



Weets

Water environment ecology
technology systems

**Cooling and circulating
water purification system**

Weets

1) Overview of Kariya Plant, Toyota Boshoku Global Mainstay Hub (Kariya City, Aichi Prefecture)

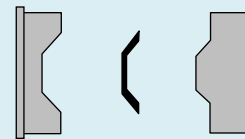
- Main plant for unit components
- Production of air cleaners and other molded plastic products
- Number of plastic molding machines: Approximately 60 (75t - 850t*)

*Variety of molding machines ranging from 75t to 850t

2) Problems encountered in kaizen activities

- Intermittent defects in plastic molding
- Extended time for molding is required

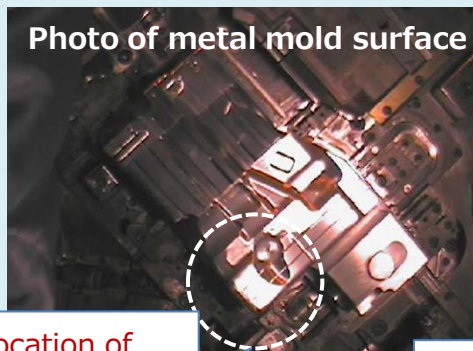
Metal mold



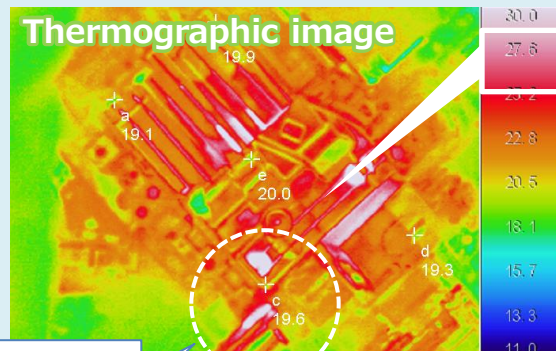
High temperature

- Locations of mold defects match high-temperature spots in metal molds

- Scale accumulated inside the piping for the insufficiently cooled part
→ Factors that inhibit cooling



