PROFILE

Company name	Toyo Koatsu Co., Ltd.
Founded	April 20, 1974
Company executive	Kenjiro Noguchi
Business activities	· Designing and manufacturing of high temperature & high pressure chemical equipment · Designing and manufacturing of instrument for chemical and physical research · Designing and manufacturing of high pressure facility and high pressure fluid control device · Designing and construction of high pressure and vacuum piping High pressure valve · Designing and manufacturing of vacuum vessel and instrument · Designing by CAD system in the field of mechanical and electrical design · All other businesses for construction connecting with above mentioned items
Address	2-1-22, Kusunoki-cho, Nishi-ku, Hiroshima 733-0002, JAPAN TEL: +81-82-237-6255, FAX: +81-82-230-0611
E-Mail	info@toyokoatsu.co.jp
URL	http://www.toyokoatsu.co.jp/

Subsidiary	Supercritical Technology Research Corporation
Business activities	· Contract research and trial by using supercritical fluid such as carbon dioxide and water · Contract research and trial with high pressure equipment (~200MPa) · Contract research and trial with high temperature and high pressure equipment · Various contract research and trial related to above mentioned items
Adress	3-13-17, Kusunoki-cho, Nishi-ku, Hiroshima 733-0002 TEL: +81-82-257-1633 FAX: +81-82-537-1632
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URL	http://www.chorinkai.co.jp/

TOYO KOATSU CO,LTD.

Adress 2-1-22, Kusunoki-cho, Nishi-ku, Hiroshima 733-0002, JAPAN
TEL: +81-82-237-6255, FAX: +81-82-230-0611
E-Mail info@toyokoatsu.co.jp
U R L http://www.toyokoatsu.co.jp/

It's only one

Breakthrough for the future of technology by using our original idea and our own know-how, which is the unique in the world!

Transferring the idea of a researcher into an instrument, and make the dream of the people into a real form

We are offering not only a thing like an instrument. We are offering instruments, which lead to the possibility of development for industrial technology and show a direction in development for advanced technology.

Customers are inventing their new technologies day by day using our instruments.

For a promising future

TOYO KOATSU
Toyo Koatsu Co., Ltd.

Products & Delivery

Main Products

High pressure device

- Reaction system by supercritical water
- Extraction system by supercritical carbon dioxide
- Test system under high temperature and high pressure
- High pressure hydrogenation system
- Gas-liquid continuous desulphurization test system
- High temperature and high pressure hydrogenation reduction system
- Polycondensation reaction apparatus
- Catalytic reaction test system
- Gas mixing system
- Catalytic decomposition system
- Continuous extraction system
- Metal impregnation test system
- Hydraulic test system
- Metallic material corrosion test system
- High pressure polymerization apparatus
- High pressure hydrogen purification system
- High pressure gas phase reaction system
- Decarboxylation test equipment
- High temperature and high pressure reaction autoclave
- Induction stirring autoclave
- Static autoclave
- Shaking autoclave
- Super high pressure treatment apparatus

Pressure control parts

- First pressure control valve
- Second pressure control valve
- Valve for high temperature and high pressure
- Fine flow control valve
- Super high pressure safety valve
- Shut down valve
- Super high vacuum apparatus
- First and second pressure control valve for fine pressure difference

Furnaces

- Electric furnace
- Hydrogen atmosphere furnace
- Explosion-proof electric furnace
- Special furnace for experimental use
- Drying furnace (hot blast style, infrared style)
- Molten salt bath
- Conveyor style electric furnace
- Vacuum high temperature furnace

Control panels, instrument panels, switch boards

- Equipment automatic operating system
- Equipment data automatic sampling and processing system

List of Customers

Special corporations

- Central Research Institute of Electric Power Industry
- Food Industry Research Institute
- Hiroshima Prefectural Food Technology Research Center
- Industrial Research Institute of Ishikawa
- Industrial Technology Center of Okayama Prefecture
- Institute of Environmental Science
- Institute of Public Health
- Japan Atomic Energy Agency
- Japan Nuclear Cycle Development Institute
- Japan Science and Technology Agency
- Low Temperature Food Processing Technology Laboratory
- National Aerospace Laboratory of Japan
- National Food Research Institute (NFRI)
- National Institute for Agro-Environment Sciences
- National Institute for Environmental Studies
- National Institute for Resources and Environment (NIRE)
- National Institute of Advanced Industrial Science and Technology (AIST)
- National Institute of Materials and Chemical Research
- National Laboratory for High Energy Physics(KEK)
- National Space Development Agency of Japan (NASDA)
- Osaka National Research Institute
- Research Institute for Solvothermal Technology (RIST)
- Resource Technology Laboratory
- Shimane Institute for Industrial Technology
- Technical Research and Development Institute, Japan Defense Agency
- West Japan Rail Way
- Others

