Ultrasonic Flow Meter

SONIC Corporation

Industrial Instruments BU.

2018.08

SONIC PRODUCTS

```
                                              ┌─ GF-2500
                                              ├─ GF-2500 for Steam
                                    Gas ──────┤
                                              ├─ FEx-100
                                              └─ SGF-200
Ultrasonic
flow meter ──┤
                                              ┌─ LF-2000
                                              ├─ SLF-500
                                    Liquid ───┤
                                              ├─ SLF-100
                                              └─ uLF-300
```
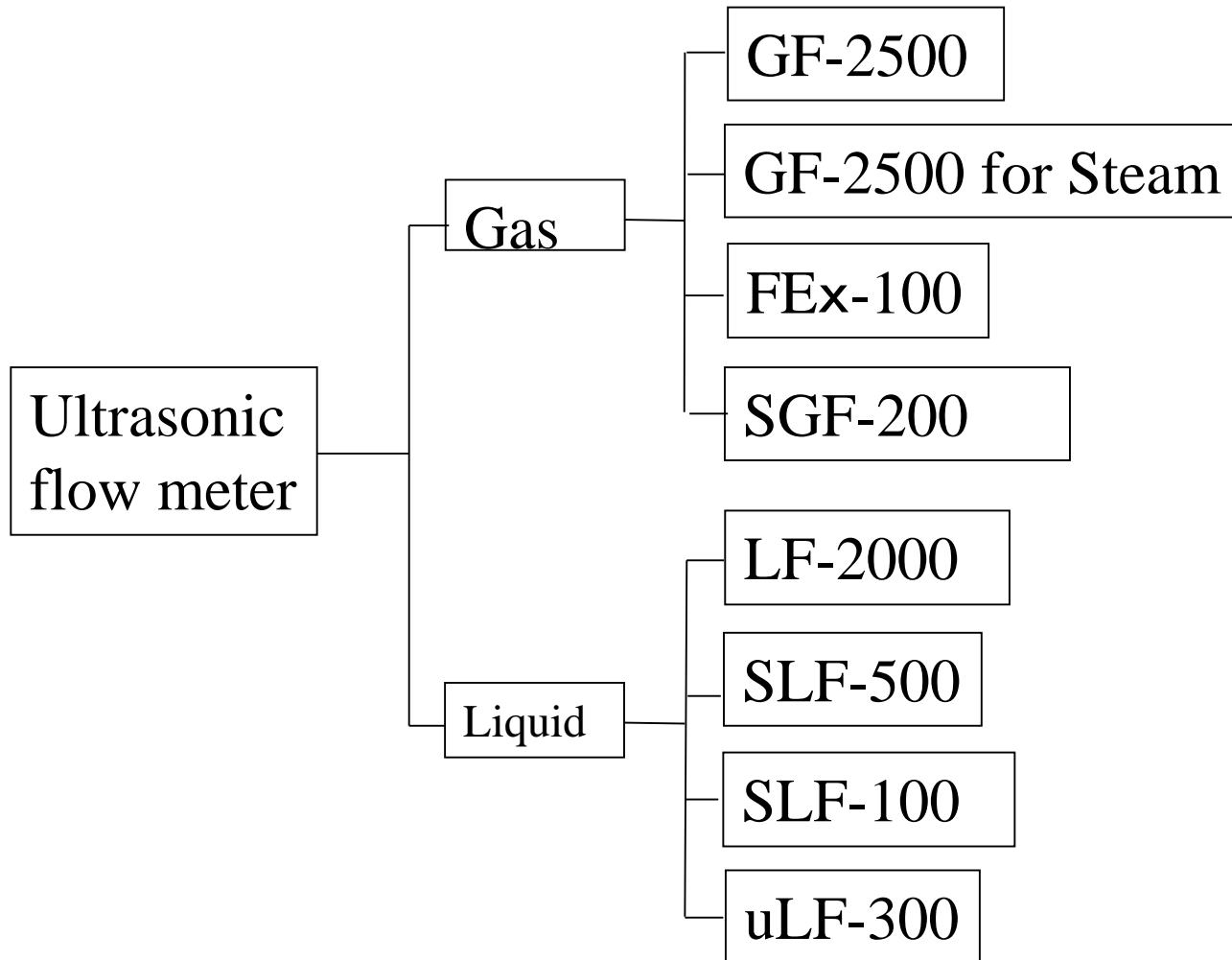
Application for Liquid FM

Industry	The application (what to measure?)
Water-purification plant	■ **Waste, drain water** ■ **Intake water and discharged water**
Automobile	■ **Industrial water（underground water）** ■ **Cooling water**
Steel company	■ **Cooling water** ■ **Water with high corrosion**
Electric power utility plant or Gas plant	■ **Intake water from river (Water power plant）** ■ **Cooling water（Nuclear power plant）** ■ **Water in a boiler (for steam lines)**
Semiconductor	・**Waste water** ・**D.I.Water** ・**Chemical solution・CMP slurry**

