



# ECOBOUND

*ECOLOGY IS EVERYTHING!!*

[www.ecobound.net](http://www.ecobound.net)

Final Draft  
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# ECOLOGY IS EVERYTHING!!



*Life and Nature is the gift to us from GOD. Without it we are nothing and meaningless. Therefore, protection of life and preservation of nature is not only our duty, but an obligation that is laden upon us.*

*“Man has lost the capacity to foresee and to forestall. He will end by destroying the Earth” ~ Albert Schweitzer (Famous German Philosopher)*

*“Man has been endowed with reason, with the power to create, so that he can add to what he's been given. But up to now he hasn't been a creator, only a destroyer. Forests keep disappearing, rivers dry up, wild life's become extinct, the climate's ruined and the land grows poorer and uglier every day” ~Anton Chekhov (Famous Russian Author)*

*Technology and innovation is the faculty given to Man; with this endowment, it is our duty to make sure that not only we develop, but at the same time we have to create things that ensure the ecological balance between us and the Nature.*

*To us, this the essence of our products, inventions, and solutions; because our **ECOLOGY is EVERYTHING** related to our life.*



# Introducing ECORR



**“ZERO-POTENTIAL”  
ANTI-CORROSION SOLUTIONS**

## ECORR - **“ZERO POTENTIAL”** Anti-Corrosion Solutions

**ECO** – means the product is Ecological based and friendly  
**The Number “0”** refers to **“ZERO”** and **“CORR”** refers to the word **“CORROSION”**; which means we targeted to achieve an environment that is totally **“Zero Corrosion”**. The Number **“0”** also refers to the fundamental concept of our technology – that is to achieve a **“ZERO POTENTIAL”** solutions in anti-corrosion.

**“Zero-Potential”** solutions is the ***first of its kind in the World***, this is the hallmark of our technology and invention.

# The Costs of Corrosion

- The cost of corrosion is a major issue in the World today. While there are no clear authoritative figures of the costs of corrosion, an estimate that was provided for the USA alone is estimated at US\$276 billion per year which is about at 3% of the Gross Domestic Product. This cost has been growing year on year. Bear in mind that the costs quoted are the direct costs of corrosion, while the truth is the indirect costs which is almost impossible to be accounted can multiply to a few times of the direct costs. Such indirect costs are mainly in the environmental impact and damage, pollution, costs of environmental clean ups, and finally the quality of life itself.
- Every metal needs corrosion protection, whether it is by employing forms of coatings (paints, etc.), chemicals, inhibitors, metals and alloys, polymers and cathode and/or anode protections.
- The industry has been in existence since early in the last century, and many companies have grown to become giants in the marketplace. Examples of such are BASF, BAYER, Dow Chemical, ICI, to name a few.
- To most industry players – corrosion is considered as a “cost factor”, to protect the assets and investments. Therefore it is left as an element which is to be controlled in order to protect the business bottom line, and not a major factor to be considered as a cost element. Therefore, in most major industries, anti-corrosion is either being pre-designed into the systems or contracted out to third parties.
- At the national level such as the Governments, however, the cost of corrosion is a “hidden cost” whereby the costs will creep up in the annual maintenance budget; such as the costs to maintain the infrastructure (e.g. ports and railroads; highways and bridges; water and sewer pipelines, etc.). There are no clear studies to calculate these costs and how much it drains the national budget. If we take the figure of 3% of the GDP as a correct number, then this issue should be taken into consideration.



# Industry Cross Cut Estimates



The table below provided a cross cut estimates of the industrial applications of the anti-corrosion for the United States.

MATERIAL AND SERVICES	RANGE	AVERAGE COST	
	(\$ x billion)	(\$ x billion)	(%)
<u>Protective Coatings</u>	40.2-174.2	107.2	88.3
Organic Coatings	1.4	1.4	1.2
Metallic Coatings			
<u>Metals &amp; Alloys</u>	7.7	7.7	6.3
<u>Corrosion Inhibitors</u>	1.1	1.1	0.9
<u>Polymers</u>	1.8	1.8	1.5
<u>Anodic &amp; Cathodic Protection</u>	0.73-1.22	0.98	0.8
<u>Services</u>	1.2	1.2	1.0
<u>Research &amp; Development</u>	0.020	0.02	<0.1
<u>Education &amp; Training</u>	0.01	0.01	<0.1
<b>TOTAL</b>	<b>\$54.16-\$188.65</b>	<b>\$121.41</b>	<b>100%</b>

Source: Report by CC Technologies Laboratories, Inc. study commissioned by the US Federal Highway Administration.

