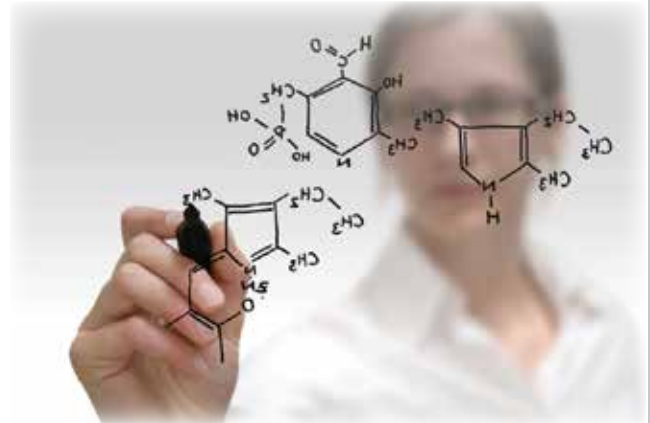


## The Science and The Scientists behind EICCT. (Electromagnetic Induction Corrosion Control Technology)



## Our Science Explained

<b>Contents</b>	<b>Page</b>
History of Rust Protection	1
Corrosion Module Systems	2
How EICCT Works	3
R&D Laboratory and Scientist Biographies	4/5
Patents & Certifications	6
Published Paper of the Electrochemical Society	7
Third Party Testing	
Smither's Scientific Services - 1997	8
Underwriters' Laboratories of Canada - 2001	8
CC Technologies - 2002/03	9
Ohio State University - 2004	9
Automotive Compliance Testing	
Elite Electronic Engineering - 2007	10
Key Benefits	11
FAQs	12
Recent Article from Canadian Auto Dealer magazine	13

# History of Rust Protection

Rust prevention has gradually evolved over the past 40 years. In the 1970s, technicians would drill holes into individual body panels to spray oil-based chemicals. In 1983, Final Coat pioneered the 'no-holes-drilled' spraying process that did not compromise the integrity of the vehicle body.

Next came the adaptation of a 100-year-old technology called Cathodic Protection to the automotive industry. While cathodic theory is sound, its application to automobiles is flawed due to the absence of an electrolyte. As a result, many cathodic rust protection devices were pulled from the market by government bodies, including the FTC in the USA and the Federal Competition Bureau in Canada.

In the past 15 years, a patented technology called Electromagnetic Protection has emerged that works in the alternating current (or AC) realm, unlike the DC realm used in Cathodic Protection. It emits a low power, low amperage radio frequency (RF) signal that produces a surface current covering the vehicle's sheet metal surfaces, both inside and out. It is a much more effective and greener alternative to traditional spray methods. Having proven its efficacy to government through continuous testing and field work, this technology has become the preferred rust protection system among new car dealers.

## Chemical Sprays

- Offers no rust protection in the areas that can't be sprayed, such as the outside surface and seam areas, where corrosion is common in today's vehicles
- Provides no protection above the window line
- Relies on a proper application, usually re-applied annually
- Messy residue is often visible
- Not eco-friendly since most sprays gradually wash off into the environment
- Requires either a separate, dedicated service bay or an off-site third party applicator, which adds cost and time.

## Cathodic Protection

- Also called Electrostatic or Direct Current (DC) technology
- High voltage and high power consumption system
- Scientists around the world confirm this technology works, but only on ships, pipelines, bridges, etc. and only on the portion of the structure that is covered with anodes and submerged in water or covered by an electrolyte
- Several car manufacturers have issued technical service bulletins that forbid the use of these devices, due to the high parasitic draw on car battery

## Electromagnetic Protection

- Patented technology utilizing Alternating Current (AC)
- Requires only 0.3 milliamps of current
- Specifically designed for automobiles
- Clean and environmentally friendly
- Easy to install and portable from vehicle to vehicle
- Effective (tests show up to 99.7% reduction of corrosion on automotive sheet metal)
- Enhances protection offered by zinc coating on the steel to increase protection against corrosion by as much as a factor of 100
- Increases rust perforation warranty to 10 years
- Additional coverage beyond factory warranty

# Corrosion Module Systems

Final Coat has been the leader in rust protection since introducing its electromagnetic corrosion protection technology in 1998. Final Coat manufactures the TC-3000 exclusively for the Tricor Automotive Group. Our superior corrosion protection is now available in three different module systems:

- TC-3000 for passenger vehicles, SUV's and light duty trucks
- RM-3000 for heavy duty trucks, RV's and larger commercial vans
- BPH-5000, the world's first and only module specially designed for Hybrid and Electric vehicles, with zero battery draw. It requires no hook-up to the vehicle's electrical system since it is powered by its own 'C' batteries.

