizing neural network technology to assure latch and lock performance and alarm on failures.

5. **When was this product first marketed or available for order?**
   First available for license November 21, 2006.

6. **Inventor or Principal Developer:** Robert F. Eakle, Jr.
   Position: Principal Engineer
   Organization: Washington Savannah River Company
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   Fax: 803-725-4478
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7. **Product price:** $30 to $50 (estimated - mass production consumer lockset)

8. **Do you hold any patents or patents pending on this product?** Yes ☒ No ☐
   A provisional patent application was filed October 13, 2006.

9. Describe your product's primary function

The Smart Latch™ is an electronically enhanced door lockset device for industrial and consumer applications, which uses existing neural network technology to analyze the sequence, timing, and acoustic signatures associated with lockset functions and provides immediate indication of failure to correctly lock and latch. It essentially "listens" to and learns the sequences and acoustic signatures associated with lockset function and latching. When triggered by specific door activity the Smart Latch™ begins analyzing sequences, frequencies and other parameters. With a satisfactory outcome the device provides positive feedback (*e.g.* visual and/or audible) and returns to a "sleep" state awaiting the next activity. If any part of the normal door operation, including latching and length of time, are incorrect various alarm signals can be generated.

With electronics and 5+ year battery integrated, the device is simple to install and transparent to the user. Because the device uses proven voice recognition algorithms, it could meet or exceed the performance of the human ear in detecting the unique and complex acoustic signature associated with a properly operating and secured door. Unlike existing technologies, such as limit switches, it is not easily spoofed or defeated and has a high level of immunity to interference. The Smart Latch™ technology can be integrated into existing lockset and door hardware designs, including both low price consumer products and high end electronic/cipher locks.

The concept and design are based on a simple security industry adage: "It isn't locked if it isn't latched." Even the most elaborate and robust security barriers are of little use if the locking and latching mechanisms are not properly functioning and engaged. Smart Latch™ provides automatic verification of the first and most important step in facility security: Close and properly latch doors and barriers. It is a compelling product for households with children, elderly, or high traffic areas such as an office where a properly closed and latched door is essential for security and safety. In an age of ever increasing security concerns and limited human resources, Smart Latch™ can be a significant addition to the $20 billion plus industrial and consumer lockset market.

The Smart Latch™ is unique because: 1) as an inexpensive, battery powered, stand-alone device or as integrated into any standard consumer lock set, the device uses neural network technology to analyze the acoustic signatures associated with normal door operation and generates an alert if a door is not latched correctly and within a set amount of time. 2) It is not easily spoofed or defeated. 3) Installation, setup, and use are simple.

Figure 1 Door mounted prototype Smart Latch™ device.

Smart Latch™ Design and Operation

The device consists of electronics and a battery integrated into an enclosure which may range from a simple mounting case to a full door lockset. The electronics, including battery, in most cases will require a volume of about 2 cubic inches and would be concealed and protected in the lockset or separate case. Battery life will vary depending on the frequency and length of alarms that occur, but it is expected to be 5 to 10 years in a typical application. Every application would incorporate essentially the same electronics, however it may be desirable in some cases to have the Smart Latch™ installed as an addition to an existing and satisfactory door lockset and thus the simple, separate mounting case. Regardless of the configuration, installation normally would be no more complex than installing a typical door lockset. The result is a reliable, low profile or concealed device which will deliver the desirable functions of the Smart Latch™ previously described.

The electronics consist of a commercial neural network processor with custom software, microcontroller, event sensor, and various alarm features. Figure 2 provides a block diagram showing the most basic interaction of these subsystems.