Comparison list (competitors')

	Turbine	Vortex	Ulrasonic (Clamp-on)	Electro-Magnetic	Coriolis (Mass)	Heat type (Mass)
DIW	△	〇	◎	×	◎	×
Clean liquid	◎	◎	◎	◎	◎	◎
Dirty liquid	△	△	〇	◎	◎	〇
Adhensive liquid	△	△	〇	〇	◎	△
Petro, Oil	◎	〇	〇	×	◎	×
Corrosive liquid	△	〇	〇	◎	△	〇
Corrosive slurry	×	×	〇	◎	〇	〇
Polishing slurry	×	×	〇	◎	〇	〇
Fibrous slurry	×	×	×	〇	△	△
Slow stream fluid	〇	×	〇	◎	〇	〇
Pulsation fluid	△	×	△	〇	〇	△
High-temp. fluid	〇	〇	×	〇	〇	〇
Ext low-temp fluid	〇	〇	〇	×	〇	×
Hi-pressure fluid	〇	〇	〇	〇	△	〇
Non-fulled fluid	×	×	×	〇	×	×
Non-Newton fluid	×	×	×	△	◎	〇

◎ ： Very suitable
〇 ： Suitable
△ ： Usable with condition
× ： Not usable

Application : River

Measuring volume of water flow in a river (research purpose)

Semiconductor application SLF-100 ①

Installed on a branched-pipe, in a semiconductor equipment.

Measuring slurry liquid in a process of manufacturing semiconductor parts.

Semiconductor application SLF-100 ②

Installed in a pipe in front of a small tank, in a process of semiconductor parts manufacture.
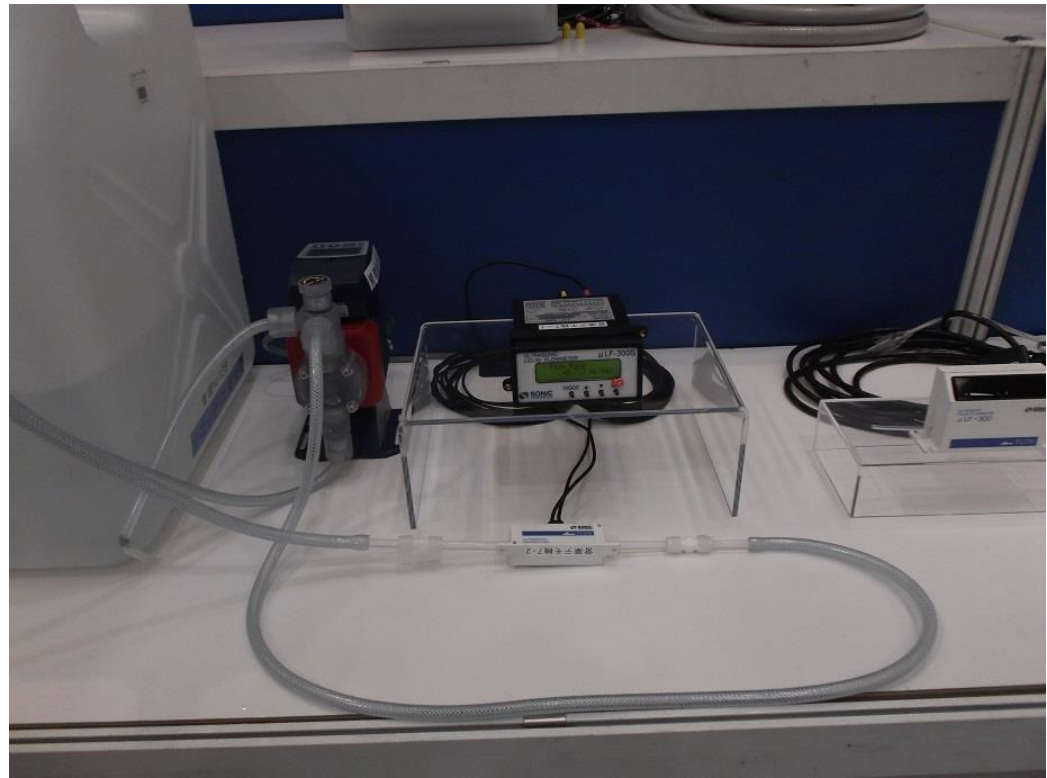
Semiconductor application SLF-500 ③

Installed in a company, which makes semiconductor equipment (water production plant)

Semiconductor application uLF300④

Integrated and separate type with ¼ inch NEW PFA Tube

Measuring volume of water flow (exhibition purpose)

Food-products company application SLF-500 ①

SLF500(Dairy products Co.) :   20-250A PVC or SUS, Measuring water in each making line, carrying and measuring like a tester.