Each module system is designed with patented EICCT technology and offers the same industry-leading performance and warranty coverage that only Tricare can offer.



	CM-3000	RM-3000	BPH-5000
Module dimensions	54 x 54 x 24 mm	83 x 51 x 24 mm	290 x 104 x 53 mm
Power source	Vehicle's Battery	Vehicle's Battery	8 x 'C' Batteries
Power draw on vehicle's battery	0.3 milliamps	9.8 milliamps	0.0 milliamps
Installation location	Under hood, near battery	Under hood, near battery	Any interior location
Number of wires to install	3: positive, ground, output	4: positive, ground, 2 outputs	2: ground, output
Annual requirements	See warranty for details	See warranty for details	See warranty for details
Canadian patent numbers	2,474,444 2,558,790 2,364,750	2,474,444 2,558,790 2,364,750	2,474,444 2,558,790 2,364,750
USA patent numbers	7,198,706 6,875,336 6,331,243 6,046,515	7,198,706 6,875,336 6,331,243 6,046,515	7,198,706 6,875,336 6,331,243 6,046,515
Reduces rate of corrosion on automotive sheet metal by:	Up to 99.7%	Up to 99.7%	Up to 99.7%
Vehicle Applications	<ul style="list-style-type: none"> <li>• Passenger Vehicles &amp; SUV's</li> <li>• Light Duty Trucks less than 16,000 lbs GVWR or less than 25 feet in length</li> </ul>	<ul style="list-style-type: none"> <li>• Medium - Heavy Duty Trucks greater than 16,000 lbs GVWR or more than 25 feet in length</li> <li>• Commercial Vans (eg. Sprinter)</li> <li>• RV's, Motor homes &amp; Campers</li> </ul>	<ul style="list-style-type: none"> <li>• Electric Vehicles</li> <li>• Hybrid Vehicles</li> <li>• Trailers</li> </ul>

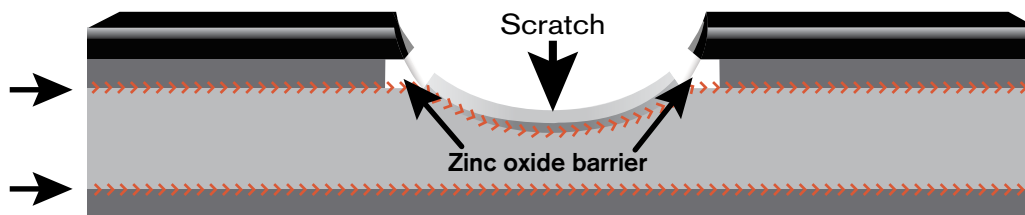
# How E.I.C.C.T. Works

Final Coat's patented Electromagnetic Induction Corrosion Control Technology (EICCT) is a state-of-the-art solution that extend the life of any vehicle. It reduces the rate of corrosion on galvanized and galvanized steel by up to a factor of 100 on automotive sheet metal panels, (i.e. it will take up to 100 times longer to create the same amount of rust with EICCT than it would without it.)

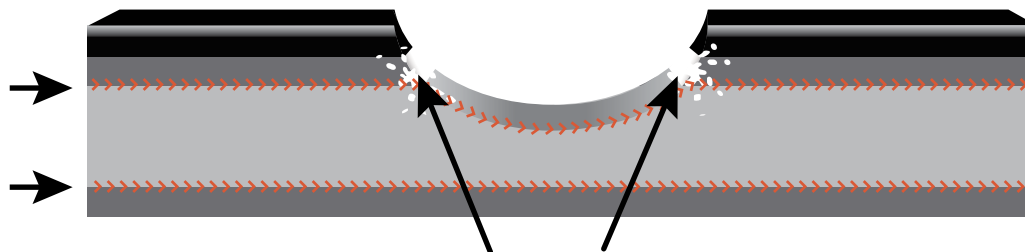
The electromagnetic module generates radio frequency pulse-wave surface currents over both sides of the steel.



When a scratch or stone chip exposes steel, zinc galvanizing naturally sacrifices itself to protect the steel.



However, moisture from the environment reacts with zinc to form a zinc oxide barrier, which renders the zinc galvanizing inert and unable to protect the steel, causing corrosion.



Electromagnetic surface current **breaks down** zinc oxide barrier, enhancing the ability of zinc galvanizing to protect the steel.

## R&D Laboratory and Scientist Biographies

Since our R&D Laboratory was opened in 2007, Final Coat has invested millions to create what has been described as “a unique facility with no peer anywhere in the world,” by Dr. Digby Macdonald, formerly Distinguished Professor of Materials Science and Engineering Director for Electrochemical Science and Technology at Pennsylvania State University.