# Shortcomings of Existing Practice



The problems with corrosion are two:

- a. Firstly, the costs of anti corrosion systems – which is mainly a direct economic costs
- b. Secondly – the costs to the environment and Nature

Anti corrosion systems are costly because – they need to be performed by expensive methods of providing protective layer (such as coatings or galvanizing, etc.); and it requires frequent replacement costs – such as replacement of coatings or substitutions in case of cathode or anodic protective methods.

In another word: existing solutions are at best – to provide “temporal protection” against corrosion which is more like delaying and reducing the corrossion, but nobody can actually “STOP” the corrossion on permanent basis.

In a cynical way, may this is best for the industry because of potential “repeat business” from the end users/customers and continued dependency on their products and services over time.



# The Concept of “ZERO POTENTIAL”

- What does it mean? **Zero Potential** means – we targeted to make the corrosive elements to be Zero or almost zero. This implies that the potentiality of the metals to corrode is brought down to almost negligible level.
- This has never before been accomplished worldwide!!!
- While the subject of Zero Potential has been in the academic circles for more than 20 years, the issue is to be able to invent and design a method that produces such results has been a very daunting subject.
- We can claim today that we have accomplished such achievement!!
- Zero potential means that the possibility of the corroding effects being eliminated to ZERO LEVEL!!
- This is truly a new revolution in our fight against corrosion, and finally we might be winning this battle for good!!



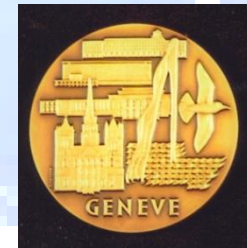
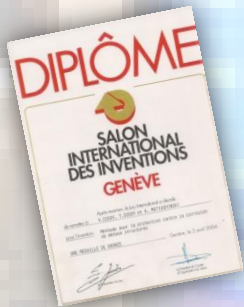
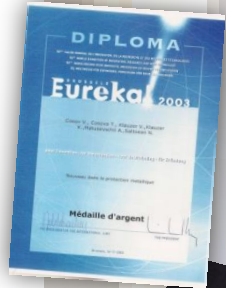
# Scientific Development

- Our scientific founder and scientists – Prof. Dr. Wilhelm Kosov and Prof. Dr. Viktor Klauser has been researching the subject of Zero Charge Potential in metal protection for the last 30 years.
- Our scientists have published numerous academic papers in Russian language and English languages in the field.

They have exhibited the concept in many scientific exhibitions & have won prestigious awards:

- Silver Medal award – 2003, 52<sup>nd</sup> World Exhibition of Innovation, Research and New Technology, “Brussels EUREKA”.
- Bronze Medal award – 2004, 32<sup>nd</sup> Exhibition of Inventions Geneva.(Salon International des Inventions de Genève is an international exhibition that is reserved exclusively for inventions and new products and is recognised as the world’s most important marketplace for inventions.)

- We have patented the innovations under:
  - Patent - No. A 2003 01 00, and
  - International Patent EA 008848B1 31.08.2007