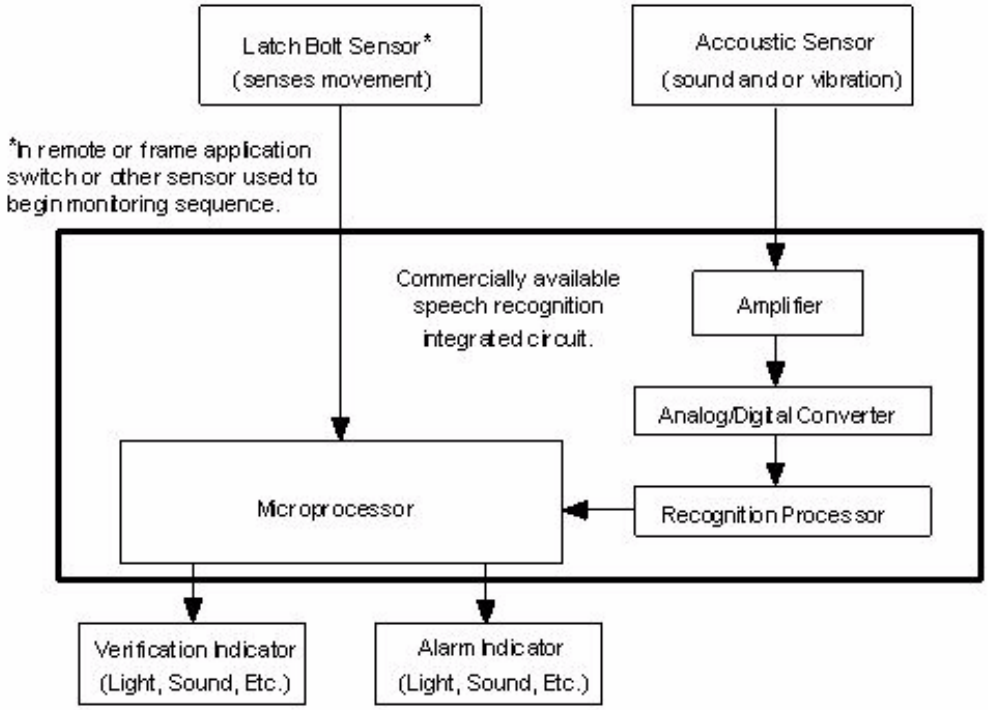

Figure 2 Basic Block Diagram of Smart Latch™ electronics.

The existing embodiment of the device uses the Sensory Incorporated VR Stamp™ voice recognition module to learn and recognize acoustic events related to lock and latch functions. The module is configured in a "speaker independent" mode which normally allows recognition of various human voices, but also works well for acoustic signatures associated with mechanical systems. The VR Stamp™ , when implemented with Sensory Inc. proprietary software, acts as an 8 bit microcontroller for system functions (*i.e.* logical sequences), a signal conditioner (receiving, amplifying, filtering signals), and neural network recognition processor. It was chosen for ease of application. However, an optimized design would most likely use an application specific configuration of the Sensory, Inc. technology to minimize part count, size and cost.

External to the recognition module are switches, acoustic sensor, and indicators. Typically there would be three switches in the circuit: “train”, “reset”, and “latch bolt.” The train switch is manually operated after the Smart Latch™ is installed to begin listening as the door and lockset are cycled several times in a normal fashion. The training cycle itself ends automatically with an indication to the operator. The switch is a fully recessed momentary type that only requires a single push with a small instrument, such as a pencil tip, to begin the training cycle. It is located on the Smart Latch™ interior or secured side of the door. The reset switch is also momentary, recessed and located on the interior or secured side. It is used to clear persistent alarms and stored acoustic information. This function would be used to disable the Smart Latch™ in the event of system malfunction or if door monitoring is undesired. The latch bolt switch detects the movement of the lockset bolt indicating that the door may not be secure. Detection of bolt movement begins the normal logic and recognition sequence. If, after detection of the bolt movement, the lockset and door are not properly latched and secured an appropriate alarm would be generated. An acoustic sensor, generally consisting of a piezoelectric transducer, provides a signal to the recognition module where it is amplified and then analyzed or stored by the processor. This sensor is in use during training or when the system is monitoring activity triggered by the latch bolt switch. In a basic configuration there is a red and a green LED indicator on the Smart Latch™ . The red LED is used to indicate alarm, power on (after battery install or reset), or training error. The green LED indicates satisfactory lock/latch, power on, or successful training. Specific applications and value added features may incorporate additional numbers and types of switches, sensors and indicators, including audible and contact closure alarms.

