

Engineered Polymer-Composites
Solutions for Chemical-Corrosion.

FUJI RESIN

FUJI RESIN CO., LTD.

High Chemical-resistant and Engineered Composites Technology

Since establishment in 1953, FUJI RESIN has continuously supplied the advanced products as a pioneer of technology used high polymer materials (plastics) and has dedicated an environmental security to anti-corrosion lining and coating industries in Japan. With the research and development of FRP (Fiber Reinforced plastics) composite technology, FUJI RESIN has achieved to win customers esteem at anti-corrosion engineering FRP by the accumulation of successful experiences as a challenger since 1961. Recently, globalization of the industry has become a normal state, that is glowing to be more sophisticated and diversified by a rapid technology innovation. At the same time, an innovation by green procurement is demanded for a harmony with the global environment. FUJI RESIN, as the mission for supplying new anti-corrosive technology used original technology and experiences, with the best partner spirit, and will try to solve problems and build up trust with bringing passions into the themes proposed by everyone.



What is Chemical-resistant Technology?

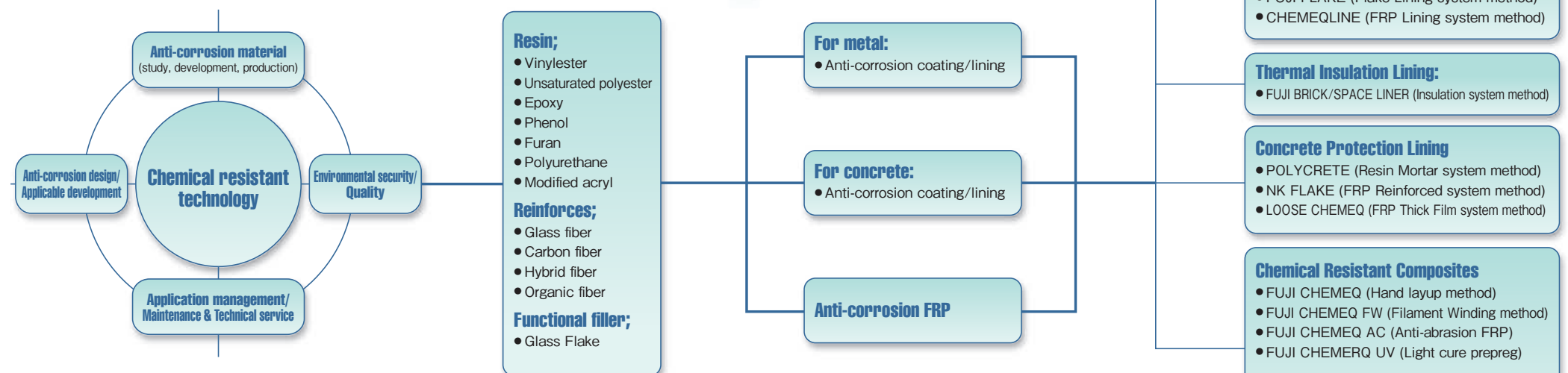
A lot of structures are made by steel and concrete around us. Steel shall rust by oxygen, humidity and rains in natural environment and deteriorate if it leaves as it is, while concrete shall be dissolved shortly by a little acid environment, that is corrosion.

Such paint is used for the purpose of anti-corrosion combined with decoration in a general natural environment, however, the equipment and facility at industrial field are operated under severe environment of chemical corrosion gas and liquid, high temperature, abrasion, etc., that is not resisted by paints which don't have chemical proof and heat proof (anti-corrosion) performance.

For the purpose of protecting steel and concrete structure, we say it is anti-corrosion lining/coating technology that material is adhered with structures and protection layer is designed and applied at superior durability.

And we say it is anti-corrosion FRP technology that the structure having similar strength with metal and moreover lightweight is designed and produced by the anti-corrosion resin composited with glass-fiber/or carbon fiber, etc.

FUJI RESIN is providing such products;



※CHEMEQ is our original of anti-corrosion FRP products.