Studies at our Final Coat R&D laboratory in Hartville, Ohio allow us to isolate and control almost every variable in corrosion testing. This ongoing investment in technology has yielded significant advancements such as our latest generation TC-3000 Module, which draws only 0.3 milliamps of power from a vehicle’s battery. We are unlocking the tremendous potential of our Electromagnetic Induction Corrosion Control Technology (E.I.C.C.T.) and are committed to advancing both the pure science and its application to the automotive industry.

We employ two full-time scientists to lead our corrosion research. Dr. Michael Lewis invented the technology in 1997 and was hired by Final Coat in 2004. Dr. Jason McLafferty joined in 2008. Both scientists, plus two full-time lab assistants, work under the guidance of a world-class corrosion scientist, Dr. Digby Macdonald.

### The Inventor / Physicist

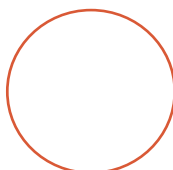


**Dr. Michael E. Lewis, PhD**, is the inventor of EICCT and the leader of Final Coat’s R&D Department, with a PhD in Physics from Kent State University in 1987. Dr. Lewis has twenty-two patents and invented a new electronic corrosion reduction method in 1997. He has designed various environmental chambers and a Raman spectrometer for surface chemical analysis. While with Cisco Systems, he led a communications systems engineering group where he directed the architectural design of digital signal processing integrated circuits for digital communications and was responsible for the design and direction of several large scale communications computer simulations. As a faculty member and consultant, Dr. Lewis has directed a multidisciplinary materials science research effort to study the relationship between the molecular structure and the third-order optical nonlinearity of metal organic polymers and monomers and has worked extensively in the fields of laser physics, optoelectronics, optical modulation and liquid crystal physics.

### The Graduate / Electrochemist



**Dr. Jason McLafferty, PhD**, has a Bachelor of Science degree in Chemistry from Penn State Erie, the Behrend College. He then worked at Alcoa’s Research Laboratories and became interested in electrochemistry. Based on this interest, he decided to do his doctoral dissertation research with Dr. Digby Macdonald in the Department of Materials Science and Engineering at Pennsylvania State University. He co-wrote two invention disclosures on Regeneration of Sodium Borohydride. Jason graduated with his PhD in Materials Science and Engineering from Pennsylvania State University with dissertation research in electrochemistry. In 2009, he joined Dr. Michael Lewis at our research facility to explore the electrochemical side of our patented technology.



**Michael Teka Woldemedhin, PhD**, has is doctorate in Chemistry (electrochemistry) from Ruhr University in Germany. He then went to further his knowledge at Johannes Kepler University in Austria to study Electrochemistry and Corrosion in chemical technology of inorganic materials. He then went to study at the Department of Interface Chemistry and Surface engineering. To finish of his education he went to the university of Virginia and worked in the Department of materials science and engineering center for CESE as the postdoctoral research associate. He has been awarded the Max Planck Fellowship, International Max Planck Research School for Surface and Interface Engineering in Advanced Materials (IMPRS-SurMat) Fellowship, Max Planck Institute for Iron Research, April, 2008 – March, 2011 given to especially gifted students from all over the world. He is a member of The Electrochemical Society (ECS), National Association of Corrosion Engineers (NACE), and Chemical Society of Ethiopia (CSE).

## The Consultant



**Dr. Digby Macdonald, PhD**, is a leading corrosion scientist and Professor in Residence in the Departments of Nuclear Engineering and Materials Science and Engineering at University of California at Berkeley. From 2003 to 2012, he was a Distinguished Professor of Materials Science and Engineering Director for the Center for Electrochemical Science and Technology at Penn State University. Dr. Macdonald has published over 800 papers in scientific journals, books and conference proceedings. He is the author of a book entitled "Transient Techniques in Electrochemistry" and holds 9 patents. In 2003, Dr. Macdonald received the highest award in the field of corrosion science and engineering – the U.R. Evans Award from the Institute of Corrosion in the United Kingdom. Dr. Macdonald holds a B.Sc. (1965) and M.Sc. (1966) in Chemistry, University of Auckland (New Zealand) and Ph.D. in Chemistry (1969), University of Calgary (Canada).

