FERMINEWS

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SUPERCONDUCTING MAGNET AWARDED PATENT

A superconducting magnet developed by scientists at Fermilab has been awarded U.S. Patent 4,189,693.

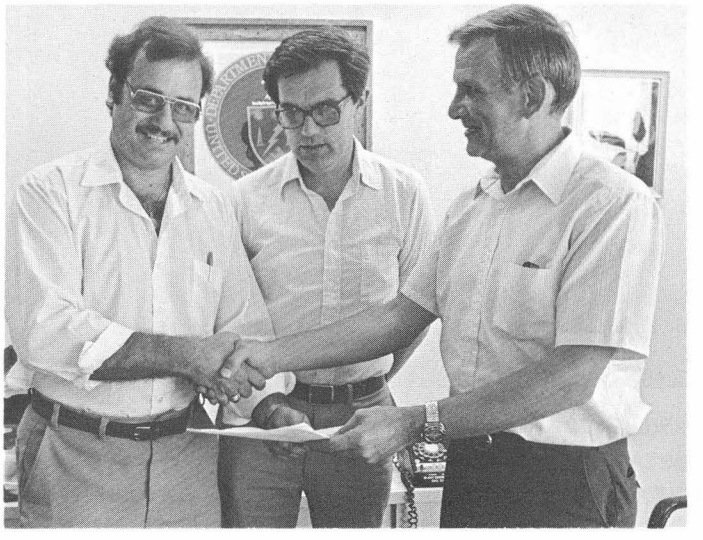
The inventor is John A. Satti, a project engineer with the Satellite Refrigeration Support Group, Energy Saver Division. The assignee is the United States of America as represented by the U. S. Department of Energy.

The magnet was designed to meet the rigorous demands of beam lines. One is installed in the Proton West high intensity secondary beam line. The four-foot-long dipole prototype magnet can reach a field strength of 4.2 tesla at 210 amperes. It has a six-inch diameter bore tube.

Essentially it is a low-current unit that has good cryogenic stability, explained Satti. One of the unique features of this magnet, one that helped earn its design a patent, is that it's constructed with an insulated strand cable. This was done to create what Satti calls a sponge-like coil containing many small grooves through which liquid helium can flow, absorbing any heat generated in the coils. The liquid helium is in intimate contact with the superconducting wires, considerably enhancing the cryogenic stability of the magnet.

"The low current configuration is achieved by winding the coil with the cable consisting of 15 electrically insulated strands which are ultimately connected in series," said Satti. "The insulated cable concept also leads to an ideal quench protection by induction coupling. This coil protection works automatically and does not rely on mechanical or electronic devices. This method built in the coil is used to deposit the energy evenly through the coil in case the conventional parallel resistor method fails. Recent tests on coil number three showed the induced coupling to be very effective."

Because the magnet draws low current--an extremely attractive feature-- the refrigeration load on it (and the other magnets that eventually will come) is much less than for magnets that require higher currents. Most refrigeration is lost through the leads that carry current to and from the magnets. The greater the current, the hotter the leads get. Consequently, more refrigeration is required to cool them. Since a secondary beam line has many pairs of leads, the low-current feature is quite important.



John Satti (left) receives congratulations from Andy Mravca (right), area manager of the Batavia Area Office of the Department of Energy. Observing is Linc Read, Fermilab patent officer.

Satti began working on the design of a secondary beam line magnet in the fall of 1975 following a series of meetings by Fermilab scientists about the demanding conditions such a magnet needed to meet. He was head of the Cryogenic Support Group, Neutrino Department, at the time.

After one year, he joined the Proton Department as leader of the Superconducting Magnet Group. Most of the work was done on the magnet during the four years he was with the Proton Department. In January of this year, he was transferred to the Energy Saver Division.

Satti has been with Fermilab since Jan. 1, 1968. He is employee number 72.