Location of defective molding

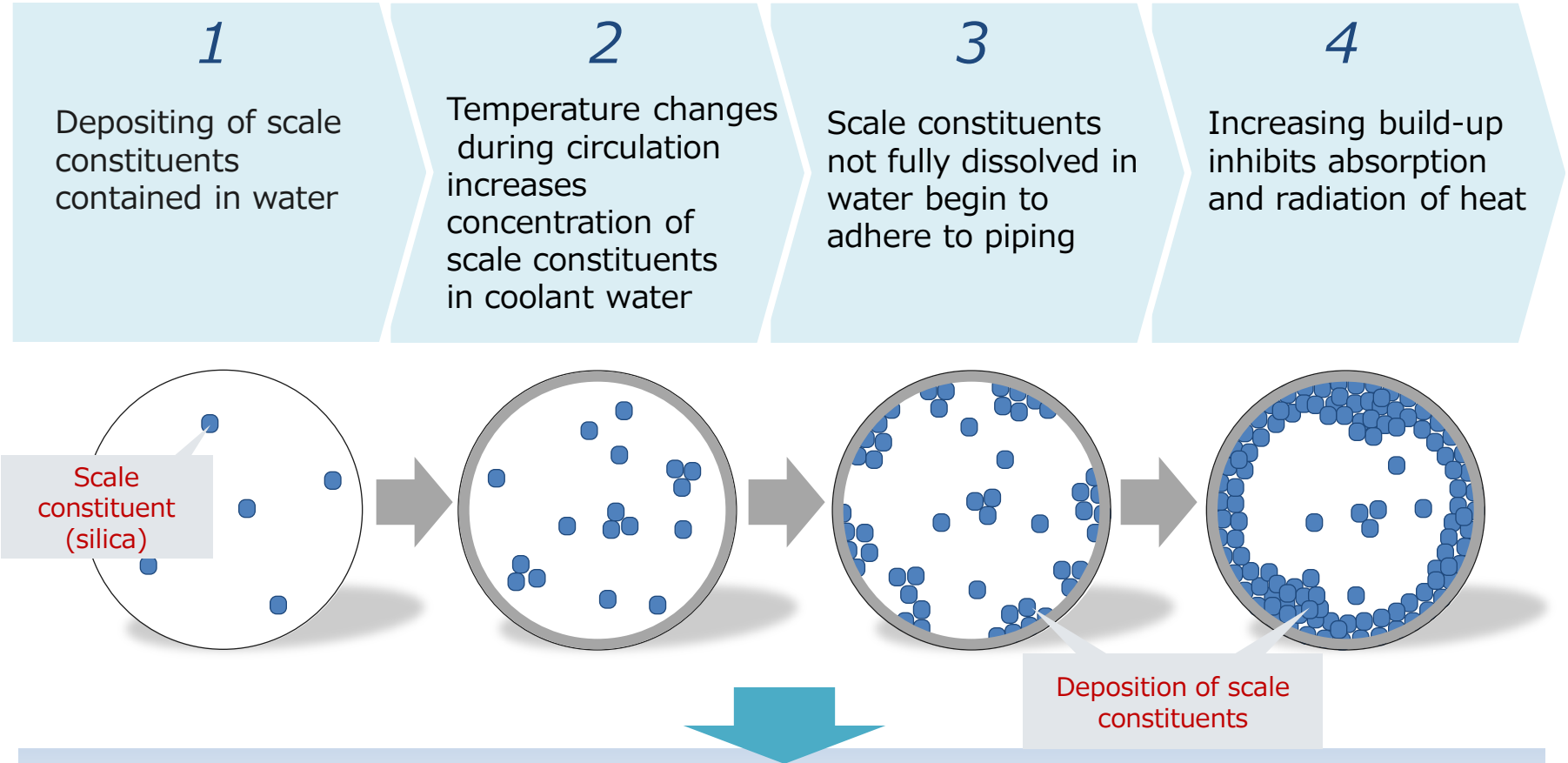


Area of high temperature

Cause is insufficient cooling



3) Mechanism by which scale adheres to piping



In 2012, steps begun to improved quality of water used in circulating coolant water for metal molds