Figure 3 shows an early prototype of the Smart Latch™ configured to magnetically mount on a door frame. This particular prototype is very rudimentary and requires manual triggering of the lock and latch recognition sequence. Additional switches and indicators are used to trigger and monitor the mostly manual operation. The prototype was used as a proof of concept device.

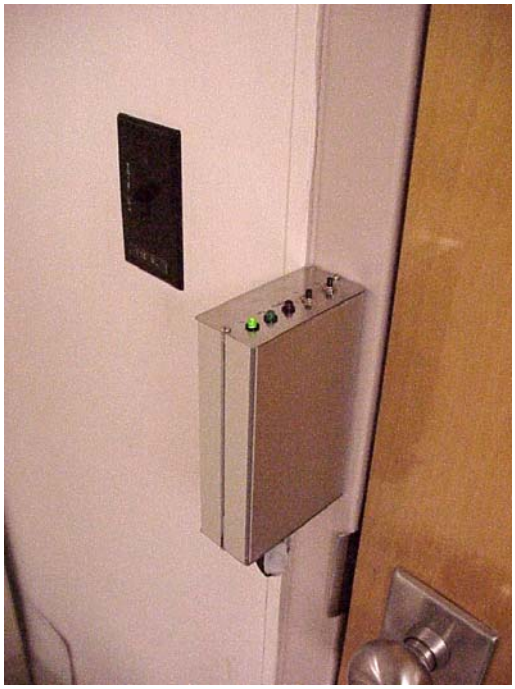

Figure 3 Manually activated, proof of concept prototype Smart Latch™ device.

Embedded software (sometimes referred to as firmware) controls the logical sequences and recognition parameters associated with operation of the Smart Latch™. This is key to the operation and performance for any specific application or special features of the device. It is developed on a personal computer system using Sensory Incorporated propriety algorithms, C programming language and third party software compilers. Normally the software would be loaded into the Smart Latch™ once and never changed, however provisions can be made to allow future upgrades via an optional communication port. The most basic steps of the software, excluding the recognition algorithms, are as follows:

power on
blink GRN and RED LED 5 times
goto sleep wait for SW1
SW1 (train button)
turn on GRN (train LED)
listen for lockset sequence for 10 sec
if no signal or error then blink RED 3 times then ret to power on
if lockset sequence then listen again for lockset sequence
if no error then blink GRN 3 times or else ret to power on

Lockset Mode
Sleep and Wait for Latch Bolt
On Latch Bolt wake up, flash RED LED continuously and listen for 15 sec
If no lockset sequence or incorrect signal after 15 sec then flash RED and other alarms (audible, etc.)
Continue RED flash and other alarms until lockset OK or TRAIN or RESET
If Lockset sequence OK and within 15 sec flash GRN LED 2 times
Go back to Lockset Mode