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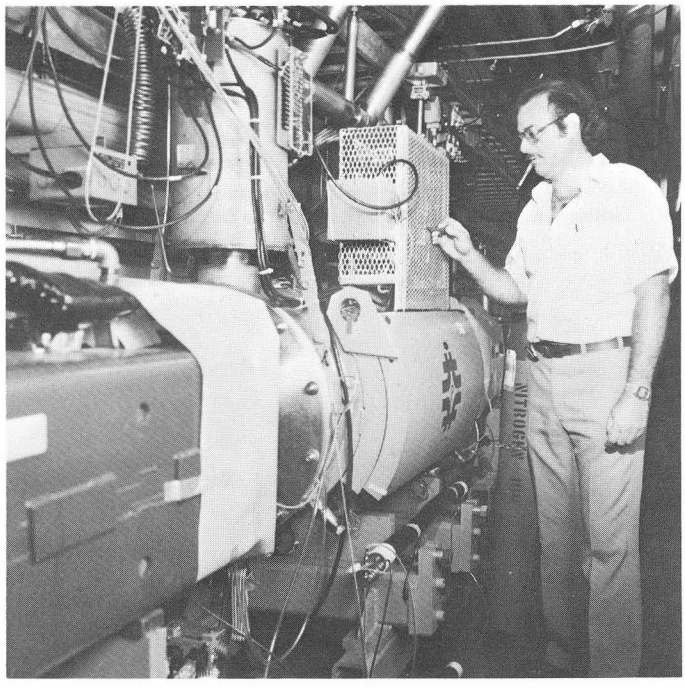

John Satti with the superconducting magnet installed in the Proton West high intensity secondary beam line.

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The patent for this superconducting magnet was first applied for on Jan. 3, 1977. It was issued Feb. 19, 1980, but it was not until early last month (July) that the final details had been cleared.

Although technological achievements at Fermilab have been the source for a number of patents, this has been the first one issued for a superconducting magnet.

"Superconducting magnets of various kinds must be constructed so that they are not destroyed by the electrical energy that must be dissipated when they are quenched," said Satti. "Such coils must also be built to withstand the extremely large forces that are generated by interactions among parallel currents of large values.

"Superconducting magnets intended for use in particle accelerators, in addition, must be able to dissipate the deposited energy that is associated with the presence of occasional stray particles of high energy. This heat, of course, must be absorbed by the cooling system in such a manner that the magnet does not quench--lose its superconducting ability. This magnet's coil and overall design makes it ideal for beam line use."

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FERMILAB'S TUITION REIMBURSEMENT PROGRAM

Fermilab provides extensive employee educational development through its tuition reimbursement program.

It's available to all full-time employees and pays 100% of the tuition, required fees (except late and parking fees) and required books and supporting materials. The courses and degree majors should be related to the job an employee is now working at or to one to which he or she aspires in the future at Fermilab.

An employee who is interested should complete an educational support request, then have it approved by his supervisor. The form should be forwarded to Ruth Christ, in Personnel, mail station 124, CL15-E.

"Now is the time to consider how the wide variety of courses available in the many colleges and universities in this area may fit into your needs and goals," said Christ. "Almost every conceivable kind of course is offered somewhere in the Chicago area, particularly in community colleges, vocational schools, colleges, universities and public-school extension divisions."

Contact Christ at Ext. 3793 for additional information.

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CHEZ LEON MENUS

Tuesday, August 12 - 7:30 p.m. - $9.00

Cream/cucumber and walnut soup
Filet of Pork w/prunes & cream sauce
Broccoli braised w/white wine
Swiss Rosti
Fresh tomato salad w/fresh basil dressing
Cream puffs stuffed w/fresh blueberries, creme chantilly

Wednesday, August 13 - 12:30 p.m. - $4.50

Fresh summer vegetable soup
Crepes stuffed w/ham & mushroom & cream madeira sauce
Fresh salad of the season
Viennese custard

Thursday, August 14 - 7:30 p.m. - $9.00

Caponata
Barbecued loin lamb chops
Fresh green beans w/lemon sauce
Dilled julienne of carrots
Fresh salad of the season
Souffle glace au grand marnier w/fresh raspberries

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FERMILAB DRIVERS TO
GET GAS-SAVING TIPS

Fermilab drivers will soon have the chance to learn how to improve their driving so they can save gasoline as well as wear and tear on their vehicles.

It's all part of a nationwide Driver Energy Conservation Awareness Training (DECAT) program sponsored by the Federal Energy Management Program of the Department of Energy with the help of the General Services Administration and a number of DOE facilities, including Fermilab. Seven Fermilab employees recently completed an instructors' training course given by the GSA. The course included classroom study at Fermilab as well as driving specially-equipped vehicles on and off site.