POWER GENERATION FACILITY

Since 1882, Edison established coal fired power plant at first in the world, progress of the generation technology and expansion of utilization were remarkable, electricity becomes the infrastructure of our social life, FUJI RESIN's anticorrosion technology is used at such generation facilities.

In thermal power stations, FGD (Flue Gas Desulfurization) facilities and WWT (Waste Water Treatment) facilities which make our environment clean are installed.

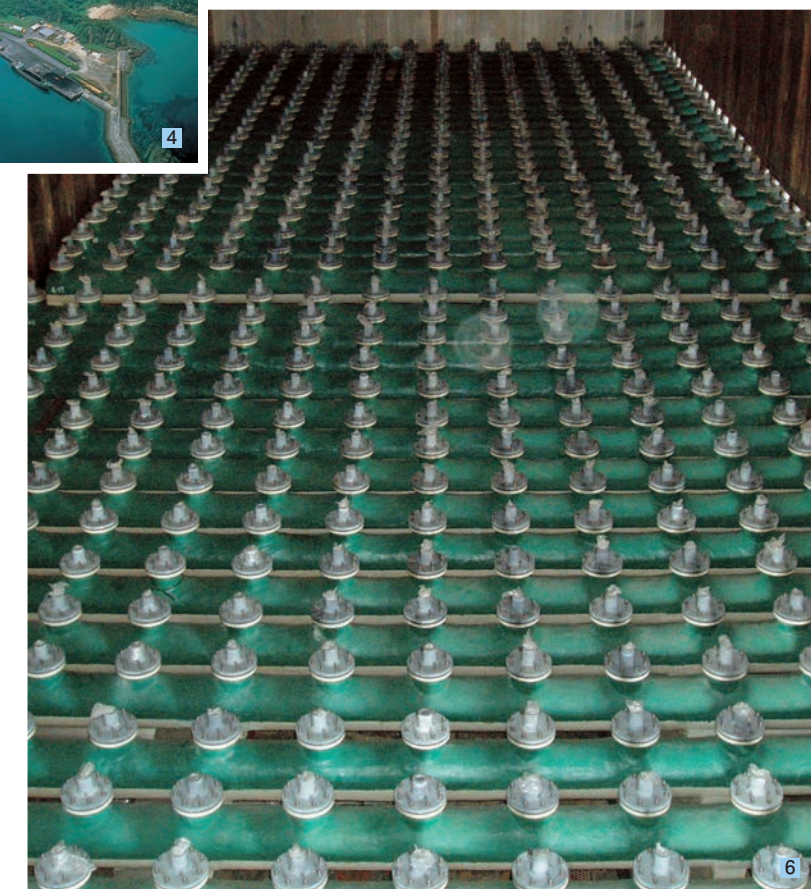
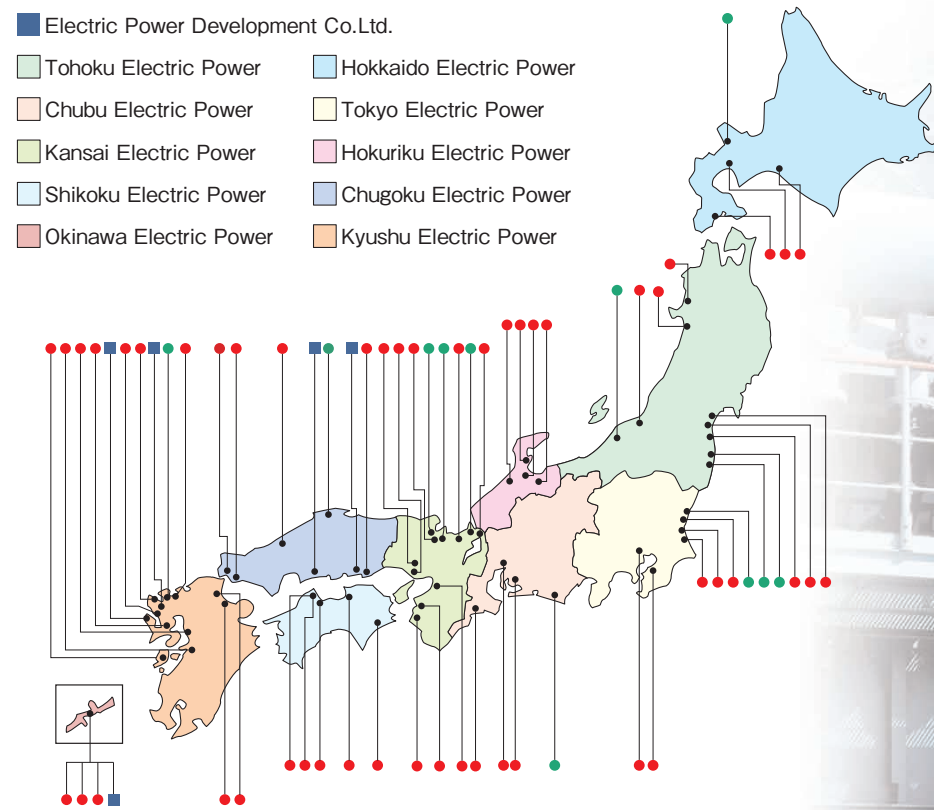
Facilities are under the environment, run high temperature gas from the boiler and attacked by de-sulfured absorbent solutions which generates chemical corrosion and abrasion, where is required the advanced anti-corrosion material for making possible a stable operation in a longer term.