### Professional experience

- 1/2013 – present: Professor in Residence, University of California at Berkeley.
- 6/2003 – 12/2012: Distinguished Professor of Materials Science and Engineering, Penn State University.
- 6/2001 – 6/2003: Chair, Metals Program, Penn. State University.
- 7/99 – 12/2012: Director, Center for Electrochemical Sci. & Tech., Penn. State University.
- 1/98 – 7/99: Vice President, Physical Sciences Division, SRI International, Menlo Park, CA.
- 7/91-3/2000: Director, Center for Advanced Materials, Penn. State University.
- 7/91 – 6/03: Professor, Materials Science and Engineering, Penn. State University.
- 4/87 - 7/91: Deputy Director, Physical Sciences Division, SRI International, Menlo Park, CA.
- 4/87 – 7/91: Laboratory Director, Mat. Research Lab., SRI International, Menlo Park, CA.
- 3/84 – 4/87: Laboratory Director, Chemistry Laboratory, SRI International, Menlo Park, CA.
- 3/79 – 3/84: Director and Professor, Fontana Corrosion Center, Ohio State University.
- 3/77 – 3/79: Senior Metallurgist, SRI International, Menlo Park, CA.
- 3/75 – 3/77: Senior Research Associate, Alberta Research Ltd/University of Calgary, Canada.
- 4/72 – 3/75: Lecturer in Chemistry, Victoria University of Wellington, New Zealand.
- 9/69 – 4/72: Assistant Research Officer, Whiteshell Nuclear Research Establishment, Atomic Energy of Canada Ltd.

### Professional Honors and Associations

- 1983: Research Award, College of Engineering, Ohio State University.
- 1985: Selector of the Kuwait Prize for Applied Sciences.
- 1991: The Carl Wagner Memorial Award from The Electrochemical Society.
- 1992: The Willis Rodney Whitney Award from The National Association of Corrosion Engineers.
- 1992: Chair, Gordon Research Conference on Corrosion, New Hampshire.
- 1993: W.B. Lewis Memorial Lecture by Atomic Energy of Canada, Ltd., "in recognition of [his] contributions to the development of nuclear power in the service of mankind".
- 1994: Elected Fellow, NACE-International.
- 1993-1997: Member, USAF Scientific Advisory Board, Protocol Rank: DE-4 (Lieutenant General equivalent).
- 1995: Elected Fellow, The Electrochemical Society.
- 1996: Elected Fellow, Royal Society of Canada. ("National Academy" of Canada).
- 1996: Wilson Research Award, College of Earth and Minerals Sciences, Pennsylvania State University.
- 1997: Elected Fellow, Royal Society of New Zealand. ("National Academy" of New Zealand).
- 2001: H. H. Uhlig Award, Electrochemical Society.
- 2003: U. R. Evans Award, British Corrosion Institute; Elected Fellow, Institute of Corrosion (UK); Appointed Adjunct Professor, Massey University, New Zealand; Appointed Adjunct Professor, University of Nevada at Reno.
- 2004: Elected Fellow, World Innovation Foundation.
- 2005: Elected Fellow, ASM International.
- 2006: Elected Fellow, International Society of Electrochemistry.
- ISI Highly Cited Researcher.
- Feb. 2007: Khwarizmi International Award Laureate in Fundamental Science
- 2007-2010 Trustee, ASM International.
- 2010: Appointed Chair Professor, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia.
- 2010: Recipient, Lee Hsun Research Award, Chinese Academy of Sciences, China.
- 2011: Inducted Doctuer Honoris Causa by INSA-Lyon, Lyon, France; Nominated for the Nobel Prize in Chemistry.
- 2012: Awarded the Faraday Memorial Trust Gold Medal.
- 2013: Awarded the Gibbs Award in Thermodynamics by IAPWS.
- 2014: Awarded the Frumkin Memorail Medal in Fundamental Electrochemistry by the International Society of Electrochemistry.

# Patents

## **Canadian Patent #2,558,790 - Circuit for inhibiting corrosion of metal.**

Relates to the apparatus and methods for generating surface currents on conducting bodies to inhibit corrosion.

## **Canadian Patent #2,474,444 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **Canadian Patent #2,364,750 - Improved process and apparatus for preventing oxidation of metal.**

An apparatus for prevention of corrosion in metal objects uses a capacitively coupled fastener or pad attached to a metal body being protected from corrosion.

## **US Patent #7,198,706 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **US Patent #6,875,336, #6,331,243, #6,046,515 - Process and apparatus for preventing oxidation of metal.**

An apparatus for prevention of corrosion in metal objects uses a capacitively coupled fastener or pad attached to a metal body being protected from corrosion.

## **Taiwan Patent #I 359210 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **China Patent #ZL 200510069527.0 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **Hong Kong Patent #HK 1084982 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **European Patent #1598445 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

## **Australian Patent #10/846,598 - Method for inhibiting corrosion of metal.**

The present invention generally provides a method for prevention of corrosion in a metal object by inducing either an AC or RF surface current over the entire surface of the metal object.

Other patents are pending worldwide.

# Certifications

The Final Coat electromagnetic corrosion protection technology is certified by the following International regulatory authorities:





# Electrochemical Society (ECS) Published Paper

This 20-page peer-reviewed paper published in 2009 by the Electrochemical Society scientifically proved the efficacy of EICCT.