END

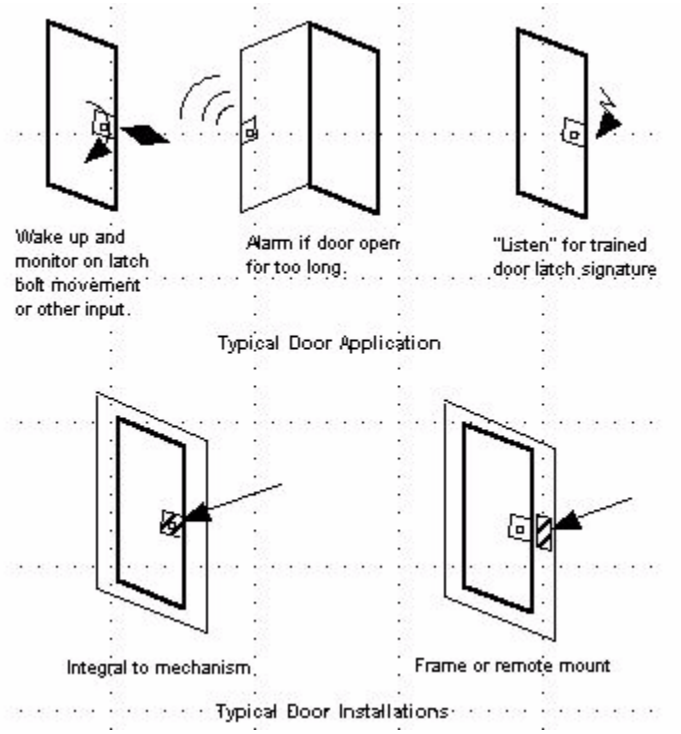

Figure 4 Smart Latch™ Operation and installation examples

Installation, setup and use of Smart Latch™ is simple. For the lockset version of the technology, installation is essentially the same as any off-the-shelf lockset and requires only standard tools. Once in place the user presses the concealed "train" button and twice (may vary) closes the door in a normal fashion. The lockset then stores these signatures in memory and flashes (or beeps) indicating successful training. Installation and setup are then complete. In normal use the device is transparent, however if the door remains open for too long or is not properly latched, an audible and/or visual alarm is generated.

10a. List your product's competitors

To the best of our knowledge and according to our research sources (The Freedonia Group, World Security Equipment to 2008, *et al.*) there are no competing products similar to Smart Latch™. The current spectrum of lockset, locks, and door hardware manufacturers offers a variety of technologies ranging from simple mechanical devices to complex biometric and RF ID tag readers. These devices have various identification functions, time out features, and multiple failure lock out (too many attempts by user). However, aside from basic limit switches they do not possess any internal analytical or cognitive capability that could determine proper function and verify the actual locking and latching event. The Alarm Lock™ Model PG30 and Kouba Systems LDA9621 devices represent commercially available door lock alarm and tamper detection systems. While they are robust and have timeout features, they rely on magnetic and various switch inputs which can be defeated or spoofed. Neither system can verify that the actual mechanical system has performed it's functions correctly. These two products are excellent examples of devices that can be improved by incorporating Smart Latch™ technology into their current design.

10b. Comparison Matrix

Table 1 compares Smart Latch™ with the competing technologies, feature by feature.

Table 1. Smart Latch™ Comparison Matrix

Feature	Smart Latch™	Alarm Lock™ Model PG30	Kouba Systems LDA9621	Smart Latch™ Competitive Advantage
Stores acoustic signature of proper lockset function	Yes	No	No	Stores multiple acoustic signatures associated with door/lockset function
Analyzes in detail the sequence of open, close, and latching	Yes	No	No	Monitors and identifies incorrect open, close, and latch sequences and their timing – alarm on error
Neural network for recognition of actual latching event	Yes	No	No	Analyzes the unique and complex acoustic signature associated with an actual and correct latch event
Alarm (visual/audible) on failure to latch	Yes	Audible	Yes	Visual and audible alarms various effects (blinking, etc.) possible
Verification (visual/audible) of proper lock/latch	Yes	No	If specifically wired	Visual and audible alarms various effects (blinking, etc.) possible
Difficult to spoof due to acoustic recognition	Yes	Can be defeated mechanically, megnetically	Can be defeated mechanically, magnetically, electrically	No accessible switches or sensors to defeat. Relies on high integrity acoustic signature