In Japan, FUJI FLAKE LINING and FUJI CHEMEQ (anti-corrosion engineering FRP) have been popularly used since around 1972 and it was proved the anti-corrosive performance in long term, that has built up trust of the brand.

And recently, FUJI CHEMEQ AC, superior at anti-abrasive performance was in spot lighted to be selected for spray pipe in FGD facility.

FUJI FLAKE LINING technology is evaluated as the best at thermal power station in overseas, we are expanding a global activity with providing our technology, materials and application instruction.

At nuclear power plant, the functional FUJI FLAKE which is superior at technology in high level anti-radiation, abbreviated application in inhibited area and available to be cured in waters is used for maintenance of the facilities.



- 1 Thermal power station (FUJI FLAKE)
- 2 FGD (Flue Gas Desulfurization) (FUJI FLAKE)
- 3 FRP Duct 4500φ, Demister 7000□ (FUJI CHEMEQ FW)
- 4 Thermal power station (FUJI FLAKE)
- 5 FGD (Flue Gas Desulfurization) (FUJI FLAKE)
- 6 Super anti-abrasive spray pipe (FUJI CHEMEQ ACS)

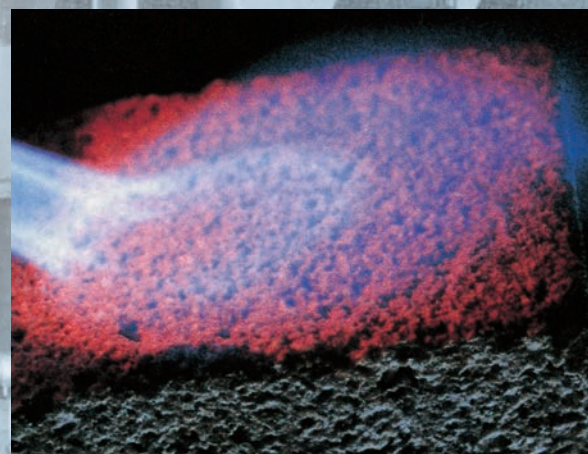
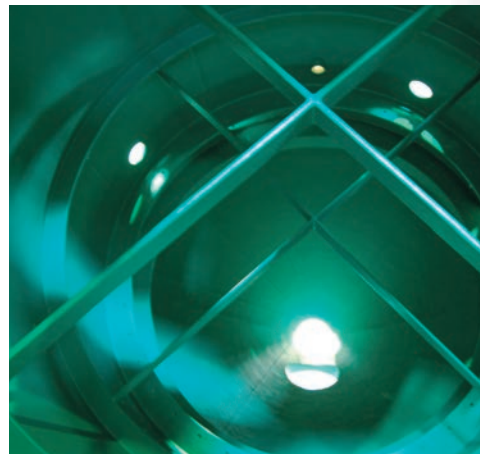
Steel & iron, non-ferrous metal, metal surface treatment

Waste gas & water treatment facility are set up at ironworks and smelters of non-ferrous metals like copper, zinc, titan for environmental protection from high heat and corrosive gas given off from, accompanied with complicated and severed chemical treatment lines like pickling tanks, metal plating line and electrolytic smelting line, etc.