ECS Transactions, 19 (29) 55-74 (2009)  
10.1149/1.3259799 ©The Electrochemical Society

## Electromagnetic Induction Corrosion Control Technology (EICCT)

Digby D. Macdonald<sup>1</sup>, Michael Lewis<sup>2</sup>, Jason McLafferty<sup>2</sup>, and Randy Peek<sup>3</sup>

<sup>1</sup>Center for Electrochemical Science and Technology  
Department of Materials Science and engineering  
Pennsylvania State University  
University Park, PA 16802

Tel: (814) 863-7772; Fax: (814) 863-4718; E-mail: [dgm2@psu.edu](mailto:dgm2@psu.edu)

<sup>2</sup>Lewis Research & Engineering  
13345 Market Ave. N.  
Hartville, Ohio 44632  
Tel: (330) 354-8101; E-mail: [melewis@raex.com](mailto:melewis@raex.com)

<sup>3</sup>Randy Peek, CEO  
Canadian Auto Preservation Inc.  
390 Bradwick Drive  
Concord, Ontario L4K 2W4  
Canada  
Tel: (905) 660-9615 Ex. 226; E-mail: [randy@capfinalcoat.com](mailto:randy@capfinalcoat.com)

Over the past several years, a new corrosion control technology has been developed for protecting damaged, painted steel surfaces in contact with ambient atmospheres. The method makes use of electromagnetically-induced surface currents and, to date, the efficacy of the method has been demonstrated with painted, galvanized steel. While the exact mechanism of protection has yet to be thoroughly defined, the technique appears to work by the induced current inhibiting passivation of the zinc and hence maintaining the zinc in the active state. Accordingly, the active zinc is more effective in protecting the underlying steel, as a sacrificial anode, compared with passivated zinc in the absence of the electromagnetically-induced current. Thus, the technique is not a classical, impressed current cathodic protection system and no electrolyte is needed between an anode (which does not exist, anyway) and the damaged area. Experiments have demonstrated that the induced current is spread uniformly across the surfaces of complex shapes, such as automobile bodies, so that induction at a single point is effective in protecting the whole body, that the power consumption is very low, and possibly that the induced signal can be tailored to optimize the efficacy. To our knowledge, EICCT is a new, radically different corrosion control technology that may find extensive application in protecting metallic structures.

# Third Party Corrosion Testing

## Smither's Scientific Services Inc.



Independent Laboratory located in Akron, Ohio  
Testing conducted in 1997 on BodyGard module (rebranded Final Coat in 2004)

Type of Test: Humidity Test

Test Panel Size: 2 sections (7 feet x 15 inches)  
connected by a grounding strap

Test Results: "substantially reduced the corrosion rate".

### Test Methodology

- Test conformed with ASTM Standard D1654
- 35 days (800 hours) of exposure in corrosion chamber

### Test Results

- "test panels...showed a marked degree of severe corrosion and rusting"
- "Scribes protected by BodyGard system were nearly corrosion free"



Protected sheet metal test panels and unprotected control panels are scribed and exposed to 800 hours of humidity @ 95°F.



Corrosion chamber simulates prolonged exposure to the harshest environments.

## Underwriters' Laboratories of Canada



Independent laboratory located in Toronto  
Conducted in accordance with ASTM Standard D1654

Test conducted: 2001

Type of Test: Salt Spray Test performed to ASTM D1654-92 Standards (Test Method for Evaluation of Painted or Coated Specimens Subject to Corrosive Environments)

Test Panel Size: Four panels each measuring 4 feet by 4 feet were grounded together giving a test surface area equal to 128 square feet. All panels were scribed.

### Single Panel Test

- Two painted galvanized automotive sheet metal panels measuring 4 feet x 4 feet
- Only 1 of 2 panels was connected to Module.

### Conclusion on Single Panel Test

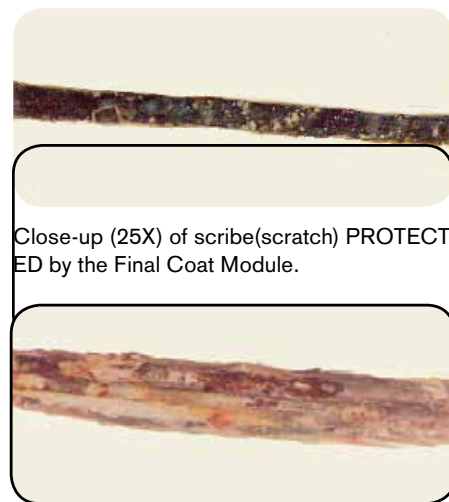
- Panel connected to Module "showed no corrosion or rust"

### Multiple Panel Test

- Four panels each measuring 4 feet x 4 feet connected by conductive wire

### Conclusion on Multiple Panel Test

- "all panels showed no corrosion or rust"



Close-up (25X) of scribe(scratch) PROTECTED by the Final Coat Module.

