

High performance Sealants and
Packing Rubber for Various Industrial Field



INEM Co., Ltd.

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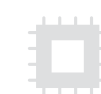
Innovate your Business with **iNEM**

iNEM



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→ Company Introduction



- **Company Name** INEM Co., Ltd.
- **Establishment Year** Jan. 2011(Incorporation)
- **CEO** Hyun-Seob Kim
- **Business Number** 305-86-08842
- **The head office / Factory** 235, Techno 2-ro, Yuseong-gu, Daejeon, Korea 305-510
- **Contact Number** tel 82-42-862-7509 / fax 82-42-862-7508
- **Capital** US\$ 1,301,500
- **Web Site** <http://www.inem.co.kr>
- **Business Area** Sealing / Packing, Rubber Parts, Software

Management Motto

Creation of best quality product and Service based on technology and talent

Core Value

Anthropocentrism
High technology
Righteousness and Friendship management



Production equipment of factory



Production equipment



Mixing apparatus

Cutting equipment

Mold management

Experimental apparatus of R&D center



Various experimental apparatus

Rheometer

Mooney Viscometer

UTM

Specimen Cutter



Aging Tester

Mixing tester

Thermal aging furnace

Sealing tester



Were resistance tester

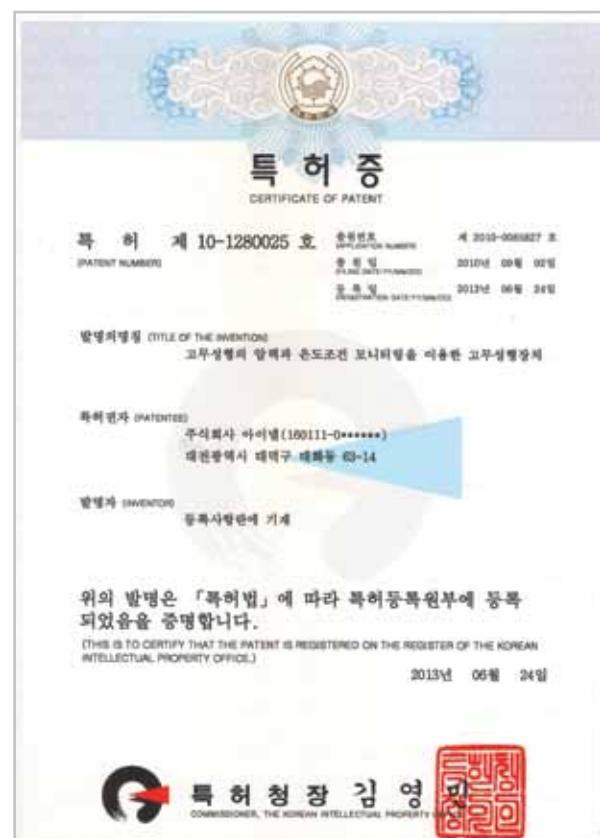
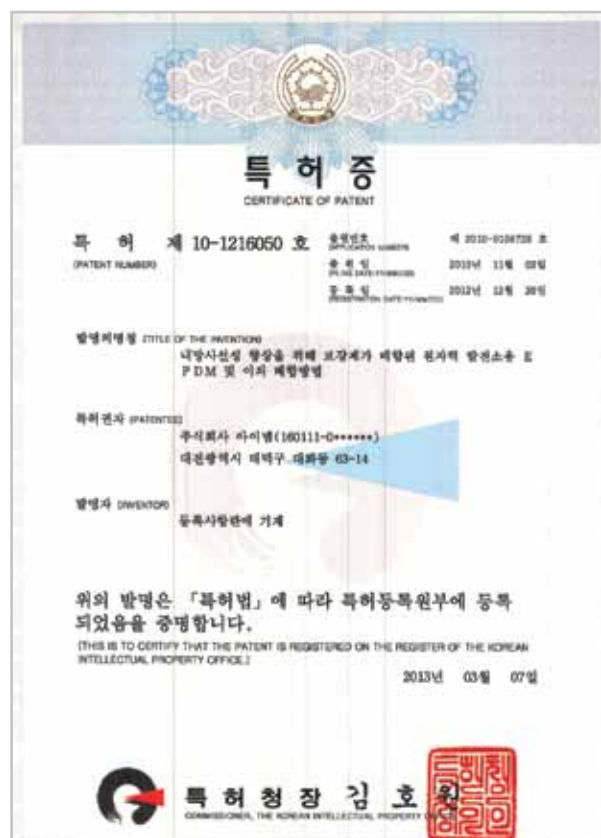
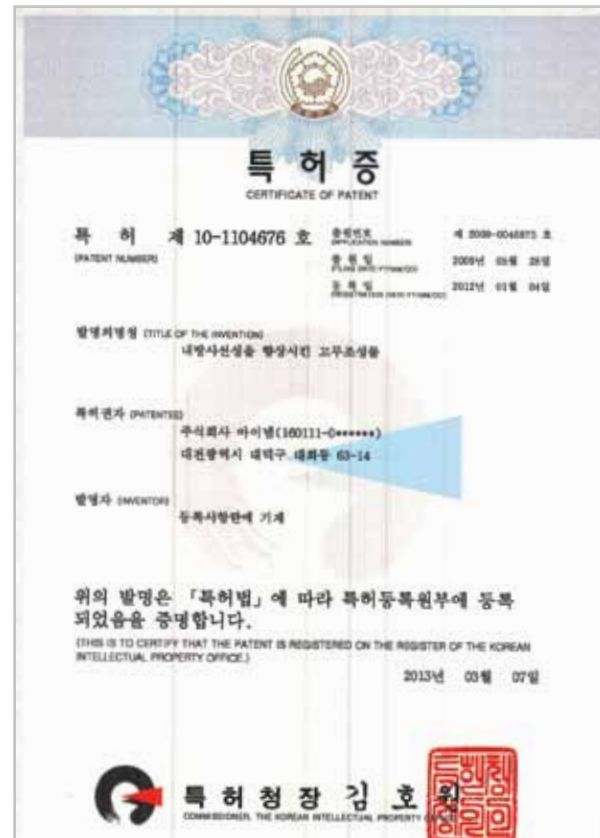
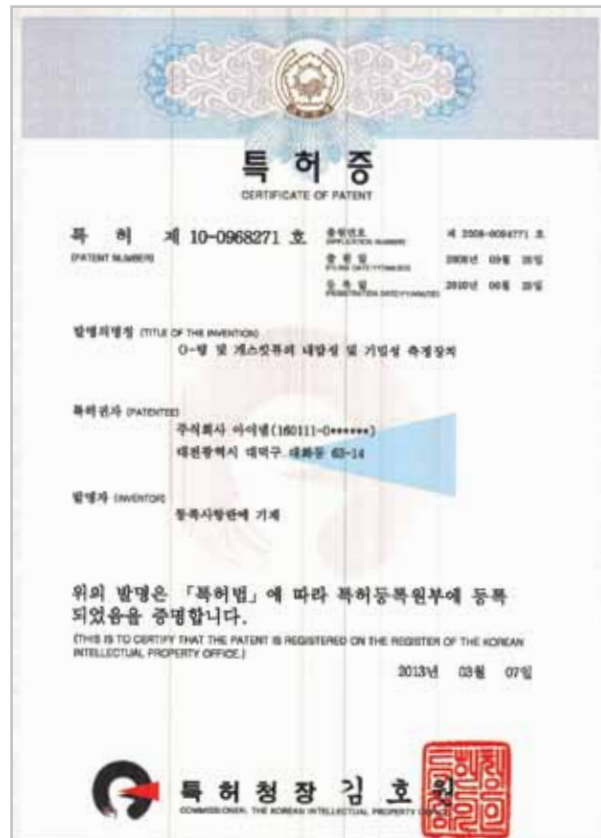
Flame tester