Application for Gas FM

Industry	Application (What to measure?)
Sewage works	■ **Air for aeration tanks** (spec-in with Bureau of Sewerage) ■ **Blow-in air to aeration tanks** ■ **Digestive gas**
Automobile	**General gas** ■ **Compressed air in a compressor** **Saturated gas** ■ **steam for air-conditioner** (fridge of absorption type)
Steel	■ **B-gas, C-gas, MIX gas** ■ **Digestive gas from chimney of a plant**
Power・ Gas plant	■ **City gas (emission control)** ■ **LNG・BOG Gas** ■ **Status of cooling and heating in the area near a plant**
Others	**Fuel cell** ■ **Hydrogen gas** **Exhaust gas** (automobile) ■ **Engine-exhaust gas**

Sewage works plant GF2500 ①
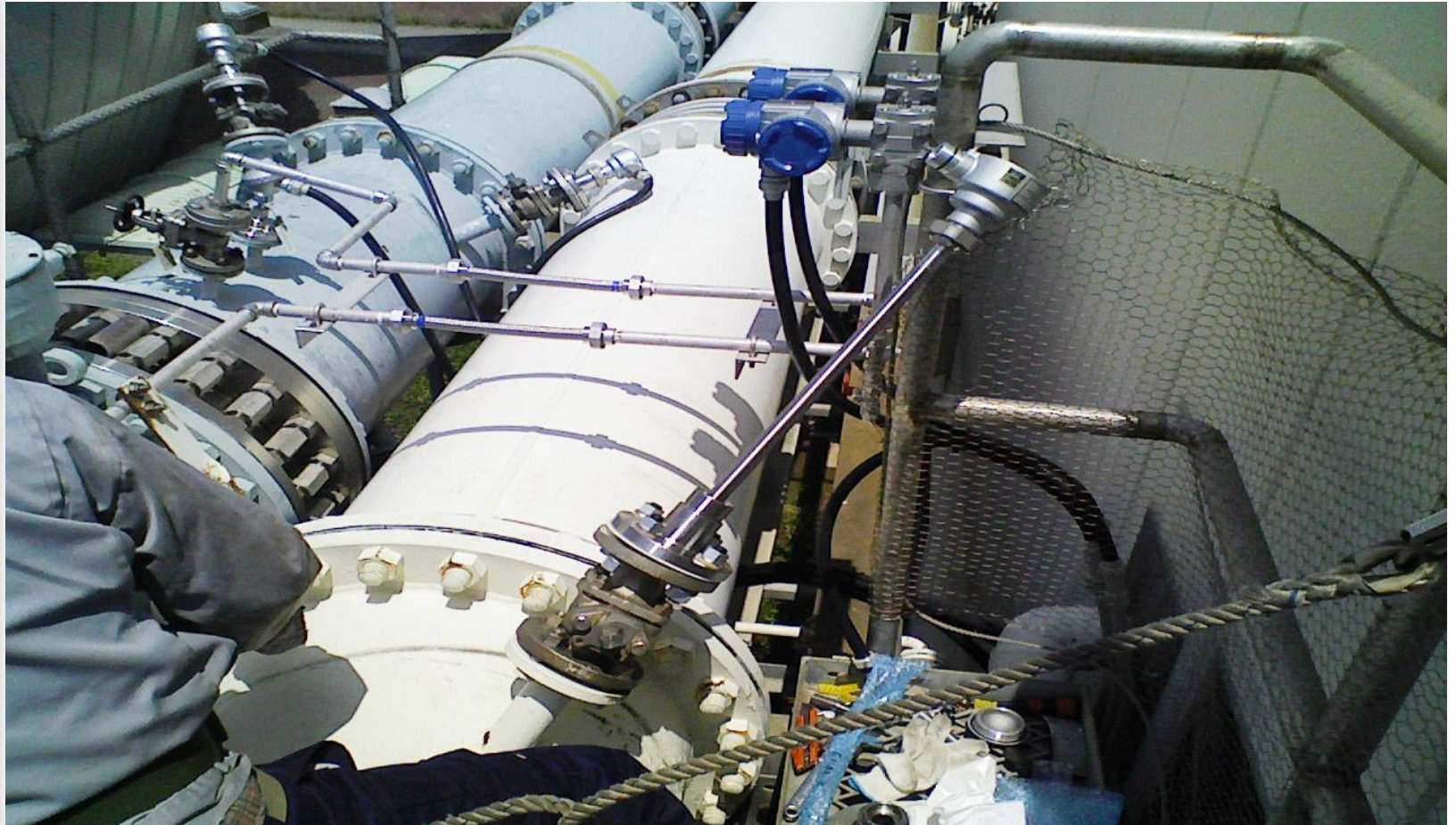## Measuring blow-in air in a main pipe (upper stream)