Close-up (25X) of UNPROTECTED scribe (scratch) showing pitting, metal loss & severe corrosion.

**These photos were taken with an Olympus optical electron microscope for subjective evaluation after 1,000 hours of salt spray exposure.**

# Third Party Corrosion Testing

## CC Technologies

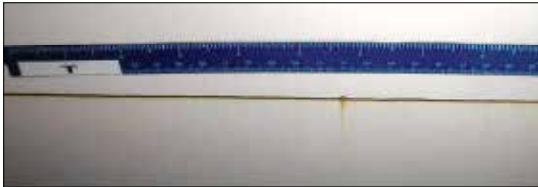


Independent laboratory,  
located in Dublin, Ohio

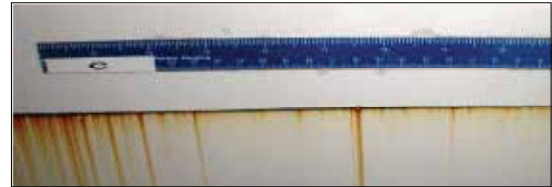
Test conducted: 2002-03 for the Canadian government's Competition Bureau

Type of Test: Salt Spray over the scribed area only. Test was done to show the efficiency of the Final Coat Electronic Corrosion Module over a surface in the absence of an electrolyte (moisture) film and its ability to reduce the rate of corrosion.  
Test Panel Size: 4 feet x 3 feet.

**Test Results:** "The corrosion rate is reduced by 99.7% by the Module on the Test Panel compared with the Control Panel. Even if the difference in the corrosion potential is reduced to -0.100V, the ratio (CR) test/ (CR) control = 0.0204 and hence the corrosion ratio is reduced by 98%. To put these numbers in perspective, imagine that a system (automobile) fails by corrosion without the Module in a time of 1 year. If the Module is attached, the failure time would be 343 years if the potential is displaced by 150 mV in the negative direction, and 49 years if the potential was displaced by only 100mV. Such results are particularly significant when one considers that the average life of a vehicle is in the order of 10 years. Accordingly, these calculations demonstrate that the reduction in corrosion rate is substantial and that the Module is an effective corrosion control device".



Test Panel (With a Final Coat Electronic Module)



Control Panel (Without Protection)

## Ohio State University ElectroScience Laboratory



Test conducted: 2004 for the Canadian government's Competition Bureau

Type of Test: Test was done to measure "surface current" generated by the Final Coat Electronic Corrosion Module on a typical automobile and to determine whether the induced current is uniformly distributed across the vehicle surface.  
Test Panel Size: 1994 Buick Century Automobile.

Top Currents



Driver's Side Currents



Passenger Side Currents



### Test Results:

- Fifty-eight (58) points were measured on the vehicle, from the back to the front, from the top to the bottom.
- Current was found to be uniformly distributed across entire surface of vehicle. "...we have reliably and demonstrably sensed surface current all over the surface of this test automobile".

# Automotive Compliance Testing

## Elite Electronic Engineering Inc.

Independent laboratory located near  
Chicago, Illinois




Test conducted: 2007

Type of Test: RF Emissions Measurement. To determine if the module meets the conducted and radiated emissions requirements of the FCC "Code of Federal Regulations."

Test conducted: 2007

Type of Test: Electromagnetic Compatibility. To determine if the module compromises or interferes with automotive electrical systems.

Engineering Test Report No. 37802-02 Rev. A



Measurement of RF Emissions from a  
Final Coat Electronics Corrosion Module

---

For : Canadian Auto Preservation, Inc.  
390 Bradwick Drive  
Concord, Ontario CANADA L4K 2W4

P.O. No. : N/A  
Date Tested : January 26, 2007  
Test Personnel : Mark E. Longinotti  
Specification : FCC "Code of Federal Regulations" Title 47 Part 15, Subpart B

Test Report By : *Mark E. Longinotti*  
Mark E. Longinotti

Approved By : *Raymond J. Klouda*  
Raymond J. Klouda  
Registered Professional Engineer of  
Illinois - 44894

Elite Electronic Engineering Inc.  
1516 Centre Circle  
Downers Grove, IL 60515  
Tel : (630) 495-9770  
Fax: (630) 495-9785  
www.ellitest.com

Engineering Test Report No. 37802-01 Rev. A



Electromagnetic Compatibility Tests on a  
Final Coat Electronic Corrosion Module

---

For : Canadian Auto Preservation, Inc.  
390 Bradwick Drive  
Concord, Ontario, Canada L4K 2W4

P.O. Number : Credit Card  
Date Tested : January 26 - 31, 2007  
Test Personnel : Derrick Gabalewicz, Mark Longinotti  
Test Specification : Commission Directive 2004/104/EC  
ISO 16750-2:2000

Test Report By : *Derrick Gabalewicz*  
Derrick Gabalewicz

Requested By : Mike Lewis  
Canadian Auto Preservation, Inc.