Universities

- Gunma University
- Hiroshima University
- Hokkaido University
- Hong Kong University of Science & Technology
- Kansai Gakuin University
- Kansai University
- Kobe University
- Kochi University
- Kumamoto University
- Kyoto University
- Kyushu Institute of Technology
- Kyushu University
- Nagoya University
- Nihon University
- Okayama University
- Osaka City University
- Osaka Prefectural University
- Osaka University
- Shinshu University
- Tohoku University
- Tokyo Agricultural & Technical College
- Tokyo Institute of Technology
- Tsukuba University
- University of Tokyo
- Yamaguchi University
- Others

Private enterprises

- Asahi Glass Co., Ltd.
- Asahi Kasei Corporation
- Daicel Chemical Ind., Ltd.
- Daikin Industries, Ltd.
- Ishikawajima-Harima Heavy Industries
- KURARAY Co., Ltd.
- KYOCERA Corporation
- Kansai Electric Power
- Kao Corp.
- Kawasaki Steel Corp.
- Organo Corporation
- SHIMADZU Corporation
- Shin-Etsu Chemical Co., Ltd.
- Teijin Ltd.
- Others

Research & Development

We are challenging new technology and development

Following are the main results which are recognized as our own assistance

- **Development of multi-oil perfume by supercritical fluid extraction**
- **Development of non-waste dyeing and finishing system by high pressure and high temperature fluid**
- **Development of high performance drying method of organic slurry using heat-sensitive gel with high-speed response**
- **Development of high efficient gasification system using char of organic waste as raw material**
- **Development of recovery system of valuable gas in the same furnace as for carbonization of organic waste**
- **Establishment of basic technology for high efficient detoxification processing of dioxins in incineration fly ash by calcium**
- **Development of on-site waste power generation system of medical waste and so on**
- **Development of asbestos melting processing by electromagnetic induction**
- **Development of equipment for manufacture of food extract under super high pressure**

Our results are evaluated

1994 — Received the 19th Invention Award for invention and commercialization of the automatic peeler for crab

1996 — Received the Highlight Invention Award of the Minister of Science and Technology for the automatic peeler for crab

1998

2000 — Received the New Business Special Prize for designing and manufacturing of chemical plant for experiment

2001

2002 — Received the Prize of the Minister of Education, Culture, Sports, Science and Technology as meritorious person of promoting science and technology

2003 — Selected as one of the aggressive 300 medium and small companies in production by the Small and Medium

2004 — Selected and supported by the Organization for Small & Medium Enterprises and Regional Innovation, Japan (SMRJ) as a model project to support the business idea

2005

2006 — Selected as development project of new business field cooperating with a different field, and received the supporting fund by the Small and Medium Enterprise Agency

2007 — Received the Special Prize of The second Monodzukuri Nippon Grand Award as No. 1 company for development of supercritical fluid equipments

Machine & Technology

Supercritical Fluid Systems

Supercritical water continuous reaction system

Test instrument for decomposition of hazard materials such as dioxin and PCB

Medium: Water
Design Pressure: 40MPa
Design Temperature: 500deg.C
Main Material: Inconel 625

Supercritical water reaction system

Test instrument for oxidation reaction in supercritical water, applicable also for slurry reactant

Medium: water slurry solution
Design Pressure: 40MPa
Design Temperature: 650deg.C
Main Material: Inconel 625

We have sold both types, such as batch-type and continuous-type apparatus, for the purpose of reaction (water), hydrolysis reaction (water), extraction (CO_2, hydrocarbons) and others (water, CO_2, hydrocarbons).