Participating in this initial phase of the GSA-DECAT program were Jim Smith, Jan Burdick and Bob Scherr, all of the Safety Division, and John Colson, Ray Lewandowski, George Davidson and Jack Riffell, all of Support Services. In the second phase of this program, they will in turn teach Fermilab employees how to drive with fuel economy in mind.

The training sessions will begin this fall, said Colson, head of Support Services. The first employees taught will be those who regularly drive government vehicles. Then the sessions will be opened to all employees on a voluntary basis. Class size has to be limited, Colson explained, because Fermilab will have only two vehicles that have been equipped with special instruments.

This equipment includes a system that tells the driver the number of miles per gallon the car is consuming at any moment. It also includes a trip gauge that precisely records the number of miles traveled. The third special item is a vacuum gauge that informs the driver of the vacuum in the engine. The more open the throttle, the less the vacuum, explained Davidson, foreman of Vehicle Maintenance.

All of this data, properly interpreted, gives a driver a good idea of how he is handling his car at any particular moment, said Colson. He added that many drivers who believe they are expert and experienced will be surprised to find out they can learn a lot in a course such as this. Colson further said that they should not feel offended if they take this course, rather they should look on it as a valuable opportunity to learn how to be even safer and more economical drivers.

GSA-DECAT participants (L-R) are Bob Scherr; Thomas Pokaopinski, operations specialist with the GSA who assisted Roger Willadsen (fourth from left); Ray Lewandowski, George Davidson, Jack Riffell, Jim Smith, Kris Mathers, Kankakee Community College; Bob Wendt, project manager, Batavia area office, DOE; Frank J. Grabowski, chief of security, Illinois Department of Correction; John Colson; and Karel Klima, Chicago Operations and Regional Office, DOE. Not shown are Jan Burdick; Henry P. Kelley, assistant chief of engineering, Illinois Youth Center, St. Charles; and Mike Klimas, conservation program specialist, DOE, Chicago. Willadsen is handing Wendt a certificate of completion.

The phase I course also was attended by three employees of the state of Illinois, two from the DOE and one from the GSA, for a total of 13.

Roger Willadsen of the GSA, Region 5, Motor Equipment Division, Chicago, taught the course.

"It was decided that the individual driver would be the person to approach for a very real savings in fuel," said Colson. "With that belief and on the basis of tests and evaluation, it was felt that a program be tried to see if it could actually teach a large segment of people to drive for fuel economy. Therefore, the DECAT program was born."