Approved By : *Franklin E. Bowes*  
Franklin E. Bowes  
Senior EMC Engineer  
NATEL® Certified: ATL-0153-E  
EMC-001162-NT

Elite Electronic Engineering Inc.  
1516 Centre Circle  
Downers Grove, IL 60515  
Tel : (630) 495-9770  
Fax: (630) 495-9785  
www.ellitest.com

Test Results: The module "did fully meet the conducted radio interference requirements of Section 15.107 and the radiated interference requirements of Section 15.109 of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart B for Class B equipment."

Test Results: The module was compliant with requirements in all tests performed. "Compliant = Meets the broadband and narrowband emissions requirements specified in the Commission Directive 2004/104/EC test specification."

# Key Benefits of the Electromagnetic Module

- Proven to reduce the rate of corrosion on automotive sheet metal by as much as 99.7%.
- Provides protection to areas that rust-inhibiting sprays cannot reach (e.g., roof, windshield pillars, door seams, outside surface areas, etc.)
- An eco-friendly alternative to petroleum-based chemical sprays, which gradually wash off into the environment and usually must be re-applied annually.
- Any Tricare module is easy to install and portable to another vehicle.
- The TM-3000 draws approximately 1/3 of 1 milliamp from the car battery, over 50 times less power than any other manufacturer's module.
- The new BPH-5000 hybrid module draws zero milliamps from the vehicle battery, since it is powered by its own 'C' batteries.
- The RM-3000 heavy duty module protects Heavy Duty trucks exceeding 25 feet in length or 16,000 lbs GVWR, as well as larger commercial vans, RV's and motor homes.
- The patented Radio Frequency (RF) pulse-wave surface current generated by the module is effective, yet completely harmless to you and your vehicle.
- Most complete warranty coverage available. Coverage includes rust perforation (hole-in-the-metal) from the inside-out or outside-in, even if rust is the result of non-repaired stone chips, scratches or chipped paint.
- Warranty period significantly exceeds the manufacturer's warranty. The TM-3000 provides coverage for a full 10 years from the date of installation on new vehicles or pre-owned vehicles up to 3 model years old.

# FAQ

## 1. Will the Tricare electromagnetic corrosion module drain my car battery?

The module will not drain your vehicle battery. The TC-3000 module draws only 1/3 of 1 milliamp, which is 90 times less power than any other manufacturer's module. And the new BPH-5000 hybrid module draws zero milliamps from the vehicle battery since it is powered by its own 'C' batteries.

## 2. Can I transfer the Tricare electromagnetic corrosion module to my next vehicle?

See your authorized Tricor dealer for details.

## 3. Has electromagnetic corrosion protection technology been tested by independent, non-biased agencies or organizations?

Yes, the Tricare module underwent extensive additional testing between 2002 and 2004 at the request of the Canadian government's Competition Bureau. It was proven that it does indeed help to significantly inhibit corrosion. Tests proved a 98% to 99.7% reduction in the rate of corrosion on automotive sheet metal panels.

## 4. Why should I choose Electromagnetic corrosion protection over chemical sprays?

The Tricare module covers areas of your vehicle that traditional chemical sprays do not, such as the roof, areas above the window line, seams and much more. Rust-inhibiting sprays may contain harmful petroleum products that gradually wash off into the environment, and most chemical sprays must be re-applied annually.

## 5. My car already has some rust. Will the Tricare corrosion module help?

Providing there is still galvanized metal, with both zinc and steel present, the module will slow down the process of rust, even if there is rust present before installation. The module is proven effective in reducing the rate of corrosion on automotive sheet metal panels by as much as 99.7%.

## 6. How was electromagnetic corrosion protection discovered?

Please read recent article from Canadian Auto Dealer magazine on next page.



# Busting rust

Canadian auto dealer is invited to an Ohio lab to get the lowdown on an electro-magnetic rust control product



From left to right, Dr. Michael Lewis; electro-chemist, Jason Lafferty; Dr. Digby MacDonald and CAP CEO Randy Peek at CAP's Research and Development Laboratories in Hartville, Ohio.

**GIVEN CANADA'S HARSH CLIMATE** and the substantial investment consumers make in new vehicles, the notion of protecting them against the elements is a big one, which for dealers, means that corrosion protection is often a contentious issue for their customers.

Canadian Auto Preservation Inc., via its FinalCoat line offers a corrosion system for F&I departments, one that it says is backed by solid research.