Feature	Smart Latch™	Alarm Lock™ Model PG30	Kouba Systems LDA9621	Smart Latch™ Competitive Advantage
Re-trainable for changing hardware and conditions.	Yes	Only mechanical changes possible	Only mechanical changes possible	Can be re-trained to accommodate changes that may affect acoustic signature (i.e. door wear, remodeling, etc.)
Integrates into existing lockset products and designs or stand alone operation.	Yes	No	No	Smart Latch™ can be a stand-alone product or integrated into existing locks and door hardware
Self-contained, wiring not required.	Yes	Yes	No	Indicators, alarms, 5+ year battery are integral. External alarms connections (contact closure) possible
New and compelling product for industrial and consumer markets	Yes	No	No	Smart Latch™ is new and unique in the security and lockset industry. Can add value to matured lockset designs

10c. Describe how your product improves upon competitive products or technologies

There does not appear to be a technology similar to Smart Latch™ at this time. Existing methods and technology rely on electric limit switches or manual (*i.e.* human) checks of door and lock security. Limit switches only verify that a door or, more specifically, the switch is in a particular position and not that it is latched. These also can be spoofed and defeated in various ways, including tape, magnets, *etc.* Any intelligence associated with a switch is generally a time out function which only indicates that the switch has not been returned to a specific position in an allotted time. Human verification of door security ranges from unreliable (consider a busy office or household) to time consuming and expensive if paid staff is utilized. Heighten sensitivity to the need for security, indicates a need for increased accuracy. Even in low wage countries where the use of sizable human security guard forces is cost effective, the Smart Latch™ can help eliminate human errors.

In contrast to other technologies, Smart Latch™ is a self-contained device that analyzes the sequence, timing, and acoustic signatures associated with lockset function and provides immediate feedback via visual and/or audible indications. It is very difficult to spoof Smart Latch™ because it relies on a unique set of acoustic signatures associated with correct operation of the locking/latch system. The neural network technology provides high reliability in detecting security failures while minimizing false alarms.

Smart Latch™ offers a truly new and unique feature to the spectrum of consumer and industrial locksets. Industry research (The Freedonia Group, *et al.*) indicates that demand for locking devices will expand 6.6 percent per annum through 2008 to $20.6 billion. The same research shows that profits will be fueled by a shift in product mix to higher-end locks incorporating electronic components and other value added features. Smart Latch™ can be integrated into existing product lines or developed as a stand-alone device. Therefore, it has potential to be a significant addition this every expanding industry.

11a. Describe the principal applications

Smart Latch™ can provide an additional level of security at any facility, government, industrial, private, that requires locked and secured doors or barriers. Examples include offices, homes, hospitals, government buildings, and storage facilities. Typically these types of applications rely on limit switches monitored from a

central location, security guards, or employees to lock and latch doors and other barriers. Often this approach fails resulting in security compromises and loss of actual and intellectual properties. Application of Smart Latch™ provides continuous monitoring of door and/or lockset security and automatically verifies the important functions of closing, locking, and latching. Failure of a lockset or door/barrier hardware will be detected by Smart Latch™ and result in an alarm condition.

11b. List all other applications

Smart Latch™ can be implemented in nearly any situation where a secured mechanical connection can be monitored and verified using acoustic signatures. Typically Smart Latch™ would be associated with a facility door, however there is potential for use with storage cabinets, safes, padlocks, cargo hatches, vehicle doors, trailers, *etc*. These applications could see the device mounted in an independent case or integrated into a variety of container and facility locking devices.

12. Summary

Safety and security related products have become an import part of life and represent a large and growing industry. Smart Latch™ is a new and unique concept in this field that can enhance existing locksets, barriers, and closure mechanisms or act as a stand alone device to add an almost human-like security verification. Using neural network acoustic signature recognition, timing and sequence logic, the device provides a high level of assurance that a facility or enclosure in not just locked, but locked and latched properly.

Smart Latch™ is expected to be moderate in cost when manufactured in bulk quantities similar to home smoke detectors. Integrated into a lockset the technology may add approximately $30 (very rough estimate) to the product cost, yet the value added could be several times that amount. For example: A high end electronic cipher lock retails for $300-500, but with the $30 Smart Latch™ added the same lock might gain $200 in perceived value. Indeed, one breech of building security could cost thousands or millions of dollars versus the small initial cost of a lock equipped with Smart Latch™.