Extractor systems

Fixed type extractor

This extractor is easily available for purification of high purity aromatic oils, and can extract valued components from all kinds of oil containing materials. This is useful for creation of new industries and expansion of employment through making it possible to utilize unused resources, e.g., recycling of industrial waste

Applicable materials for the extraction of:
Wood powder, leaves, bamboo tips, fruits, vegetables, flowers, medical herbs, garlic, ginger, coffee grounds, food waste, oil containing material such as fishes

Gas-liquid equilibrium automatic measurement system

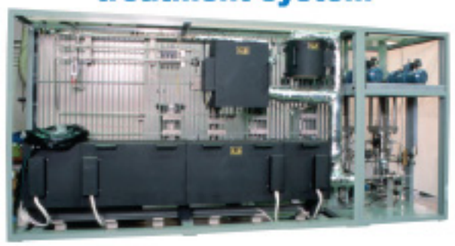
Gas-liquid equilibrium automatic measurement system

This system is designed to obtain data of gas-liquid equilibrium, which are indispensable for process development in chemical industry, easily, quickly and exactly.

Usage: Measurement of gas-liquid equilibrium data
Measurement of infinite dilution activity coefficient
Measurement of vapor pressure
Measurement of liquid-liquid equilibrium data

High temperature & high pressure treatment systems

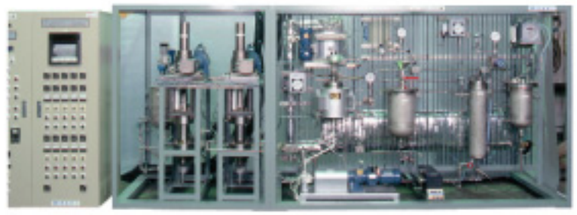
Nonflammable substance treatment system



Test equipment to probe treatment process of nonflammable substance by hydrothermal reaction under high temperature & high pressure.

Media:water
Design pressure:40MPa
Design temperature:600deg.C
Main material:Inconel 625

Alkylation reaction test equipment



An apparatus to probe performance of alkylation reaction of gasoline

Media:gasoline
Design pressure:1.0MPa
Design temperature:450deg.C
Main material:SUS316

Additionally, a continuous reaction test system for durability test of catalyst (2 series) and a bench plant for methanol gasification reaction and separation were developed and sold.

Autoclaves

Max.pressure: 12.5MPa
Max.temperature: 340deg.C

Induction-stirring autoclave units

This is a reaction vessel used in laboratory. This unit consists of autoclave vessel, supporting frame, magnet induced stirrer, stirrer driving motor, controller of the motor, band heater, valves, safety valve, pressure gage and control box.

This unit is used for synthesis of amino acids, reduction of catalyst, hydrogenation reaction, dehydration reaction, organic synthesis, polymerization reaction, condensation reaction, etc.

Currently, we are imploving new autoclaves .Please visit our website to get the latest information.
URL:http://www.toyokoatsu.co.jp/toyo-e2/index.html

High pressure treatment equipment

[Marugoto Ekisu (Whole extraction equipment)] 10L type (TFS-100)

This is a reaction vessel used in laboratory. This unit consists of autoclave vessel, supporting frame, magnet induced stirrer, stirrer driving motor, controller of the motor, band heater, valves, safety valve, pressure gage and control box.

This equipment is used mainly for development of raw materials for health foods, research in change of the environment and stage under high pressure, research of composition change of fluids, recycle process of various foods, etc.

Technology Information

DOMESTIC SHARE 45%!

Expanding the usage of supercritical fluid equipments in various fields such as energy, environment and medical field.

"Supercritical fluid equipments" are the equipment to realize a special condition, i.e., super critical state, by carrying carbon dioxide or water in states of high temperature and high pressure. The material in supercritical state shows both characteristics of liquid and gas. Supercritical carbon dioxide can dissolve a substance like a liquid, and then it can extract a special component. Supercritical water can decompose chemical substance such as dioxin, since supercritical water has a property to solve any substance because of the vigorous motion like a gas by keeping a large molecule like as in liquid stage. Supercritical fluid pesticide residue analysis equipment can perform the analysis in about an hour, while the conventional method needs about a day for the analysis. Furthermore, supercritical fluid equipments are used now in a process to make essences by extraction flavor components from flowers or foods. Supercritical fluid equipment thus has a possibility to be applied in wide areas not only in high technology fields such as energy, chemistry and environment but also in the field of medical, pharmaceutical and food materials.

Technology Information

NEW NON-WASTE FIBER DYEING METHOD WAS DEVELOPED WITH FINANCIAL ASSISTANCE FOR VENTURE BUSINESS FROM NEDO.

We have developed a new non-waste dyeing process and system for fiber together with Fukuoka University, Okayama Prefectural Industrial Technology Center, and Howa Co., Ltd. under financial assistance of NEDO by adding a special disperse dye and co-solvent in supercrytical carbon dioxide (120deg.C, 20MPa)