Aims in Developing Water Environment Ecology Technology Systems



Toyota Boshoku's Core Technologies

Filters



Filtration

Oil mist separator



Separation

Ion exchanger



Modification/Reformulation

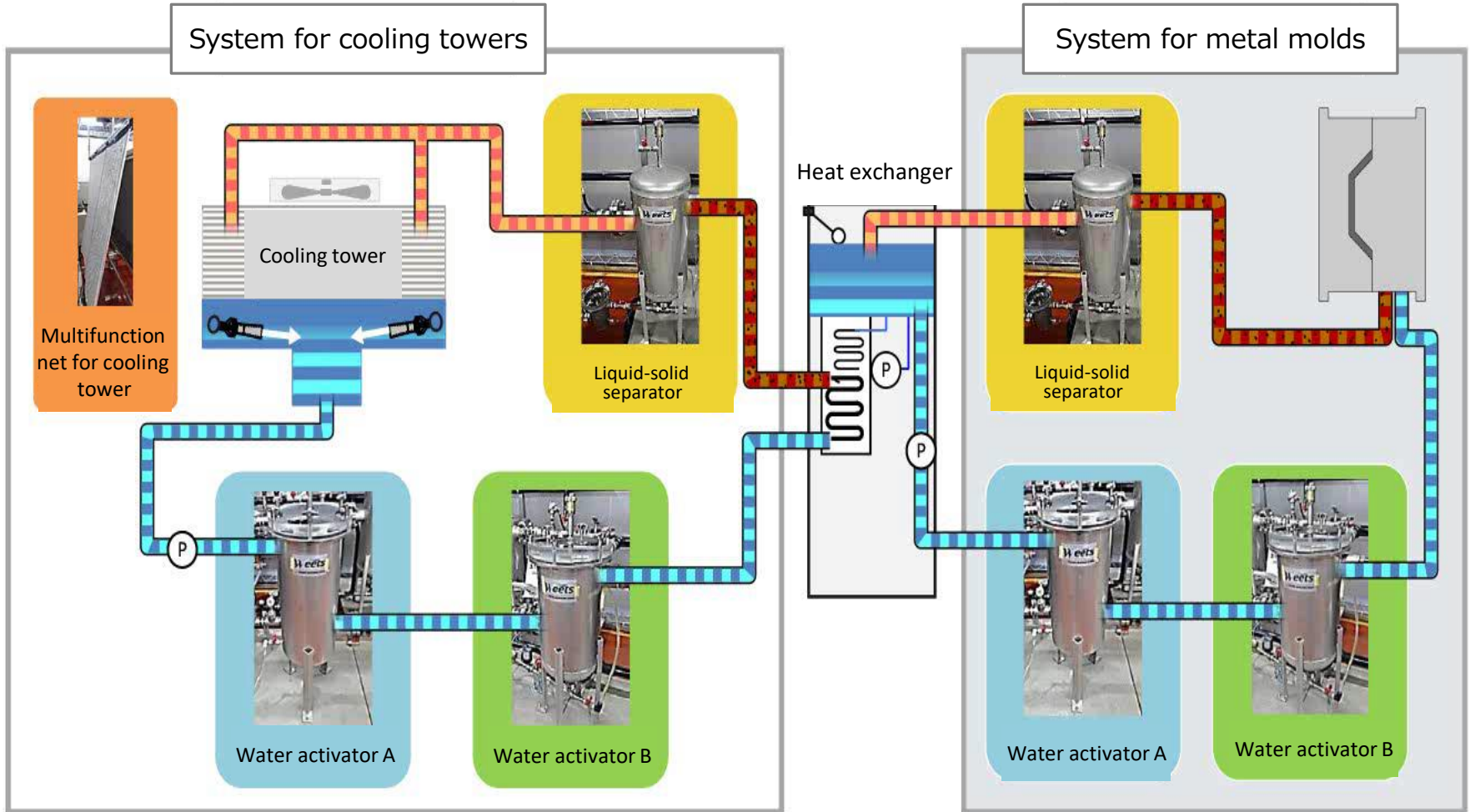


Aims in improving water quality	Corrective measures (see next page)
1. Removing scale in piping	I. Purification with TB's proprietary water conditioner