The superior anti-corrosion design at heat and chemical proof is required and FUJI FLAKE, FUJI CHEMEQ and CHEMEQ LINE are performing well with obtaining high evaluations. For concrete made facilities like Aluminum surface treatment tanks, CONCRETE PROTECTION (POLYCRETE HQ, LOOSE CHEMEQ) is performed with high reliabilities.

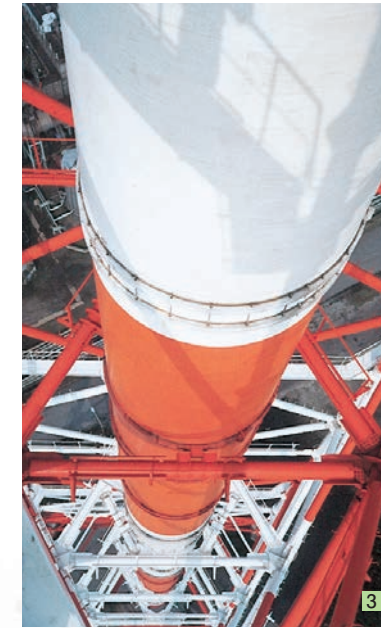


- 1 Almite treated line
- 2 High temp gas duct (FUJI BRICK X-9000)
- 3 250m³ FRP tank, 5800φ×9500H (FUJI CHEMEQ FW)



Chemical, Petroleum, Pulp & Paper

At chemical and petroleum plant where is combined with diverse and complicated chemical reaction and synthesis and at pulp and paper factory where has a lot of treatment line, high combination technology that is superior at severe anti-corrosive material and durability is required. CHEMEQ LINE, High Heat Proof FUJI CHEMEQ and FUJI BRICK insulation method are met and obtaining high evaluations. For a huge tanks to be reserved petroleum product like crude oil, NK FLAKE series that is qualified by Fire and Disaster Management Agency and KHK (Hazardous Materials Safety Techniques Association) as of approved material.



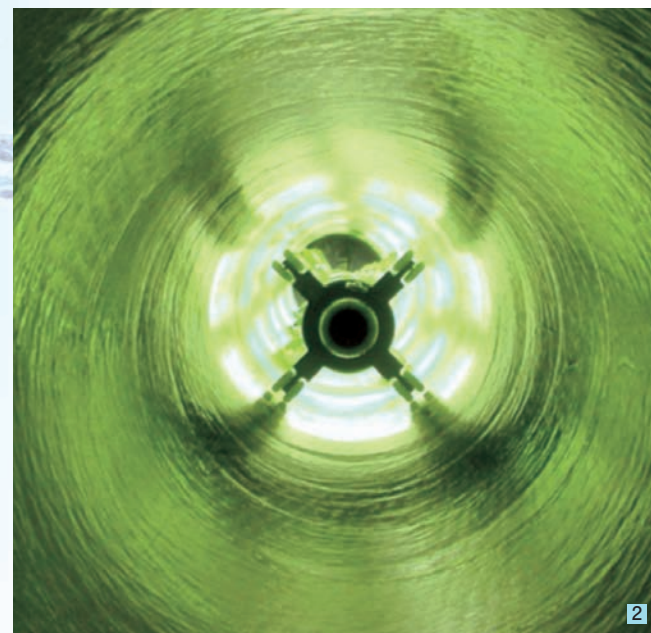
- 1 Chemical plant (FUJI CHEMEQ)
- 2 Chemical plant reactor (FUJI CHEMEQ FW)
- 3 FRP stack (FUJI CHEMEQ FW)
- 4 Crude oil tank (NK FLAKE)
- 5 FRP tank (FUJI CHEMEQ FW)
- 6 High temp reactor tank (FUJI CHEMEQ #10)

Public works, etc.