Oil resistance tester

Precision scale

Certificate of patent

Certificate of management



Certificate of production



NEP(New Excellent Product)



FDA cert



CMTR(Certified material test report)



CMTR(Certified material test report)



CMTR(Certified material test report)



CMTR(Certified material test report)

iNEM Products



Sealants & Packing Rubbers for various industrial field



Nuclear and Thermoelectric PPT
radiation resistance rubber



Various plant
rubber using for high temperature, high pressure and chemical resistance



Semiconductor
plasma resistance rubber



Ship
rubber using for low and high temperature, high pressure, oil resistance



Train/Automobile
rubber using for oil resistance, wear resistance



Defence/Heavy equipment
rubber using for high pressure, high temperature



Aviation
rubber using for noise and vibration reduction



Medical appliance
rubber using for environment-friendly

Rubber(Elastomer) and Silicon part

O-ring / Gasket / V-packing / U-packing / Diaphragm / Rubber-roll / Sealing



Diaphragm



Gasket



Oil-Seal



Bladder



U-Packing



V-Packing



Rail-Pad



Various Packing, etc.



Various O-Ring, etc.



EPRON Series

EPDM-based High Functional Elastomer
Especially developed for thermal power plants, medical and mechanical applications

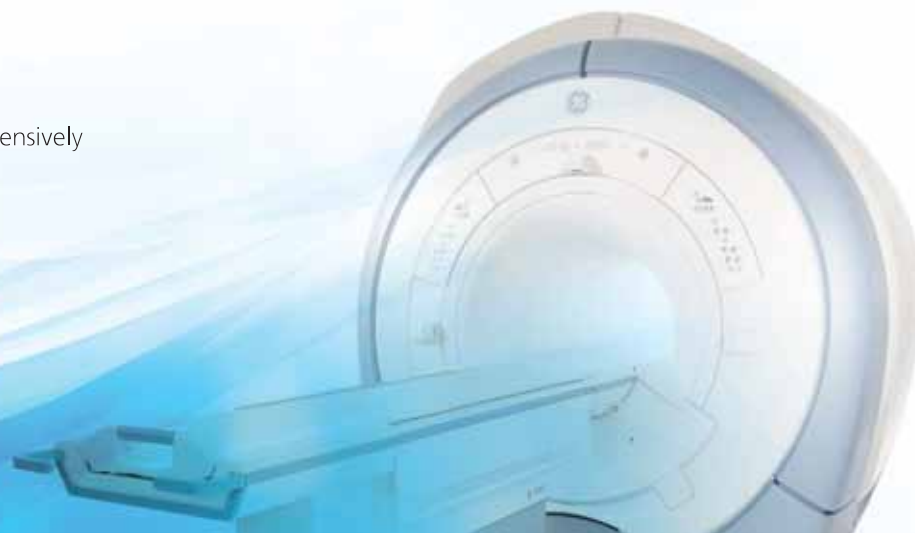
- Excellent High-temperature resistant
- Excellent Radiation resistant
- Excellent Chemical resistant
- Cost effective

Features and Benefits

- Radiation resistant high-performance sealing of EPDM base, developed as the 1st pure domestic technology in Korea.
- Sealing for radiation
- It is guaranteed reliable operation of all kinds of machine device and equipments which has possibilities of radiation exposure.
- It is superior on heat resistance, weather resistance, and chemical resistance as compared with other products.

Applications

- Thermal power plant device seals
- Nuclear power plant device seals
- Medical equipment seals
- Heat exchanger seals
- MOV/AOV actuator seals
- Electric switch seals
- Various pumps and valve seals
- Applicable environments vary extensively



FURION Series

FKM-based High Functional Elastomer
Especially developed for nuclear power plant, Equipment under radiation environment and high-performance required machineries.

- Excellent Radiation resistant
- Excellent High-pressure and heat resistant
- Excellent Chemical resistant
- Cost effective

Features and Benefits

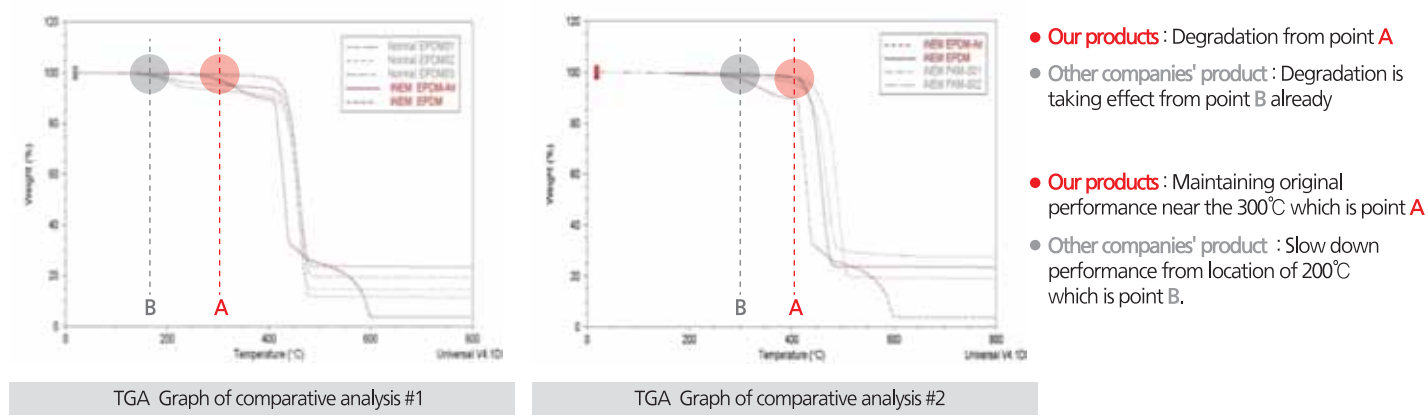
- The radiation resistant high-performance sealing with fluoroelastomer materials, developed as the 1st pure domestic technology in Korea.
- Sealing for radiation
- It is guaranteed reliable operation of all kinds of machine device and equipments which has possibilities of radiation exposure.
- It is superior on heat resistance, weather resistance, and chemical resistance as compared with other products.
- It has outstanding product performance and competitive price as compared with foreign products.