According to Freedonia Group research: "Global demand for locking devices (other than automotive and furniture types) is forecast to expand 6.6 percent per anum through 2008 to $20.6 billion. A minimum $28.3 billion market in locks is forecast for 2013. Profits will be fueled by a shift in the product mix to higher end locks incorporating electronic components and other value-added features. Greater security awareness and reduced reliance on manned security will increase demand. ….door locks account for the vast majority of demand, especially in dollar amount…."

Smart Latch™ is a timely and useful technology that can be brought into production quickly after further refinements. It uses existing state-of-the art technology and can be implemented in many consumer and industrial applications for moderate cost. Payback to the end user is enhanced safety and security and potential savings by reduced insurance cost and loss of property.

13. Contact person to handle all arrangements on exhibits, banquet, and publicity.

Name:	Joseph P. Dugan, Jr.
Position:	Program Manager C
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Phone:	803-725-0848
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Appendix A
List of Supporting Documentation

1. Acoustic Door Latch Detector Contaminant Extractor (Smart Latch™) (Washington Savannah River Company Technology Brief)
2. *FedBizOps/ Commerce Business Daily* November 21, 2006
3. Acoustic Door Latch Detector (Smart Latch™) patent application filing receipt

SRNL™ techbriefs

SAVANNAH RIVER NATIONAL LABORATORY

Acoustic Door Latch Detector

(Smart Latch™)

A "smart" door lock for industrial and consumer applications has been developed by researchers at Washington's Savannah River National Laboratory (SRNL) which uses existing state-of-the-art neural network technology to acoustically monitor lock performance and in particular the latching event.

Eliminates failure to properly latch doors

Properly implemented, the device could meet or exceed the performance of the human ear in detecting the complex acoustic signature associated with a properly secured door. Smart Latch™ is a compelling product for households with children, elderly, or high traffic areas such as an office where a properly closed and latched door is essential for security and safety. As an inexpensive, battery powered, stand-alone device or as integrated into any standard consumer lock set, the device instantaneously analyzes the acoustic signatures associated with normal door operation and generates an alert if a door is not latched correctly and within a set amount of time. It is not easily spoofed or defeated.

Initial testing promising

Physically the technology and battery would occupy approximately one cubic inch of space, and therefore could be easily integrated into many existing lockset designs. Depending on several factors, battery life should be approximately 5 years.

at a glance

- detects complex acoustic signature of a properly closed door
- simple installation, setup, and use
- stand alone device or can be integrated into any standard consumer lock set
- device transparent in normal use
- not easily spoofed or defeated
- u.s. patent pending

Initial testing promising

Installation, setup, and use are simple. For the lockset version of the technology, installation is essentially the same as any off-the-shelf lockset, and requires only standard tools. Once in place the user presses a concealed button and twice closes the door in a normal fashion. The lockset then stores these signatures in memory and flashes (or beeps) indicating successful training. Installation and setup are then complete. In normal use the device is transparent, however if the door remains open for too long or is not properly latched an audible and/or visual alarm is generated.

Technology transfer

Savannah River National Laboratory is the applied research and development laboratory at the Savannah River Site (SRS). With its wide spectrum of expertise in areas such as homeland security, hydrogen technology, materials, sensors, and environmental science, SRNL's cutting-edge technology delivers high dividends to its customers.

SRNL and SRS are managed for the U.S. Department of Energy by Washington Savannah River Company (WSRC). WSRC is responsible for transferring technologies to the private sector so that these technologies may have the collateral benefit of enhancing U.S. economic competitiveness.

Partnering opportunity

A U.S. patent application has been filed on the Smart Latch™ apparatus and method.

