

ANRITSU CORPORATION

Solutions for Pharmaceutical Industries

Since **1964**

Anritsu's inspection systems started with innovation of signal processing.



Check 1964

Checkweigher K501A



Anritsu's first Checkweigher was purchased by pharmaceutical company

Anritsu's checkweighers have advanced together with the pharmaceutical industry. We delivered our first checkweigher to a pharmaceutical manufacturer. Learning from the pharmaceutical industry's rigorous attitude toward quality control, Anritsu has since continued to develop its technologies. Anritsu is committed to addressing advanced quality assurance issues through closer cooperation with customers and partners in the pharmaceutical industry.

▶1964



Electronic micrometers

Not so long after desktop electronic calculators were put out into the world, Anritsu gave birth to its checkweigher, which was based on electronic micrometers that electrically measure micron-level displacement using a differential transformer. And that was an innovation. By measuring the difference of weight based on displacement of a coil, we developed a weighcell by ourselves to be built into a machine which is able to reject products - our first checkweigher K501A.



Desktop electric calculator of the time By MaltaGC at the English language Wikipedia, CC BY-SA 3.0 https://commons.wikimedia.org/w/index.php?curid=2542893



Morse printer



Japan's first public telephone box

1895

In 1895, Anritsu's predecessor Sekisan-sha was founded. The company improved its performance particularly with the production of Morse printers. With a merger in 1908, the company became Kyoritsu Electric Wire, and expanded its operations with the production of public telephones that had just been launched in Japan.

Around that time, technologies connected to the current business of the Anritsu Group were discovered; Guglielmo Marconi in Italy succeeded in wireless

telegraphy based on radio waves, and Wilhelm Conrad Röntgen in Germany discovered X-rays and succeeded in taking radiograph. Anritsu has a history of advancing together with technologies for signal processing, particularly communications.



[Left] Marconi experimented transatlantic transmission [Right] Wilhem Röntgen detected X-rays

Over 160,000 units installed

We disclose six facts in the history of Anritsu for more than half a century.

Cumulative shipments of checkweigher as of March 31, 2019 • Over **90,000** units

Ever since we shipped our first checkweigher K501A that was put on sale in 1965, we have sold more than 80,000 units of checkweighers in total. We have also sold more than 57,000 units of metal detectors and more than 15,000 units of X-ray inspection systems.



Countries of destination

as of March 31, 2017

• Over 50 countries

Our products are used by customers not only in Japan but also in many countries, from major pharmaceutical manufacturers in the U.S.A., Germany, Italy, China and India, to emerging countries such as Vietnam, Indonesia and Argentina.



Capsule Checkweigher Since 1970

Ever since its early years, Anritsu has developed weight inspection equipment for minute weight products. The K515, capsule checkweigher developed in 1970 featuring five small parallel spring microbalances and

Anritsu's proprietary capsule feeding design, had the capacity to weigh 600 capsules per minute at an accuracy of 3 mg.







Electromagnetic force balance weighcell Since 1989

Achieved the world's top-level speed of 400 products/minute and accuracy of ±0.02 g not by weighing based on gravity but by balancing against electromagnetic force generated by a coil.



World's first automatic sensitivity setting for metal detectors

Since 1991

Nowadays, most metal detectors are with the function of automatic sensitivity setting, but Anritsu's KD801Ax released in 1991 was the world's first one with the function. With its expertise acquired in the field and total engineering capability

in terms of both hardware and software, Anritsu automated phase adjustment that used to be dependent on skilled engineers' intuition and experience.



In-house development of X-ray inspection system Since 2000

X-ray inspection systems.

The KD7203AW is a high-sensitive contaminant detector that generates stable X-rays with an inverter power source and proprietary X-ray tube and uses image processing algorithm developed in-house. Launch of this small-sized X-ray inspection system at an almost half price of conventional large-sized, high-price models facilitated the widespread use of



Maximum accuracy: +/-0.5 mg

Anritsu develops all its products, including weighcells, in-house. The results can be seen in the performance of electromagnetic force balance weighcells.

Built-in Multi-Lane Weighing System : Weighing unit



Bringing technologies and wisdoms together

Weighcells, the symbol of Anritsu's originality, become possible only when everything that is required, including hardware, software, production technology, and frontline expertise, is in place. To achieve high speed measurement at the milligram-level accuracy, Anritsu has evolved by making continued efforts for design elaboration and repeating careful simulations, experiments and demonstrations. Anritsu's weighing technologies over half a century is packed into its weighcells.







The weighcell that resistant to vibration noise



Rigid simulation of Weighcell

Dynamic weighing technologies deliver exceptional speed and accuracy

The key to high-speed, high-accuracy weighing is reducing vibration noise and improving response. Weighing accuracy declines with vibration noise generated by non-vertical load applied to the weighcell, which may be caused by dispersion of feeding position of product to be weighed. Anritsu's weighcells have the optimal mechanism for dynamic weighing with improved rigidity due to elaborate analysis of loads in a vertical, horizontal, or torsional direction. Anritsu has also improved response of its weighcells by analyzing weighing vibration to eliminate unnecessary vibration noise because that mixed in weighing signals destabilizes the weight value, which declines processing capacity.

High stability Obtained Class XII, the world's highest standard of EU's Measuring Instrument Directive (MID)

Causes of a decline in weighing stability include a change in room temperature and thermal expansion caused by mechanism elements inside a weighcell. To comply with OIML R51 requirements, Anritsu conducted 3D CAD simulation analysis to halve weight value fluctuations caused by a change in room temperature, compared with its previous model. Anritsu also renewed signal processing to not only to quadruple output resolution compared with its previous model but also to improve rejection accuracy to achieve. Measuring Instruments Directive defines several different classes according to the accuracy of measurement instruments. Anritsu KWS60 series checkweigher is the world's first checkweigher to obtain Class XII*, the highest standard ever achieved, with its superior weighing properties. Anritsu's new electromagnetic force balance scale has achieved the verification scale interval of e=0.05 g (3 to 100 g capacity). *as of May 2013, according to our own reseach



So many Originals

We disclose six facts that tell Anritsu's technologies.