When CAP CEO Randy Peek first heard about an electro-magnetic rust control process discovered by Dr. Michael Lewis, he wasn't convinced. Peek, who'd opened his own business specializing in automotive rust proofing and paint protection products in 1983, was visiting a trade show in the mid-1990s when he first came across Lewis's idea.

"Using a process where an electro-magnetic wave induces alternating current that activates zinc to create electrons on galvanized (zinc coated) steel panels, Lewis's theory was that it would provide a barrier to oxidation over the entire area of the panel," says Peek. "As a result, on a vehicle, it would theoretically enable protection of the entire surface, including corrosion induced by stone chips."

To Peek, it seemed almost too good to be true. "Especially when I couldn't see any actual test results," he says. Nevertheless, when he heard about it again, Peek decided to get Royal & Sun Alliance involved to underwrite it, to see if there truly was market potential for this new technology.

## TOO GOOD TO BE TRUE?

Peek, whose company had built its business supplying vehicle protection products to dealers, figured that if there was a way in which Lewis's discovery could be supported by solid scientific evidence, it might just revolutionize the concept of vehicle corrosion protection sold through dealers.

He decided to team up with Lewis and set up a lab in Hartville, near Akron, Ohio to conduct further tests. Although Peek knew that previous attempts at electronic rust control, using a direct current (DC) cathodic charge had been analyzed by the Competi-

tion Bureau of Canada and were discovered to be ineffective on vehicles (only providing a barrier to corrosion when in immersed in salt water, such as ship hulls and submarines), it seemed that Lewis and his lab team were onto something.

## TAKING A GAMBLE

Peek agreed to purchase the technology and began readying it for market in Canada in 1997. With warranty coverage underwritten by Royal & Sun Alliance which covered either 10 years with no annual inspection, or vehicle life with an annual check up, the new FinalCoat CM Modules, designed to inhibit corrosion over the entire surface of a new or pre-owned vehicle, appeared to be an asset for dealers, proving more attractive than messy chemical sprays.

Although the upfront cost was significantly more than an annual spray for dealer customers, with a warranty covering a 10 year period and the unit transferable from vehicle to vehicle, the idea was, that longer term, the module would work out to be more cost effective for the consumer.

However, with growing controversy surrounding electronic modules and their effectiveness, CAP and its products soon became a target for the Canada's federal Competition Bureau, which requested independent tests to back CAP's claims for the product.

"Between 2001 and 2004, we repeatedly had to demonstrate our technology," Peek said "and the Bureau was determined to prove that it didn't work."

Enter Dr. Digby Macdonald, a distinguished professor of Materials Science and Engineering and Director of the Center of Electrochemical Science and Technology at Penn State University, recognized as one of the world's leading experts on corrosion, specifically electromagnetism and electrochemistry.

"Getting Digby involved was absolutely huge," says Peek. "He is highly respected in his field and was impressed by what he saw with this technology. His findings and support, plus exhaustive test after test conducted over a two and a half year period, proved that the technology did work."

Peek says the results found that in the worst scenario the tests delivered a 98 per cent reduction in corrosion, and at best a 99.7 per cent reduction.

For the Competition Bureau, the conclusion was that the tests proved to be "adequate and proper." The CAP Final Coat EICCT (Electromagnetic Induction Corrosion Control Technol-



ogy) case, proved to be a pivotal one, to such an extent in fact that it is now studied by students of Competition and Regulatory law courses across Canada.

## MOVING FORWARD

Since then, CAP has further expanded scientific research into the areas of corrosion, setting up a new lab and introducing new modules and technologies, such as the CM 3000.

To show the company's progress, *Canadian auto dealer* was flown down to the firm's research facility in Hartville as part of an exclusive media tour, to learn more about its electromagnetic technology and to meet personally with Michael Lewis and Digby Macdonald.

They explained to us that the key to the module is that when the vehicle paint surface is chipped and the galvanized steel is exposed to the elements, the zinc begins to oxidize, eventually exposing the bare steel and causing it to rust. The module uses an electro-magnetic wave that creates a current that reactivates the zinc, in other words, forming a new barrier against protection in areas where the paint surface is compromised.

"Our newest modules offer the lowest draw yet," says Peek. "They provide entire surface protection, which is warranted both outside and in, but uses just one third of a milliamp of power drawn from the vehicle's battery (when CAP started with its modules, the draw was around 12.6 milliamps)," he says. "Combined with verified scientific test results and ongoing research, they make for a good F&I product which dealers can sell directly to their customers, especially in areas of Canada where salted winter roads tend to accelerate the rusting process on vehicles." ■

Three proven modules. One patented technology.



TC-3000



RM-3000



BPH-5000

**Tricor Automotive Group**  
[www.tricorautomotive.com](http://www.tricorautomotive.com)