Applications

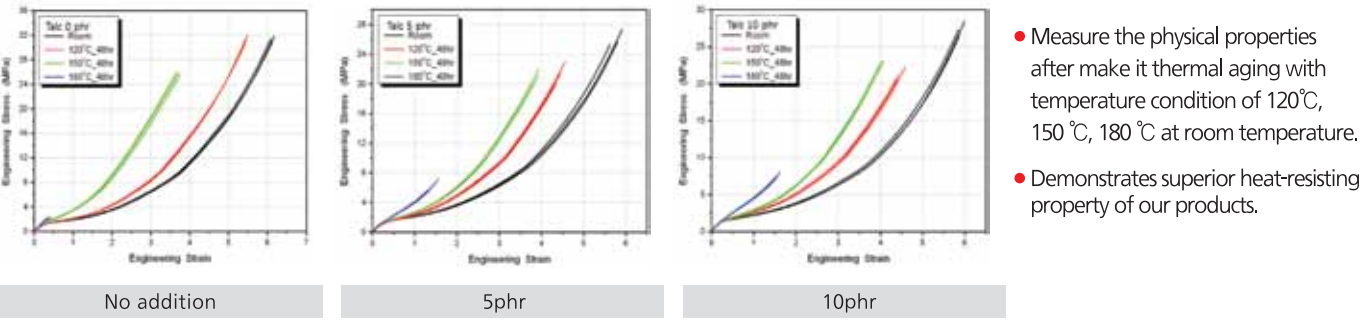
- Nuclear Power Plant (NPP) device seals
- Thermal Power Plant equipment seals
- Heat exchanger seals
- MOV/AOV actuator seals
- Various pumps and valve seals