# Technical Description of Zero Potential

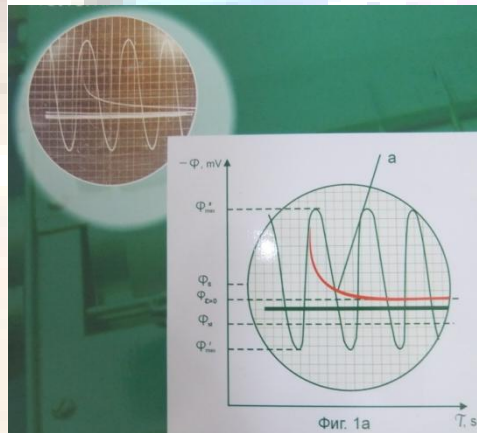


- The term “zero charge potential” is derived from Electrochemistry field whereby it describes that the measure of the charges in an object, and specifically in our case the metals that are required to be protected. The presence of these charges in the metals and the surrounding are the “source” of corrosion.
- Furthermore, each metals, within different environment will have a different level of surface charges, which makes it complicated to measure and control these charges. At the same time, the surrounding environment also changes due to geography, atmosphere, location and conditions – and therefore the charges within the external corrosive elements also keep changing (i.e. dynamic).
- For example, the hull of a steel vessel will have different charges while under salt water versus no-salt water; while moving at 5 knots versus 12 knots; under hot climate versus cold climate and so on.
- Given such complications and the dynamic environment the metals are exposed to, and the dynamic nature of the corrosive elements, to pinned down the measure of these charges and its combined effects is a very complicated matter.
- Prof. Kosov and his team, however has scientifically proven that method to measure such charges has been founded. Furthermore not only the method has been proven, EGM and the Scientists has developed the proper methods and instrumentation to deal with these issues.
- Based on this, EGM and the Scientists have furthermore develop methods deploying reverse pulses to not only bring this charges to almost zero, but also develop a dynamic system whereby even under different environment and conditions, these charges are kept to the same zero level.
- This innovation is the major breakthrough that we have accomplished, and thus our ability to claim that we can achieve and set Zero potential charges in any metals as a way to provide protection against any corrosive agents.

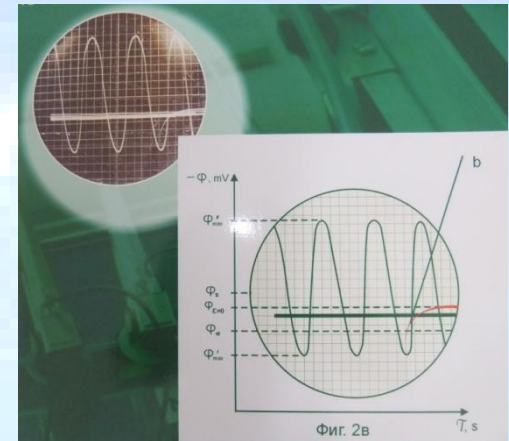


# Definition of potential of a Zero Charge

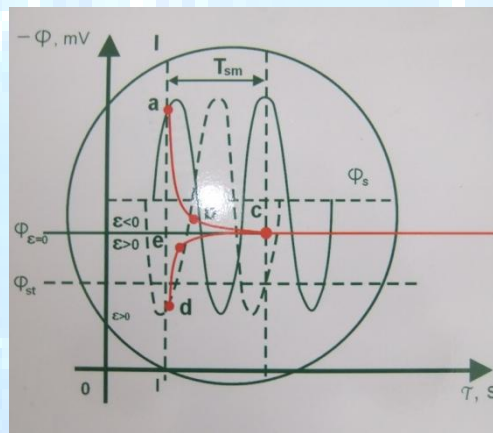
The potential of a zero charge is measured by means of an oscilloscope and a high-speed camera.



The standard protective interval which is in the range of  $\pm 300\text{mV}$  doesn't allow to carry out protection of metals against corrosion, and on the contrary, in certain cases it might even accelerates the corrosion of metals.



For the first time in the world, we establish the methods of accurate measurement and the formation of protective potential for any metal in any corrosive environments to be constrained at the range of  $\pm 2\text{mV}$ . Which is the core of the subject matter.



For the first time in the world, we claim that we can create the dynamic balance between metal and the corrosive environment which is automatically supported by setup of our protection methodology.

# New Paradigm of Anti Corrosion?



- With the possibility of creating a Zero Potential environment on the surface of the metals – Is it possible then our approach to be a totally “new paradigm” in anti corrosion?
- The answer is absolutely: YES!!!
- Normally under most conditions – metals need to be protected against corrosion and hence the development of chemical and painting industries being developed over the last 100 years, and today they have become mammoths of the economy.
- As we can see from the report that currently “cathodic and anodic method” represent about 0.8% of the total anti corrosion industry, while the coatings segment represents 88% of the industry. The reason being for such market structure is simply because coatings and paintings are the cheapest in terms of implementation and hence economic value. Compared to cathodic and anodic method, the costs and easiness of implementation will favor the coatings industry.
- How about if the costs of our solutions can beat these economic figures? And furthermore, it is easy to be implemented?
- Then we have a whole new revolution to the whole industry outlook of anti corrosion.
- We can claim that in a matter of time – we would be able to design systems that are small/compact and yet powerful enough to cover a large area of metal surfaces with minimal costs of implementation and setting up and post installation maintenance. And furthermore, we can guarantee that it works for the next 25 years with little maintenance.
- The potential of economic benefit to the end users, customers will be tremendous. Probably the day will come that we might need less chemical substances to be used (i.e. paints and coatings).
- And more importantly the impact on the environment is tremendous – we let the nature works for itself.
- ECOLOGY is the future of our lifeline....