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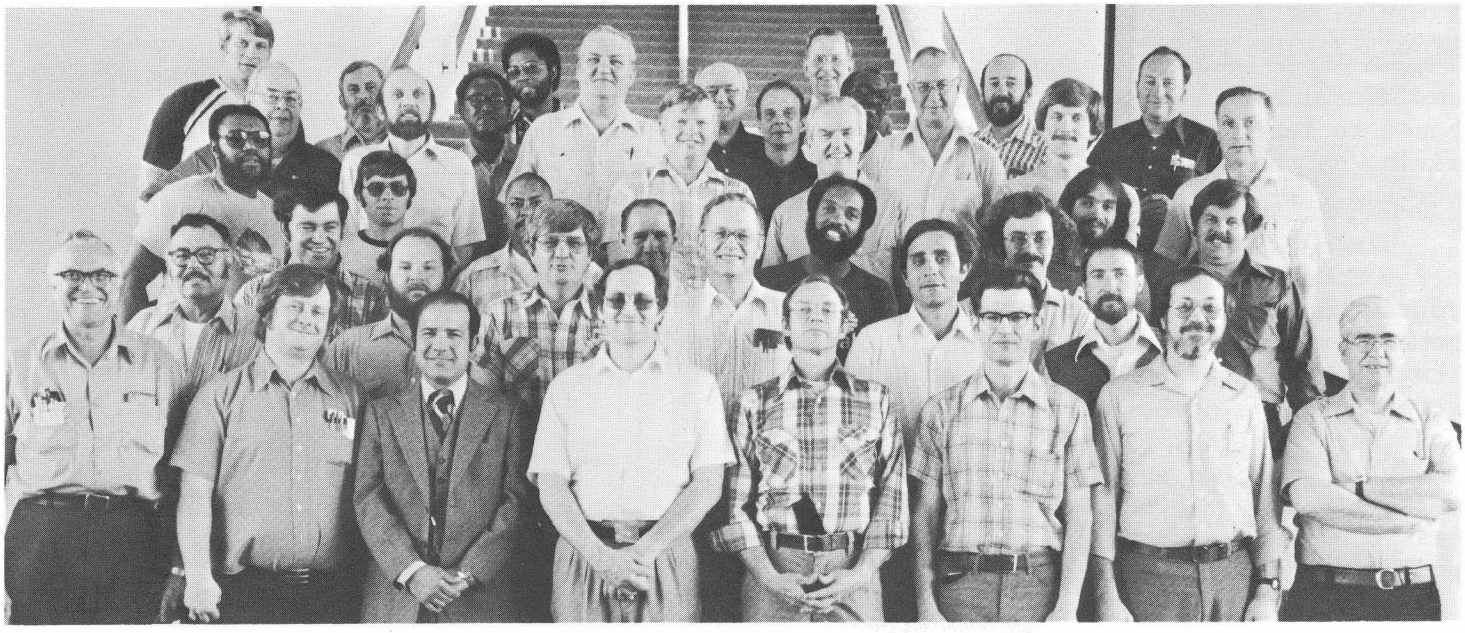
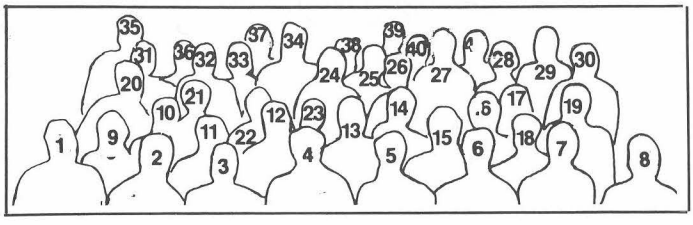


Ten year service award recipients are--1-John Stull, 2-Robert Mau,3-Jesse Guerra, 4-Armand Bianchi, 5-Robert Oudt, 6-William Martin, 7-Robert Horbus, 8-William Fowler, 9-Silvestre Fuentes, 10-Tom Rathbun, 11-Donald Poll, 12-Ronald Norton, 13-Phil Gavin, 14-Mike Armstrong, 15-Ed Barsotti, 16-Walter Janskierny, 17-Nicholas Cadena, 18-Richard Parry, 19-Robert Shovan, 20-Archie Magee, 21-Tom Blachford, 22-Samuel Gallegos, 23-William Townsend, 24-Richard Bingham, 25-Fred Assell, 26-Frank Kleber, 27-Virgil Sutcliff, 28-James



Walker, 29-Robert Vanecek, 30-Age Visser, 31-Julian Woronicz, 32-Robert Marquardt, 33-John Williams, 34-Dan Moline, 35-David Smith, 36-James Schmidt, 37-Charles Mathews, 38-Lester Bradstreet, 39-Phil Livdahl (representing the Director's office), 40-Calvin Grayson, 41-Charles Zonick.

NALWO ICE CREAM SOCIAL

NALWO will hold an ice cream social Aug. 9 at the LeRoy Oakes Forest Preserve. Docents will lead a tour of the Durant-Peterson House. Participants should bring a dessert for eight. Ice cream and soft drinks will be provided. The preserve is west of St. Charles on Dean St.

MICROPROCESSOR APPLICATIONS COURSE

A microprocessor applications course, accredited through Waubonsee Community College, is being offered at Fermilab Aug. 25 through Dec. 18. Jim Zagel, an engineer with the Accelerator Division, will teach the course. To register, contact Ruth Christ, CL15-E, for application.

"DERZU UZALA"

Presented by the Fermilab International Film Society

Friday, Aug. 8 — 8 p.m. — Central Laboratory Auditorium

Filmed entirely in Siberia, this motion picture won an Academy award for the best foreign film. It was released in 1975 in Japan and is directed by Akira Kurosawa. The film details the friendship that develops between a Russian officer and a Siberian guide during an expedition.

137 Minutes — Color — Rated G — Adults, $2 — Children, 50 cents

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