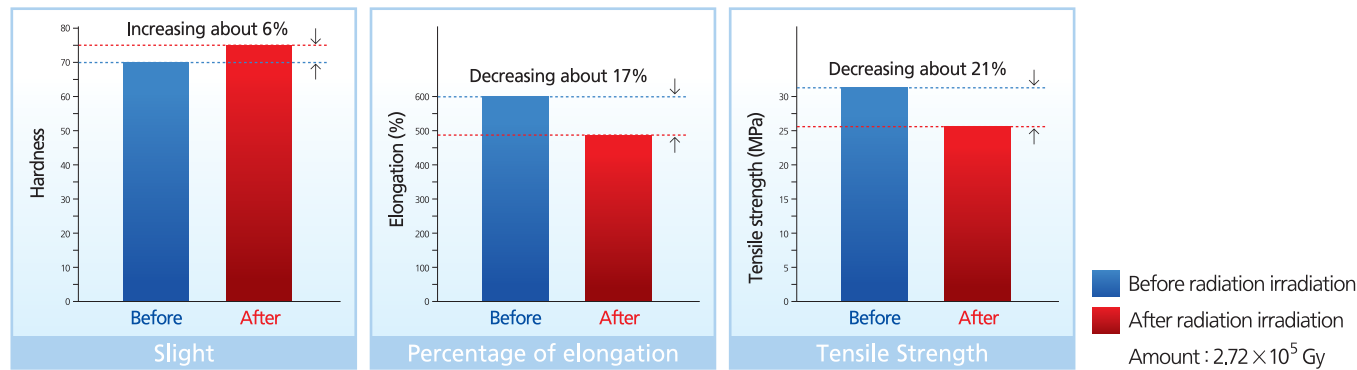
Comparing with other companies



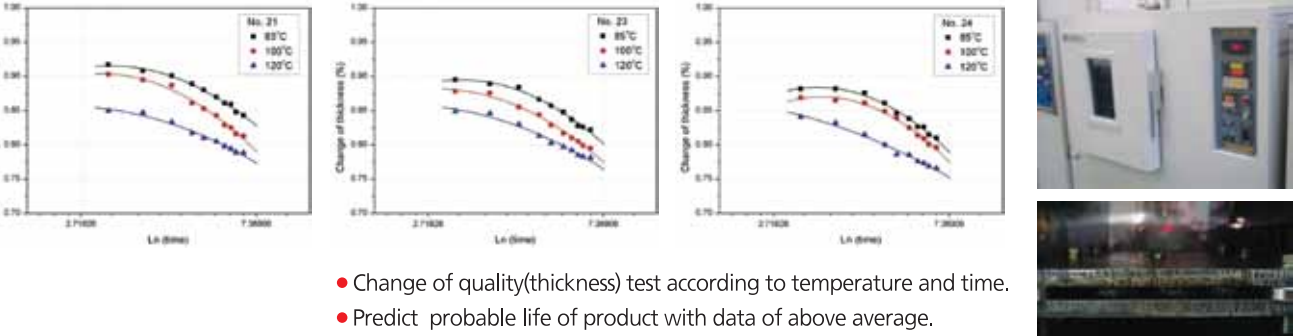
Heat-resisting property Test



Changing SPEC begin and after radiation irradiation of our product



Life prediction of rubber materials by using Arrhenius model



Comparison with Other Maker

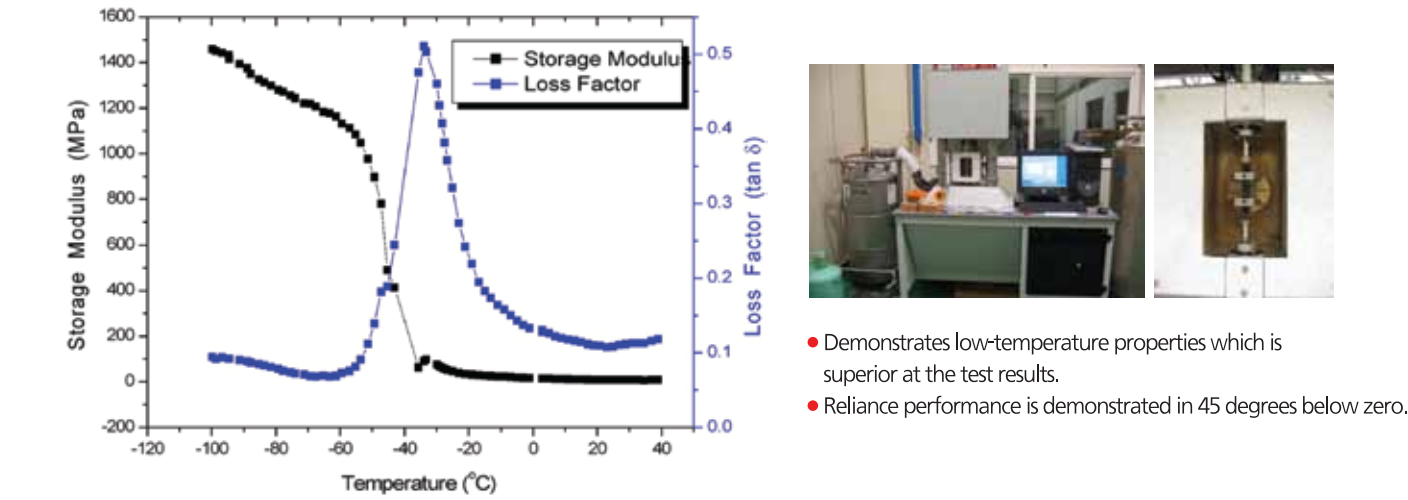
High performance production for Nuclear PPT

	Tensile Strength(MPa)	Elongation(%)	Radiation dose rate(kGy)	Compression Set(%)	Heat Resistance(°C)
D社	~18	240	1×10^5	~29	200
A社	20	330	1×10^5	~29	180
P社(E0740-75)	20	330	1×10^5	~28	177
P社(E0515-80)	20	330	1×10^5	~46	149
iNEM	35	500~700	2.2×10^6	~20	~200

Other High-performance Products

Properties	Product	D company No.1	D company No.2	IFFW963(iNEM)
Hardness(shore A)		75	80	70
Tensile Strength(MPa)		11.29	16.3	19
Elongation(%)		176	159	210
Compression set(%)		22(70 hr at 204°C)	28(70 hr at 150°C) / 42(70 hr at 204°C)	21(70±2 hr at 120°C) / 24(70±2 hr at 200°C)
Color		Tan	Beige	White
Max. Excursion Temperature(°C)		310	275	310