2. Preventing scale from repeated adhesion (rust prevention)	II. Reduction of scale constituents using ceramic balls
3. Discharging removed impurities	III. Separation of impurities through application of filtration technologies



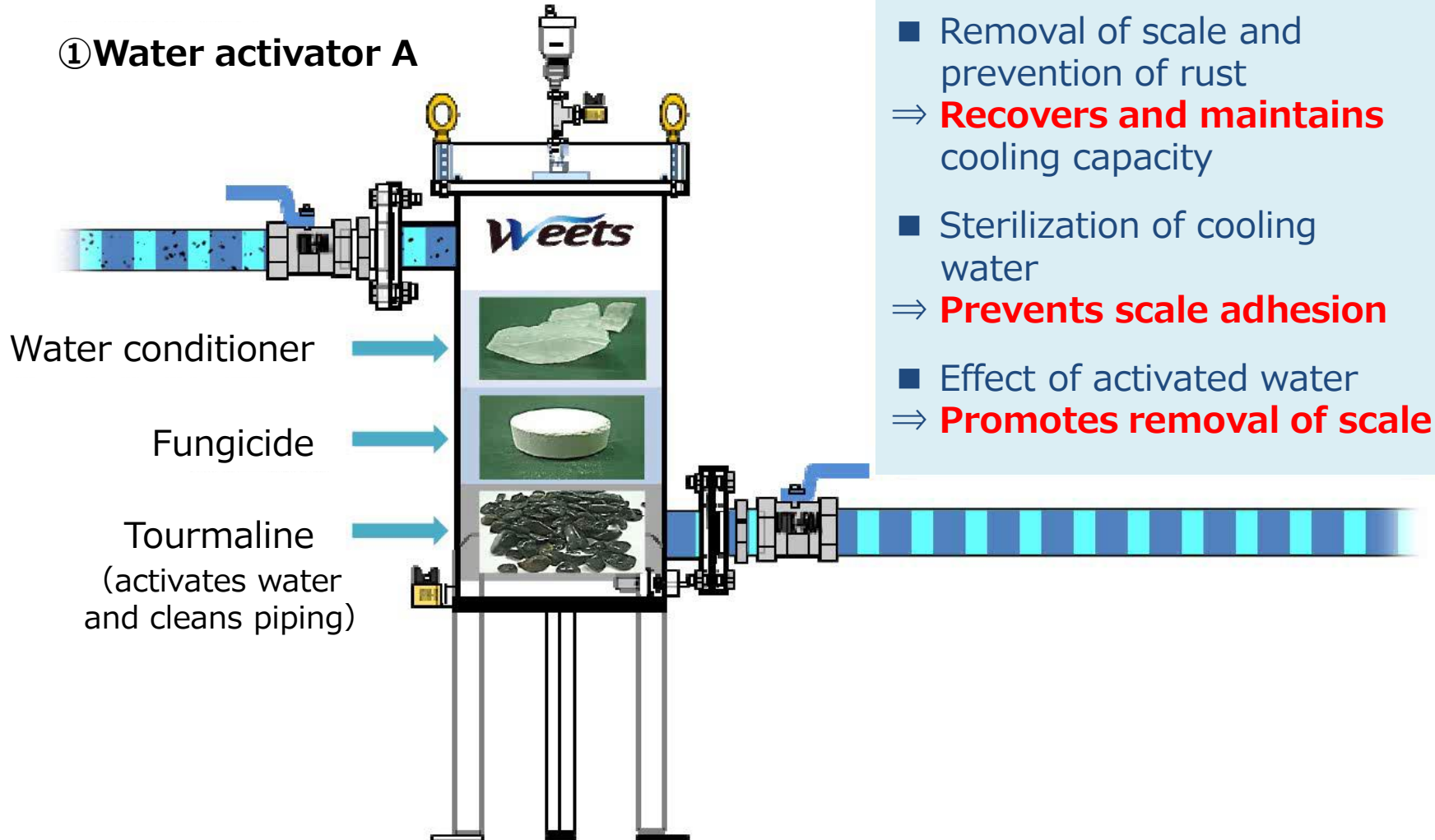
Toyota Boshoku's original development of water environment ecology technology systems