- Direct comparison of our method of anti corrosion would be the Cathodic methods and anodic methods of anti corrosion.
- Cathodic method has been developed since 1920's and has been one of the most established method – whereby electrical currents are charged through the metal to provide the reverse potentials of any corrosive charges on the metals to be protected. This method is well proven and has been in wide application worldwide.
- On the other hand, Anodic method has been developed since 1960's, and has also gains popularity in various industries. Anodic method relies on usage of sacrificial anodes which are made of special metals such as aluminum, lead, zinc, magnesium or their alloys. The electrical charges are diverted to these anodes and over time these anodes will be depleted and has to be replaced.
- The shortcomings of the methods are as follows:
  - i. It has to be maintained regularly
  - ii. It has be replaced over time (usually between 5 to 10 years)
  - iii. It never provides 100% protection (usual effectiveness varies)
- We can claim that our new method does not suffer from all of the above shortcomings.
- However the bigger issue is – do we need all the expensive coatings and paints anymore if our methods can also replace them? Or do we need galvanization of metals and alloys such stainless steels if we can overcome the corrosion? If this is possible, then we can also compare our solutions to other methods of anti corrosion.

# What are the Potential of Our Solutions?




## Our technology permits the following:

- 1. Increase of the protective effect of the metal from 50% to 96%.
- 2. More than fourfold reduction of power consumption.
- 3. More than doubling the useful life of metal internal structure.
- 4. More than double in the reduction of the environmental pollution.
- 5. Eliminates the requirement application of partly toxic corrosion preventive coatings. Discontinuation its usage and savings in terms of lab costs and continuous maintenance works.
- 6. Reduction of costs by at least 2 to 2.5 times for anti corrosion works.
- 7. Better capability in terms surface area coverage. One of our systems can replace between 3 to 5 of old stations.
- 8. Reduction of the tension field and magnetic field of the surrounding for more than the double.
- 9. More than 2 folds in terms of reduction in construction or production costs.


# Comparison with Other Electro Chemical Methods



Comparison		Cathodic	Anodic
Power consumption	0.5 Amp/m <sup>2</sup>	10 Amp/m <sup>2</sup>	100 Amp/m <sup>2</sup>
Duration of the power supply requirement	from the first 100 to 240 hours is absolutely required; however post the period the power availability is less critical	Power supply is required at all time from start till end	Power supply is required at all time from start till end
Dynamic vs. Static	Applicable in ALL dynamic environment	Only static environment	Only static environment
Long term effect on metal strength	Improve over time	Decrease over time	Decrease over time
Effectiveness	96-98% effect	max. of 45%	max. of 50%
Organic growth of the surroundings (in water)	No growth	Active growth	Not applicable
Requirement an additional thickness of metal construction	Not required	Yes. Has to be conditioned. Additional thickness to 5 mm.	Yes. The protective surface must be cleaned constantly

# Comparison with Other Electro Chemical Methods



Comparison		Cathodic	Anodic
Protective effects due to power supply failure	The system is effective for a period up to 240 hours without power supply	Fails immediately	Up to 30 minutes
Requirement of surface pre treatment	Not required	Not required	Not required
Period of Effectiveness	25 years (i.e. almost lifetime)	5 years and depending on system	5 years or less in most systems
Surface protective layer deposits over a period of time	Good possibility since the layer is used as a building material for the dielectric protective coating	Not possible. Additional measures are necessary for the surface to work as protection.	Not possible. Protective layer does not form at the corrosion surface.
Propagation of the protective coating on the metal surface over period of time	Possible. From the surface state of the metal independently	Possible; however, it is with big decrease of the point (to 1.5-fold from the radius of the protector)	Irregularly. Depending on the structure of the metal
Requirement of application of coatings	Not required	Required	Required

# Proof of Industrial Applications



Whilst technological breakthrough is a novel and important step of our development, it has to be proven and sustained in the field of operations.