Anti-corrosion technology of FUJI RESIN'S is performing at public works where is deeply related with our living. For concrete made facilities and reservoir tanks at drinking water treatment plant, providing the safe drinking water, Sanitary NK FLAKE-DW method adapted with the standard quality of JWVA-K-149, Japan Water Works Association and FUJI CONCRETE PROTECTION are met.

And at sewage system facilities, FUJI CONCRETE PROTECTION adapted with standard quality of Japan Sewage Works Agency and NK FLAKE method are met having with many experience.

FUJI RESIN is providing FUJI CHEMEQ UV (light cure FRP prepreg) as of the re-gensis material of decrepit underground sewage pipes, FUJI FLAKE Lining for cooling and absorbing towers that make emission gases clean at the waste incineration plant, FUJI FLAKE AR for explosion proof equipment (inert gas system) on the giant oil tankers crossing a global ocean and FUJI CHEMEQ tanker lorry for land transportation of chemicals. FUJI RESIN's technology is developed at a wide range of industries such food, medical, pharmaceutical, electric, electron, production facilities of automobile and offshore development, etc. to support for preserving the environment in clean.



- 1 Drinking water treatment facilities (FUJI CONCRETE PROTECTION/CHEMEQLINE)
- 2 Sewage pipe re-gensis (FUJI CHEMEQ UV)
- 3 FRP tanker lorry (FUJI CHEMEQ)
- 4 Explosion proof equipment on oil tanker (FUJI FLAKE AR)