Capsule Checkweigher

Stably feed semi-locked capsules

The shuttered magazine, unique shaped retention unit, and ejector allow stable feeding, even for lightweight semi-locked capsules that are difficult to handle, and achieve high-speed, high-accuracy weighing.



Tablets or Capsules Checkweigher based on sampling

Unique handling technology

Anritsu's tablets or capsules checkweigher suctions tablets or capsules one by one and put them on the weighcell at a certain interval to achieve highly accurate inspection. It is also designed to handle various shapes and sizes of products, such as tablets, capsules,



or spherical Chinese medicine, without replacement of parts.

Minimum conveyor pitch (Multi-Lane Checkweigher) 50 mm

Anritsu's small-sized electromagnetic force balance achieves not only the minimum conveyor pitch of 50 mm with proprietary expertise, structural analysis, and stress analysis simulation, but also the maximum accuracy of ±0.002 g with improved vibration



resistance and a highly rigid structure.



X-ray control technology Orally disintegrating tablet

Having a structure that allows effective use of low-intensity X-rays, Anritsu's X-ray inspection systems for pharmaceutical products can take high-contrast x-ray images of even pharmaceutical products through which X-ray penetrates easily, making highly sensitive inspection possible.



Conforming to CFR 21 Part 11 • Only Anritsu in Japan June 30, 2018

Anritsu's checkweighers supports authentication, audit trail, and data encryption and decryption, which CFR 21 Part 11 requires. Anritsu allows

flexibility in software design because of in-house substrate production.



Metal sensing technology Magnetoreflection method

Magnetic reflection is a unique detection method based on the principle of metals being magnetized, and invented to inspect metal contaminants inside aluminum packaging materials. Anritsu applied the method to inspect shortage or the number of package inserts printed with magnetic inks.



Solutions for **QC** & **Productivity**

Improves quality and productivity in pharmaceutical manufacturing and R&D.



With increasing population, aging of population, needs for new healthcare, and increasing demand for pharmaceuticals in developing countries, world's demand for pharmaceutical products is increasing at a pace far faster than that of population increase, and expected to increase by about 20% from 2018 to 163 trillion yen (sales value base) in 2023. Pharmaceutical manufacturers are required to further balance production efficiency and quality maintenance. Anritsu provides a wide variety of high quality solutions to support customers.



Pharmaceutical Metal Detector Capsule Checkweigher Built-In Multi-Lane Weighing System THURSDAY Multi-Lane Checkweigher Dual-Lane Checkweigher Pouch Small Bottle Checkweigher сî on-conforming Aerosol Inhaler Chackweigher Cans

Non-conforming

Filling/dispensing inspection



ANRITSU Solutions for Pharmaceutical Industries 11

Excellent maintenance services

Global support structure



Optimize performance at production lines based on the advantage that comes from development and manfacture by ourselves



Anritsu conducts development and manufacture by ourselves, knowledgeable about the characteristics of our products. To make use of those know-how, Anritsu is strengthening our support structure globally.



Our service network covers 50 countries now. Our experienced service engineers provide high-level services.



During service training, we provide know-how on machine settings and trouble shooting in depth so that Anritsu products can perform at the high level that they should be.



Service of sample test being conducted before your purchase of our inspection systems. By using your own product samples, it enables you to confirm exactly how the detection sensitivity can be.



We conduct technical seminars tailored to your requirements. The lecture includes the principle of operation, how to operate and on quality management.

About us

Corporate Data



Head office

Service Network for PQA* business

Europe, Africa and Middle East

ANRITSU INFIVIS B.V. Venlo, Netherlands

ANRITSU INFIVIS LTD. Luton, United Kingdom

- Austria Belgium Croatia Czech Republic Denmark Estonia Finland France Germany Greece Hungary Italy Latvia Lithuania Luxembourg
- Netherlands Norway Poland Portugal Russia Slovak Republic Saudi Arabia South Africa Spain Sweden Switzerland Turkey U.A.E. United Kingdom

Headquarters

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Founded:	1895
Capital:	19,151 million yen (as of March 31,2020)
Sales:	107,023 million yen (year ended March 31,2020: consolidated)
Employees:	3 881(as of March 31, 2020: consolidated)



Asia and Oceania

Anritsu Industrial Solutions (Shanghai) Co., Ltd. Shanghai, P.R.China

ANRITSU INFIVIS (THAILAND) CO., LTD. Chonburi, Thailand

Australia China Hong Kong India Indonesia Malaysia Myanmar New Zealand Philippines Singapore South Korea Taiwan Thailand Vietnam

Americas

ANRITSU INFIVIS INC.

Illinois, U.S.A.

Argentina Brazil Canada Chile Costa Rica Mexico Panama Peru United States Venezuela

(As of July 2020)



ANRITSU INFIVIS INC. (America)

ANRITSU INFIVIS LTD. (England)



Anritsu Industrial Solutions (Shanghai) Co., Ltd. ANRITSU INFIVIS (THAILAND) CO., LTD.

* PQA stands for Products Quality Assurance business and it is one of the major divisions within Anritsu Corporation. We design and manufacture product inspection equipment as well as quality assurance solutions for the food and pharmaceutical industries.



ANRITSU CORPORATION

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