The first major tests was performed on the gas pipelines in the City of Kishinev, Moldova. The experiment was started on 23<sup>rd</sup> August 2004 and was run until 23<sup>rd</sup> February 2006 (18 months period), with astounding results to proof that the concept is workable and industrial environment. (\*)

We have confirmation of the following party for testing the applications of our systems:

- i. WEENER Plastics GmbH, in Germany – part of a multi national Group with presence in all major countries worldwide, a major player in plastic packaging industry.

We are negotiating with the following parties testing the applications of our systems:

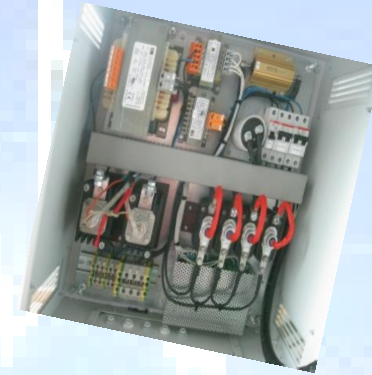
- i. MEYER Shipyards, in Papenburg, Germany – world biggest shipyard, builder of luxury cruise lines (such Caribbean Cruise Lines, Disney Cruise Lines, etc.)
- ii. VIESSMANN, Germany – one of the worlds biggest Companies in the field of climatic and heating systems

*(\*) The full reports are available upon request*

# EGM Technological Breakthrough



- We are proud to inform that we have now constructed and manufactured full industrial units of ECORR
- Description of 1 unit of ECORR
  - Size of the main system: 1 box of 2'x1.5'x1'
  - Electrical power usage: 2,400 Watt
  - Capability: to cover an area of 300,000 meter square for newly built metal structures & 150,000 square meter of old metal structures.
  - Electronic oscilloscope for monitoring and control
  - SCADA control system (to be added)
  - Does not include all the wirings and installation setups (conditional upon the sites and applications)
- The systems is scalable to be applied for large structures or smaller structures
- We plan to produce smaller and mobile units in the future (within 6 months)



# Business Model



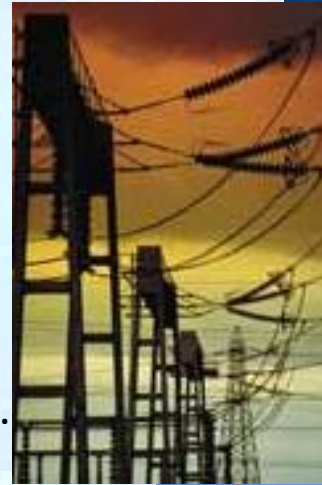
- **Business Model** in relations with customers will be based on a win-win solution by providing flexibility in payments and competitive costs structure, lowest in comparison with other systems available in the market.
- We give a **25-year-guarantee** on protection against corrosion, and it means that the guarantee is given within the limits of the useful lifetime of any metal structures.
- We build long-term relations with customers.
- We are backed by Qualified Scientists, Engineers and business professionals with the focus on building trust and confidence with our customers.
- Delivery of the systems: 30 days from date of Purchase Order.
- On delivery: We will provide technical support service for installations
- We provide on site training on the applications for the Engineers and technical staffs.
- Continuous after sales support and services through local subsidiary.
- **Together, we can make the change and transform our ECOLOGY for a better place to LIVE!!**

# Market Segmentation

There is a vast area of potential application of our solutions. Our systems is capable to deal with any kind of metal structures of any made (steel, aluminum, alloys, etc.), and whether they are fixed or moving structures; and whether they are on land or at sea. The possibility are almost unlimited.