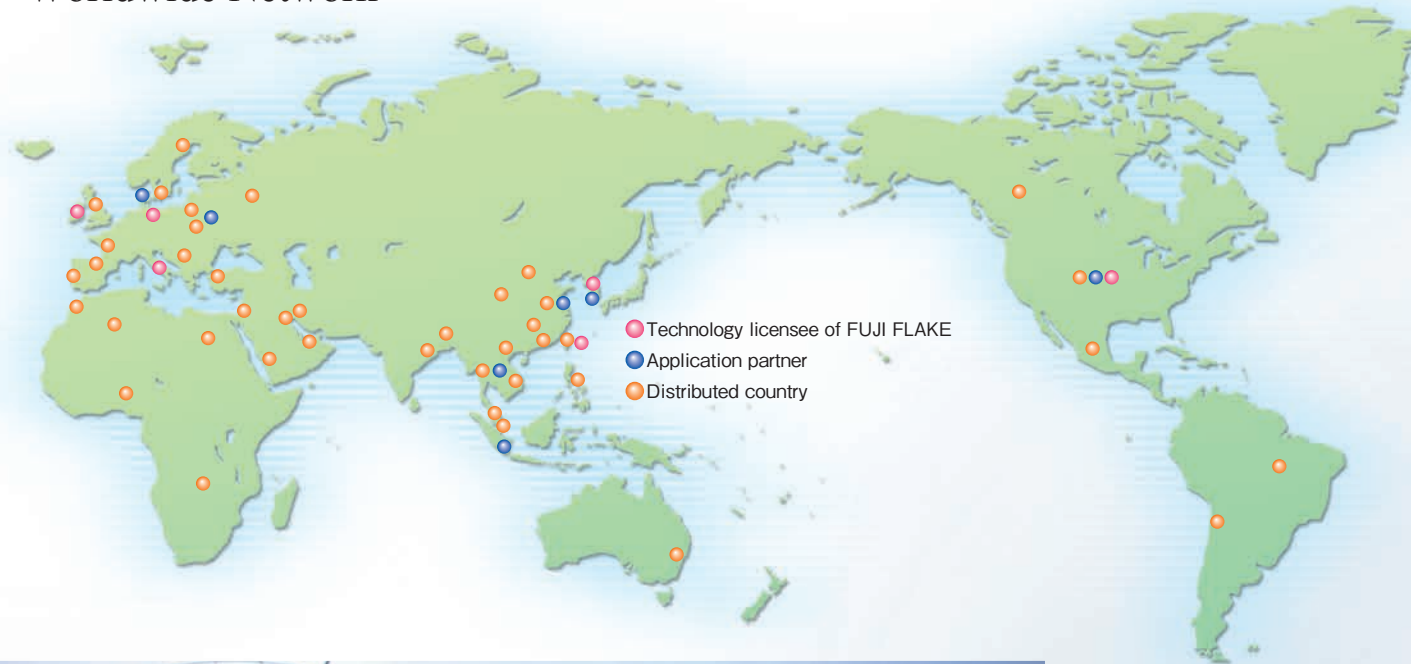
Overseas activity

In the international circumstance of demanding inhibitions to the warming and environmental protection on a global basis, various projects are expanding. FUJI RESIN has been accomplished a reliable relationship with each countries people through interactions providing the anti-corrosion technology built up in long year.

Overseas activity is going forward with global network of cooperated partners brought by a lot of activities and experiences through technology license offer, application, material export, overseas procurement and technical supervisor service of FUJI FLAKE lining.



Worldwide Network



HARDENER=11
 T₁ = 10
 T₂ = 20
 T₃ = 30
 T₄ = 40
 AL-DABBOU
 KUWAIT
 C/NO. 619
 MADE IN JAPAN
 FUJI RESIN CO.



- 1 Thermal power station in overseas (FUJI CHEMEQ ACS)
- 2 FGD (Flue gas desulfurization) in overseas (FUJI FLAKE)
- 3 FGD (Flue gas desulfurization) in overseas (FUJI FLAKE)
- 4 FUJI FLAKE (Spray)
- 5 FUJI FLAKE (Spray)
- 6 FUJI CONCRETE PROTECTION
- 7 FUJI CHEMEQ ACS (Site application)
- 8 FUJI FLAKE (Site application)