Washington Savannah River Company (WSRC) invites interested companies with proven capabilities in this area of expertise to enter into a licensing agreement with WSRC to manufacture and market this device as a commercial product. Interested companies will be requested to submit a business plan setting forth company qualifications, strategies, activities, and milestones for commercializing this invention. Qualifications should include past experience at bringing similar products to market, reasonable schedule for product launch, sufficient manufacturing capacity, established distribution networks, and evidence of sufficient financial resources for product development and launch.

for more information

Joseph P. Dugan, Licensing Executive

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http://srsnl.doe.gov

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06H00017-09

FedBizOpps/Commerce Business Daily - 11/21/2006

Classification: Alarm, Signal, and Security Detection Systems
Type: Procurement
Subtype: Supplies, Equipment and Material
Agency: Department of Energy. Westinghouse Savannah River Company (DOE Contractor). Savannah River Site.
PO Box A
Aiken, SC, 29802, UNITED STATES
Title: ACOUSTIC DOOR LATCH DETECTOR LICENSE RIGHTS
COS Bookmark URL: http://fedbizopps.cos.com/cgi-bin/getRec?id=20061121a287

Synopsis:

Solicitation Number: Reference-Number-11202006-1
Due: 12/19/06 **Point of Contact:** Joseph Dugan, Technology Commercialization, Phone 803-725-0848 or 800-228-3843, Fax 803-725-4988, Email joseph.dugan@srs.gov - Eric Frickey, Technology Transfer, Phone (803) 725-0406, Fax (803) 725-4988, Email eric.frickey@srs.gov Washington Savannah River Company (WSRC), managing contractor of the Savannah River Site for the Department of Energy, solicits expressions of interest from companies wishing to obtain license rights to market and distribute the following technology to commercial customers. License rights may be granted on an exclusive or nonexclusive basis and may include specific fields of use. WSRC also may be available to assist in further research and development of the technology under a cooperative research and development agreement and/or may provide technical assistance during commercialization of the technology under a license agreement. The technology is a ?smart? door lock for industrial and consumer applications, which uses existing state-of-the-art neural network technology to acoustically monitor lock performance and in particular the latching event. The device instantaneously analyzes the acoustic signatures associated with normal door operation and generates an alert if a door is not latched correctly and within a set amount of time. Any company interested in licensing this technology must respond with a letter of interest (may be submitted by email) no later that 30 days from the publication date of this Notice summarizing the company?s business and technical expertise and motivation for pursuing this opportunity. Qualified companies will be provided with further information on the technology. Such information may require an executed nondisclosure agreement. Respondents wishing to enter into negotiations for a license will be required to submit a business plan prior to licensee selection and negotiations. Company qualifications should include, but not be limited to, evidence of successful commercialization of compatible product lines, sound product develop plan, reasonable schedule for product launch, sufficient manufacturing capacity, global distribution networks, evidence of sufficient financial resources for product development and launch. Questions and expressions of interest may be addressed to the Point of Contact identified in this Notice. This is not a procurement; it is a request for parties

interested in licensing opportunities only. Point of Contact: Joseph P. Dugan, telephone (803) 725-0848 or (800) 228-3843, Fax: (803) 725-4988, e-mail: joseph.dugan@srnl.doe.gov , or address: Washington Savannah River Company, Building 773-41A #243, Aiken, SC 29808.

Additional Information: click here

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY.DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
60/851,575	10/13/2006		200	WSR-103-P (SRS 06-032)	2		

CONFIRMATION NO. 7148

CORRECTED FILING RECEIPT

OC000000021370016

44728
J. BENNETT MULLINAX, LLC
P. O. BOX 26029
GREENVILLE, SC 29616-1029

Date Mailed: 11/27/2006

Receipt is acknowledged of this provisional Patent Application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Robert F. Eakle JR., New Ellenton, SC;

Power of Attorney: The patent practitioners associated with Customer Number **44728**.

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: Not applicable

Early-Publication Request: Not applicable

Title

Door latching recognition apparatus and method

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the

filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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