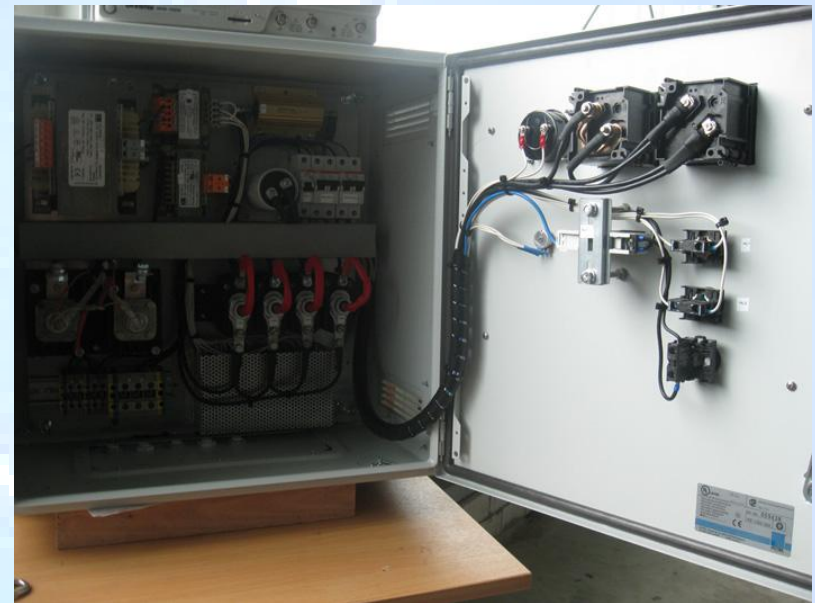
The following are few examples:

- Ports & ships: Ports, shipyards, vessels, etc.
- Oil & Gas: Drilling platforms and refineries
- Steel-concrete structures: buildings.
- Infrastructure: roads, bridges, rails, etc.
- Pipelines: water, gas, oil, etc.
- Power industry: Power plants, power cables, etc.
- Telecommunications: Towers, cables, etc.
- Industries: factories, structures, etc.
- Transportations: Heavy vehicles and machineries, motor vehicles, public transports, airports, etc.





"ZERO-POTENTIAL"  
ANTI-CORROSION SOLUTIONS



Picture of the Base System of **ECORR**

# About ECOBOUND & EGM



Human beings are supposed to live in symbiosis with nature, i.e. in a relationship that mutually benefits each other. In reality, however, it has been primarily a one-way affair. Human beings consume from nature in the forms of energy, water and food. Unfortunately during the consumption processes, we create externalities to nature which disturb the ecological balance.

The primary question is, can we human beings use all these elements and at the same time maintain equilibrium with nature?

Ecobound is focused on ecological-based technology solutions and inventions that not only maintain the ecological balance, but further solve the various problems of ecological entropy or disorder of the environment.



The EGM Group was originally established in 1999 by Mr. Wolfgang Gesen and subsequently the company was joined by leading scientists and engineers from Germany and Russia. EGM is based in Papenburg, Republic of Germany. The Group consists of EGM Environmental Solutions GmbH – which is the holder of all the patents and Intellectual Property rights developed under the Group.

The second company is EGM International GmbH – which is the Research & Development arm of the Group. The third entity is Emirates International Environmental Solutions – which is the marketing, investments and business development arm of the Group. EGM has just recently received an award from the German Government body “Deutschland – Land der Ideen” (Germany – Land of Ideas) for the year 2010 for its contribution in the field of the environmental solutions.

# Key Personnel



◀ **Wolfgang Gesen**

Chairman – EGM Environmental Solutions GmbH



▶ **Dr. Wan Mohd Hasni Wan Sulaiman**  
General Manager - EGM Environmental Solutions GmbH



◀ **Satriya Suetoh**  
President and Managing Director  
- Ecobound Sdn Bhd

▶ **Mohamed Assari Mahmood**  
Advisor (Operations)  
- Ecobound Sdn Bhd



◀ **Wan Md Suhaimi Wan Sulaiman**  
Managing Director  
– EGM Environmental Solutions (M) Sdn Bhd

▶ **Ing. Andre Linow**  
Technical Director  
- EGM Environmental Solutions GmbH



▶ **Dr Nik Hasfizul Hassan**  
Vice-President of Business Development  
– Ecobound Sdn Bhd



▶ **Prof. Dr. Viktor Klauser**  
Key Scientist - EGM Environmental Solutions GmbH

▶ **Prof. Dr. Vilhelm Kosov**  
Key Scientist - EGM Environmental Solutions GmbH



◀ **Prof. Dirk Freese**  
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▶ **Prof. Dr. Ing. Konstantin Meyl**  
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# Contact Us



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