Company History and Technological Development

FUJRESIN

- 1951 ● Founded FUJI RESIN CO.,LTD., with taken over Phenolic resin baking coating service by Tysant Ind.
- 1953 ● Set up company in Osaka city.
- 1954 ● Opened Tokyo office.
- 1955 ● Developed lining method by Fluoric, Epoxy and Polyester resin.
- 1956 ● Started Furan resin production, developed the first high corrosion resistant FRP in Japan.
- 1957 ● Head office factory was moved to Amagasaki.
- 1959 ● Developed the first site baking method in Japan and practically used at Japan Synthetic Rubber Co., Ltd, Yokkaichi
 - Developed the first acid proof mortar "POLYCRETE", joint patented with Mitsui Toatsu Chemical, (now Mitsui Chemical Co., Ltd.)
- 1961 ● Started production of corrosion resistant FRP vessel.
- 1963 ● Developed the special corrosion resistant method, F-50S for stacks, joint patented with Mitsubishi Heavy Ind.
- 1966 ● Participated in anti-corrosion section of technology development of FGD (Flue Gas Desulfurization) at Tokyo Electric Company, Goi thermal power station, national project of EX. Ministry of International Trade and Industry and various types of lining method were practically used.
- 1967 ● Developed the first flake lining "FUJI FLAKE" in Japan.
- 1968 ● Opened Nagoya office & Fukuoka office.
- 1969 ● Put into the first practical use "CHEMEQ#10" made by high temp corrosion resistant Phenolic resin in Japan.
 - Developed the first lining system in Japan used by Vinyl ester resin provided by Showa High Polymer Co.,Ltd.
- 1971 ● Licensed in "KERA" high anti-corrosion FRP from Keram Chemie G.mbh, Germany.
 - Licensed in "GP method" FRP centrifugal molding from Gadelius AB, Sweden.
 - Affiliated trilaterally in IGS anti-corrosion of petroleum tanker among J.Howden, GB, Gadelius Japan (ex. Aalborg Ind.)
- 1972 ● Opened Fuji Factory
 - Put into the first practical use "Flake Lining Method" to Large wet type Flue Gas Desulfurization (FGD) in Mitsui Miike thermal power.
- 1973 ● Put into the first practical use "CHEMEQ FW" filament winding method, developed "CHEMEQ V"
 - Put into the first practical use "FUJI FLAKE" made by domestic glass flake provided by Nihon Sheet Glass Co.,Ltd.
- 1976 ● Start producing FRP made tanker lorry by succeeding technology from "Sovap" France, Sumitomo Chemical Co., Ltd.
- 1978 ● Put into practical use Anti-abrasive high corrosion resistance "AC Lining method" at the first imported coal fired thermal power station in Japan, Electric Power Development Co.,Ltd.(Ex. J Power)
- 1979 ● Exported technology of FUJI FLAKE to Keram Chemie G.mbh, Germany.
- 1981 ● Promoted overseas business at Phosphoric plant in Jordan affiliated with French engineering company.
- 1985 ● Set up Overseas Project division.
 - Exported technology of FUJI FLAKE to National Chemical Co.,Ltd. Korea.
- 1987 ● Exported technology of FUJI FLAKE to Yong Shun Chemical Co.,Ltd. Taiwan.
- 1989 ● Exported technology of FUJI FLAKE to Boero Corori S.P.A. (Ex. APSA) Italy.
- 1990 ● Supervised FUJI FLAKE works to FGD in ENEL, Italian Electric power company.
 - Exported technology of FUJI FLAKE to ITW Devcon (US), ITW Irathane (Ireland)-Ex.ITW Devcon Futura Coatings.
- 1991 ● Put into practical use "Fuji Flake SPRAY method" for larger area at NIPSCO Bailly power station, PENN Power Bruce Mansfield, US etc.
 - Supervised FUJI FLAKE works to FGD widely in the world such at Denmark, China, Czech, Thailand etc.
- 1998 ● Developed anti-abrasion FRP pipe collaborated with Mitsubishi Heavy Ind, started producing at oversea.
- 1999 ● Developed Light curing FRP for sewage underground piping, set up "FUJI LINERTEC".
- 2002 ● Developed and practically used radiation resistant material for facilities in nuclear power station.
- 2003 ● Received ISO9001 certification (Head Office and Factory)
- 2004 ● Succeeded in "ETERNAL" business from Honjyo Taisan Chemical Machinery Co.,Ltd.
- 2005 ● Acquired trade right of "NK FLAKE" from Japan CRM Co.,Ltd, Mitsui Chemical group, set up "CRM Co.,Ltd."
- 2008 ● Practically used Ultra anti-abrasion "FUJI CHEMEQ ACS" for overseas FGD.
- 2010 ● Received Eco Action 21 certification (Head Office and Factory)
 - JEC ASIA INNOVATION AWARDS 2010 winners
- 2012 ● Certified as the manufacturing plant for sewerage materials (seamless liner) by the Japan Sewage Works Association
 - Received ISO9001 certification (Fuji factory)
- 2014 ● Received Eco Action 21 certification (Company-wide)
- 2018 ● Construction complete on the Liner Plant No. 2 within the Head Plant
- 2019 ● Certified as the manufacturing plant for sewerage materials (alpha liner) by the Japan Sewage Works Association



Research & Development

Environment, Safety & Quality

Company Profile:

Company Name FUJI RESIN CO., LTD.

Established April 20th, 1953

Copital 300 million yen

President Ichiro Matsumoto

Products, Processes of Services:

- Application of synthetic resin lining
- Design and manufacture of chemical resistant FRP structures
- Design and manufacture of synthetic resin lining materials

Location: **Head Office and Factory**
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Fukuoka, 810-0073
Phone: +81-92-781-6858 Telefax: +81-92-781-7871

Affiliated company CRM CO.,LTD. (Belonging in Nagoya branch) :
application & sales of NK Flake
FUJI LINERTEC (Belonging in Head office/Factory):
manufacturing light curing FRP



FUJIRESIN

<http://www.fujiresin.co.jp>



Head Office & Factory
Fuji Factory



Eco Action21[®]
No.0005939