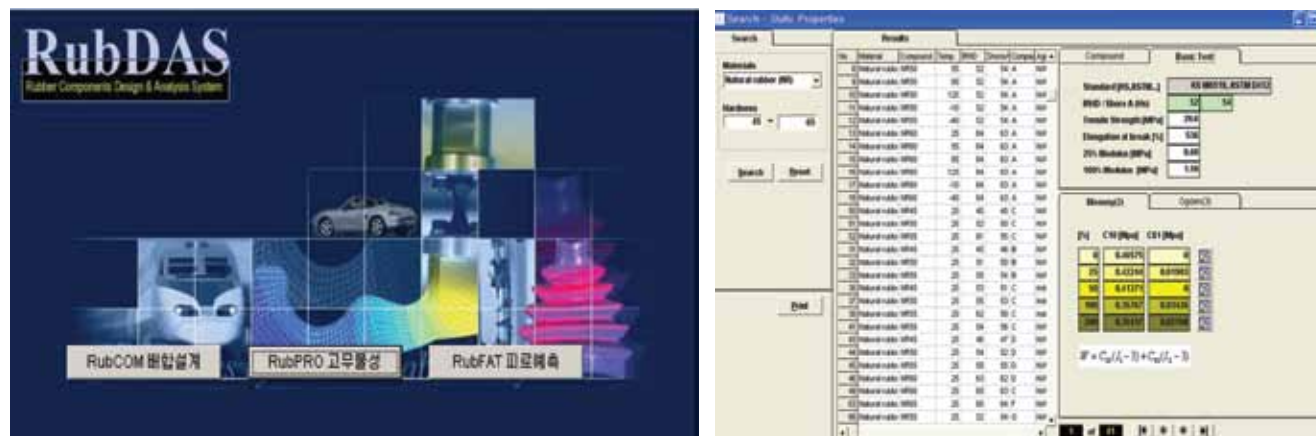
Dynamic properties and low-temperature Test Refer to ASTM D 4065, E 2254



Physical properties DB of rubber materials program(RubDAS) is developed

Integrated design program of rubber parts [Mix design, Physical properties, aging, fatigue life, and other]

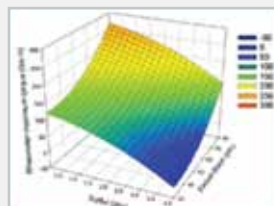
- RubCOM : Prediction of Rubber mix(2 factors and 5 factors rubber ingredients) physical properties.
- RubPRO : static and dynamic rubber materials, the coefficient of friction, and aging physical properties database.
- RubFAT : Prediction program of fatigue life for rubber materials.
- Build mixing of rubber materials, static and dynamic, physical properties of aging, material constant, and fatigue life database



Technical Skills

Material Developing Skill

• Development of high-heat resistant Compound



- Design Skills for bridging system
- Create additives and conditions of vulcanization
- Mix of material, Roll mixing milling
- Development of high heat resistant material

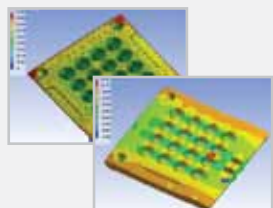
• Thermodynamic properties test and evaluation of materials



- Test and evaluation of basic thermodynamic properties
- Evaluation of heat & oil resisting
- Shortening ratio of permanent compression
- Decision of non-linear material constant

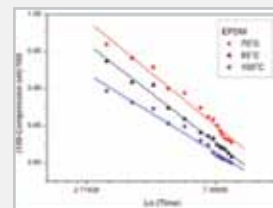
Reliance Skills

• Modeling technique optimization of product



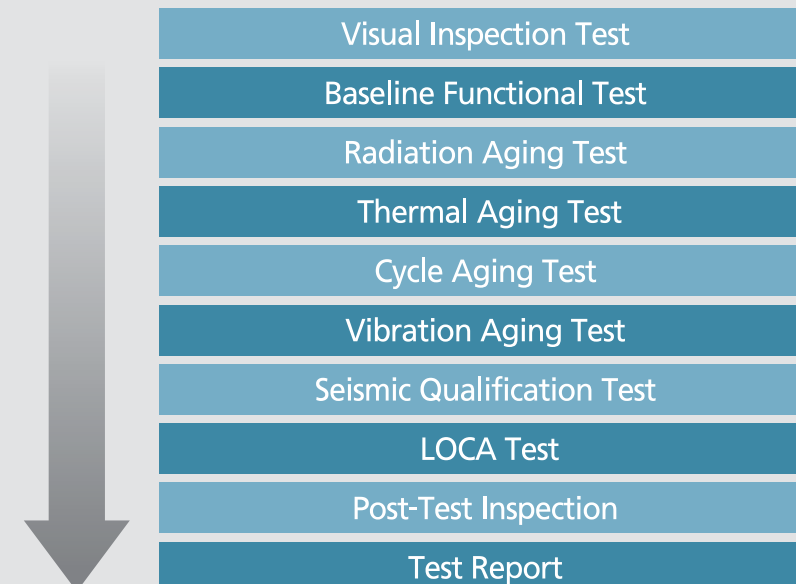
- Mold design technique
- Computational fluid simulation analysis
- Production optimum condition

• Durability life prediction techniques of material



- Evaluation of rubber material aging
- Accelerated life test
- Technical development of durability life prediction
- Building data base of thermal physical properties for rubber materials.