Sewage works plant GF2500
Installed in a main pipe②

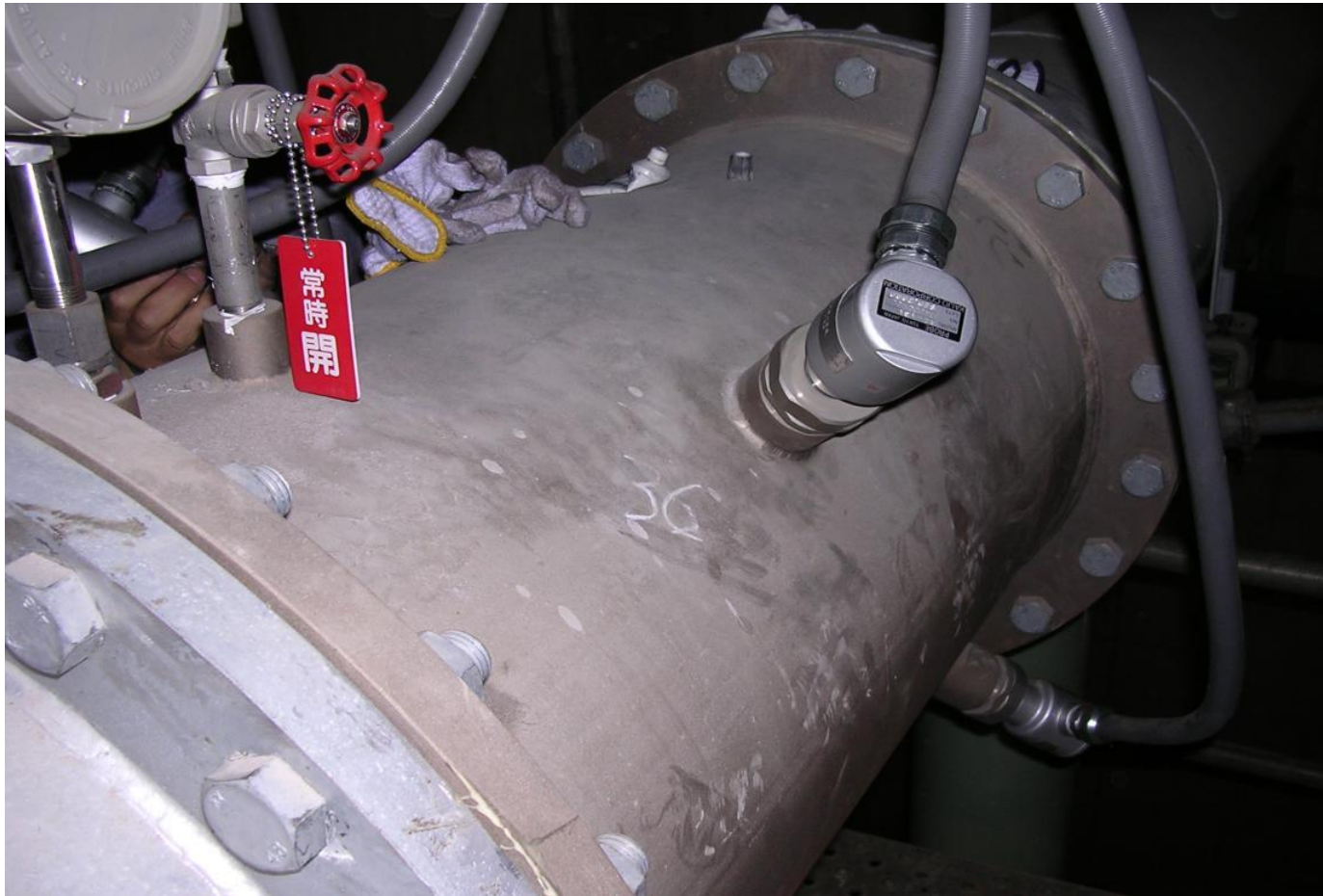# Sewage drain plant GF2500

Measuring digestive gas

Gathering digestive gas generated from sludge, and re-use as fuel.

Water Reclamation Center ①
(Bureau of Sewerage)

Measuring volume of air flow → Convey air into a ventilator equipment to activate bacterium.

Water Reclamation Center ②
(Bureau of Sewerage)

Measuring air volume from Ventilator to Aeration tank

City Gas company application FEx-100 ①

Gas Company

In a city gas factory,

installed Fex100 in pipe lines

→Mixing each gas to produce city gas

→Store gas in a tank

→Distribute to houses

Measuring City gas in each process line of manufacturing

City Gas② （Installed outdoors)

City Gas③ （Installed outdoors）

Automobile company application SGF200

Example of Company T Monitoring flow rate of compressed air "How much volume of compressed air is used?"

Compressor ⟶ Installing SGF200 with branched-pipes