Test Process



Applied products (Q Class for nuclear power plant)

- Our company's product was supplied in all the process of EQ Test (Equipment Verification Test)
- Our products passed all the test and was granted.
- In case of other company's products, they did not stand series of test after radiation aging test.

※ LOCA (Loss-of-Coolant Accident Test) :

It is the test that correspond with a term of accident (1year) about installed equipment inside of nuclear reactor building

Railroads



- Packing of railroads field should be superior on quality of durability of abrasion, heat resistance, oil resistance, and others. Also, quality react to vibration or impact is needed.
- We are able to produce and supply rubber based packing and all sorts of element parts for railroad cars based on accumulated superior technical skills. Also, we guarantee the optimum performance at various parts of railroad cars to keep safety and comfortable running environment.

Features of Product	Oil resistance, heat resistance, and durability of abrasion for industrial machinery. Special packing
Usage of Product	Dust proof and sealing of engine and suspension system
All kinds of Product	Gasket, pad, rubber bush, rubber mount, and dust proof rubber for railroads cars

Automobile



- Packing of automobile field should be superior on noise reduction, vibration reduction, wear resistance and performance on high temperature.
- We secure the quality assurance system and products uniform quality items.

Features of Product	Noise/vibration reduction, durability of abrasion, heat resistance.
Usage of Product	Reduction of noise and vibration, Impact force alleviation, protection of device from debris.
All kinds of Product	GASKET, OIL SEAL, O-RING, Air intake hose, Mat, Weather strip

Vessel



- Packing for vessel and rubber parts of INEM Co., Ltd has outstanding the quality of low-temperature, so they are excellent in capability of reaction according to change of water temperature underwater. The quality of heat-resistance and durability of abrasion is superior.
- Dust proof effect which control the vibration is great and prevent leakage trouble in advance with superior air tightness especially.

Features of Product	Using manufacture work and various quality of materials such as EPDM, silicon, FKM, and NBR. Applying to specialized demands such as all sorts of oil resistance, heat resistance, and durability of abrasion.
Usage of Product	Cabin pipe, Anti-vibration, leakage, prevention of oil leakage.
All kinds of Product	GASKET, O-RING, U-PACKING, V-PACKING, MANHOLE PACKING, DOOR-PACKING, RAIL, BUFFER, MOUNTING, COUPLING ELEMENT

Aviation



- Sealants and rubber parts of aviation industry in INEM Co., Ltd make the best use of development techniques of sealants for nuclear energy that require credibility in atrocious environment. So, these products ensure the high quality and sealed performance which are reliable.
- It is possible to serve clients swiftly through mix design program that was invented autonomously.
- We pursue the quality assurances of fraction defective zero through not only physical properties of product test but also specialized and regimented self-test regulation by sorts of parts.

Features of Product	The products are used quality materials of EPDM, FKM, HNBR/NBR, PEEK, PTFE, Silicone(VMQ), and there are maximization of performances by using optimum design and forming skills.
Usage of Product	Dust proof and sealing of all sorts of connection parts, and rubber parts in noise reduction and shock absorb.
All kinds of Product	O-Ring, Aerodynamic Seals, Fire/High Temperature Seals

Medical Device



- Packing and Sealants of medical device of INEM Co., Ltd have accumulated packing development techniques that have a strong tolerance to radiation for nuclear power plants. So, those products have a superior comparative advantages in terms of quality and performance when they are applied to medical device that low-level radiation is used.

Features of Product	This product has strong tolerances to low-level radiation, and it is suitable for vibration and noise
Usage of Product	Cabin pipe, Anti-Vibration, Anti-leakage, prevention of Oils leakage
All kinds of Product	GASKET, OIL SEAL, O-RING, U-PACKING, DOOR-PACKING RAIL, BUFFER, MOUNTING, COUPLING ELEMENT

Defense

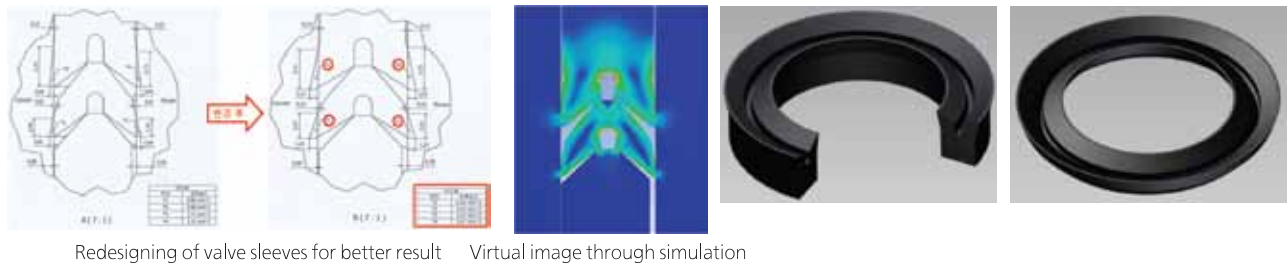


- Defense industrial packing and rubber parts of INEM Co., Ltd will be provided as high quality of products based on digitization mix design of skill that actively cope with individual demands and reliance quality evaluation skills.
- We have design and manufacture skill that are satisfied the group of wider parts from rubber parts for small articles such as gas mask to high performance parts apply to tramcar and tank.

Features of Product	Internal and external dust proof and sealing products for heavy equipments of tramcar and tank. It shows high quality performance through self-design of rubber parts and quality evaluation.
Usage of Product	dust proof and sealing of all kinds of tanks
All kinds of Product	GASKET, OIL SEAL, O-RING, U-PACKING, DOOR-PACKING RAIL, BUFFER, MOUNTING, COUPLING ELEMENT

Nuclear Power Plant(Nuclear Reactor part)

- Reformulation of material and redesign of product shape

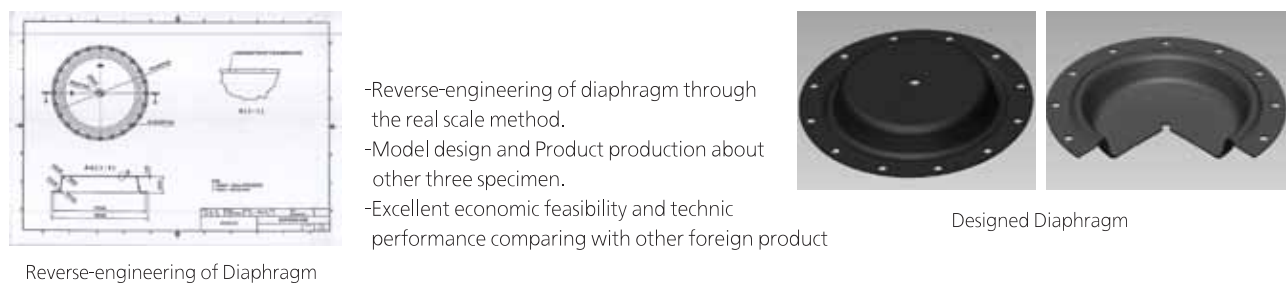


- iNEM Products

	Current Product	iNEM Product
Useful Life	30-45 days	90 days
Handling	Too hard for removal or installation	Easy to remove or install
Cost Comparison	100%	about 60%

Nuclear Power Plant(Turbine part)

- Reverse-engineering of Equipment



Shinshin Machinery

- Outstanding Issues

Pumps installed inside the boiler for an incinerating facility are exposed to high temperature and high pressure.
→ O-rings are deformed and cause leakage.
→ O-rings need to be replaced every 30 days as a warranty service.



	Current O-ring	iNEM O-ring
Heat and Pressure Resistance	Deformation detected	Deformation not detected
Leakage Test	Leakage detected.	Leakage not detected.
Life span	One month	Being used for 36 months

KEPCO KPS

- High dielectric level and Insulation resistance



Hyundai Automobile

- Development of ABB wrist axis packing



	Existing Part	iNEM Product
Chemical resistance	Change per two months	No change for three months
Application	Overseas products	domestic products

BASF Korea(Chemical Plant)

- DNT Plant Separator O-Ring (Environment : Sulfuric acid solution 80%)

- Localization of german product
- More performance and cheaper price



	Existing Part	iNEM Product
Chemical Resistance	The rubber from the surface has smeared	There is no change
Durability	Changed after 2,000Hrs working time	There is no change

Ilshin Valve

- Diaphragm for nuclear power plant

- IL-Shin valve was using the diaphragm which is most popular in the world.
- But they change it with INEM's diaphragm after Equipment Qualification Test.
- INEM's diaphragm has longer lifetime, 22 times of radiation and affordable price.
- Our diaphragm will be used in UAE nuclear power plant



S&S Valve

- Illustrating Test of iNEM products



	Existing Parts	iNEM Products
Defect Rate	3 out of 10 defects detected	No defect has been detected
Continuous Flexing Test	The result after 50,000 flexes was given to Japanese customer.	No defect detected after 100,000 continuous flexes. Japanese customer approved the replacement of diaphragms with iNEM products.