1) System layout



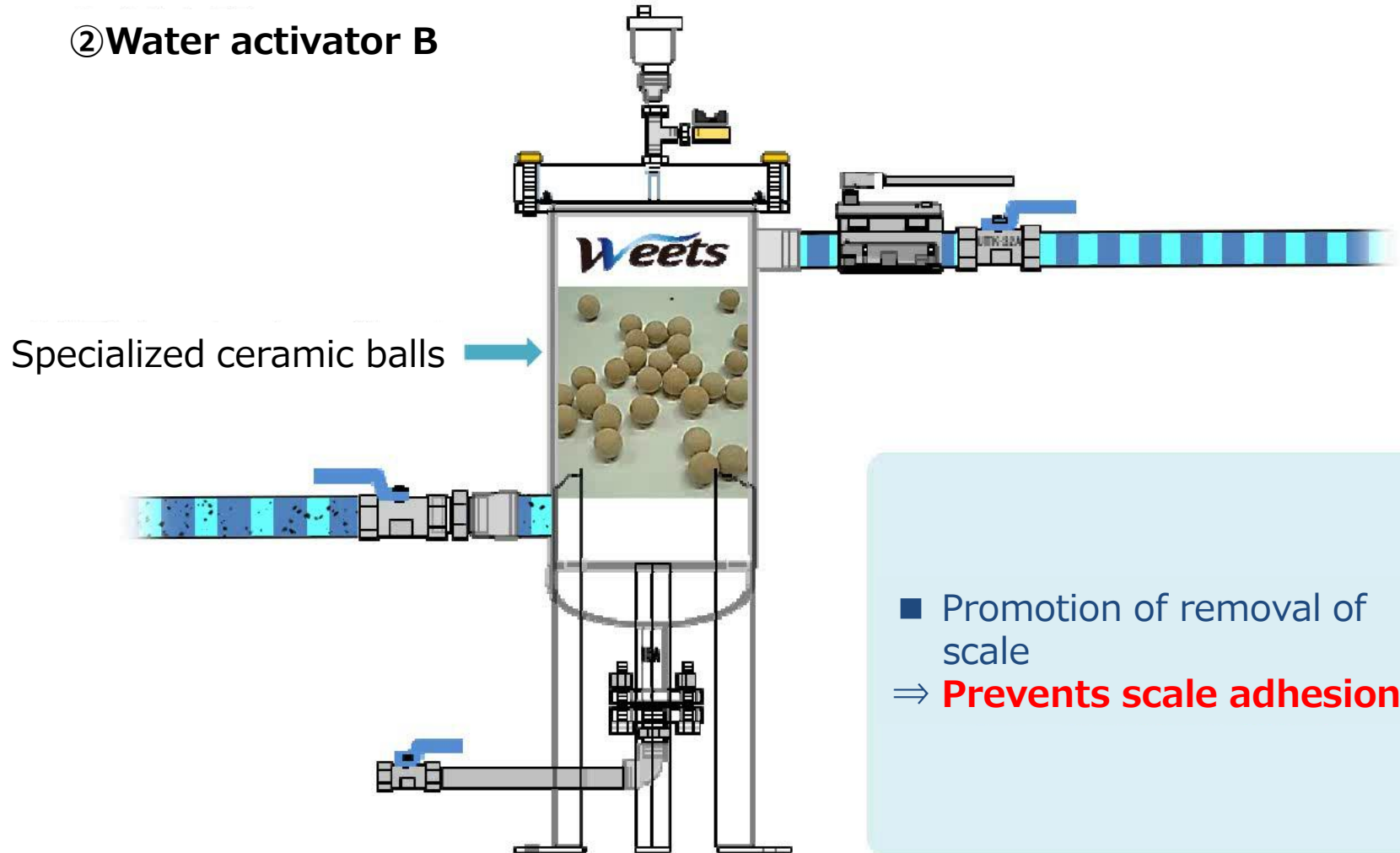
2) System details

① Water activator A



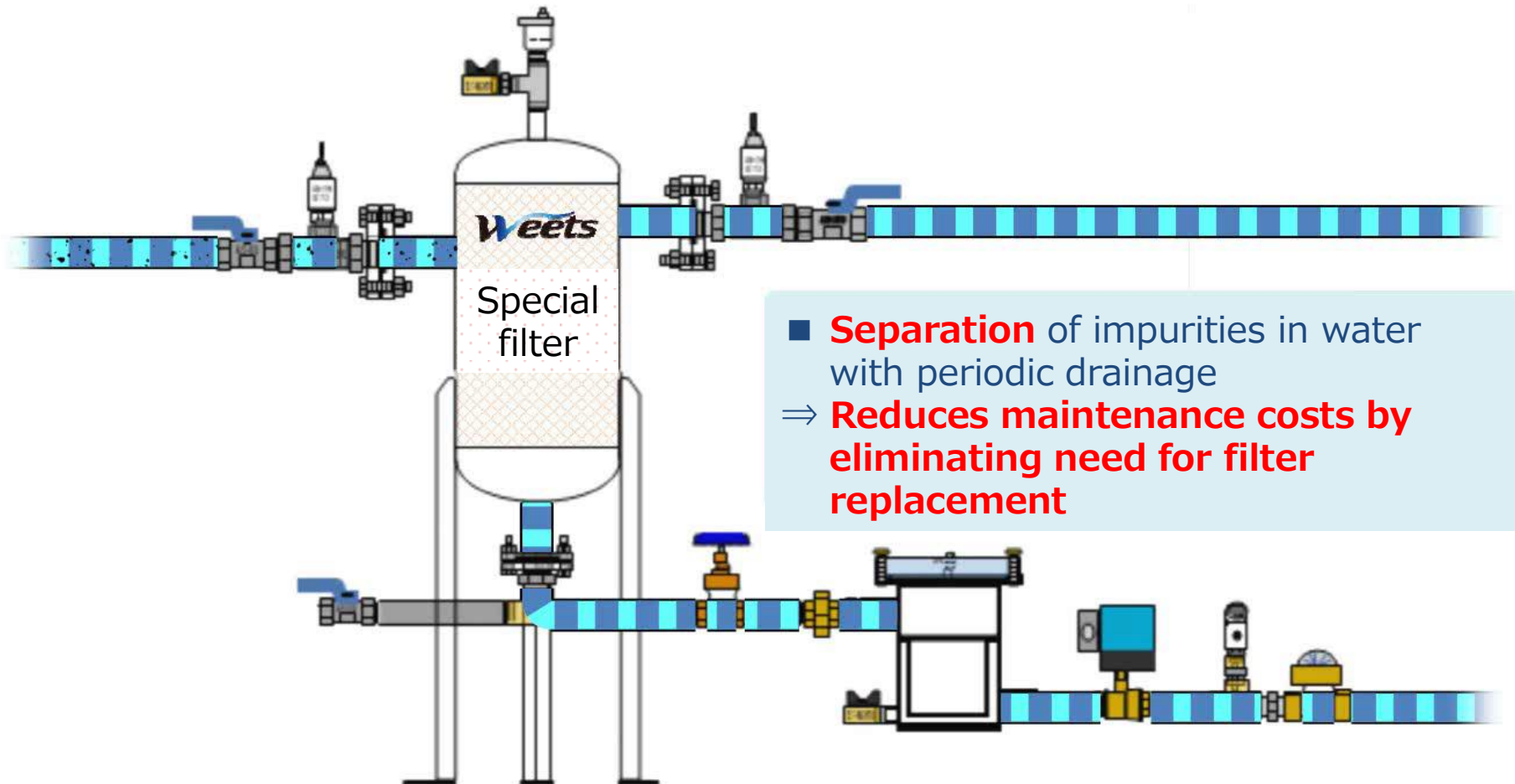
2) System details

② Water activator B



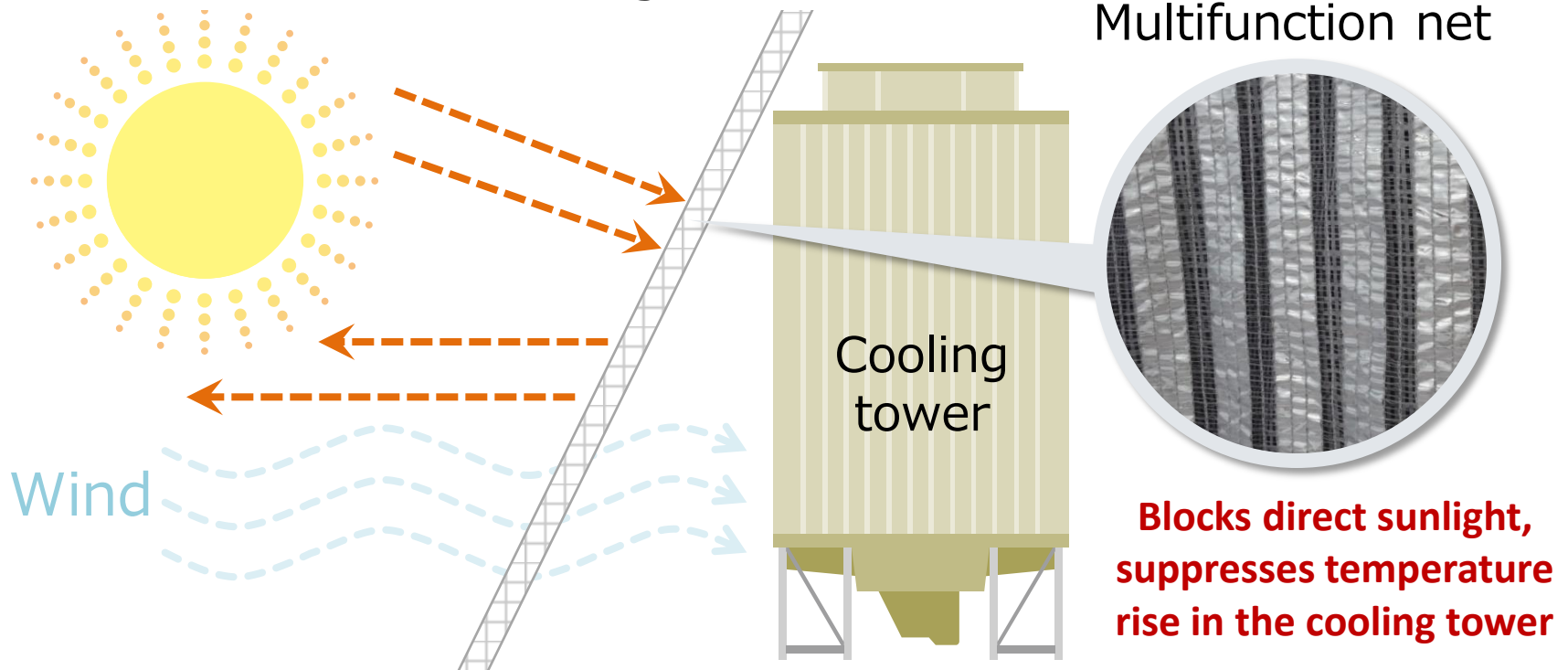
2) System details

③ Liquid-solid separator



2) System details

④ Multifunction net for cooling tower



- ① Prevents the generation of bacteria from rising temperatures, prevents deterioration of water quality
- ② Reduces power consumption by cooling towers and air-conditioning equipment

Overview of Water Environment Ecology Technology Systems



A cooling and circulating water purification system for metal molds



3) Effects



- ① **Removal of scale adhering to coolant piping, maintenance of conditions, and prevention of rust**
⇒Reduction in large-scale maintenance cost
- ② **Suppression of scale adhesion and progression of rust in piping**
- ③ **Reduction in power cost increases** due to accumulation in piping (approx. **30% improvement** at Toyota Boshoku)

Adoption of measures at Toyota Boshoku 100 sets in 13 sites

(As of May 2018)



**Currently being introduced, initially in areas
with water issues**

Toyota Boshoku's water environment ecology technology systems

showing continuous onsite improvement,

and our commitment to manufacturing

through application of our filtration technologies



Cooling and circulating water purification system 『Weets』

Features (Benefits)

■ Reduces rate of defects in molded articles

- Removes scale in coolant piping

■ Reduces cooling system maintenance costs

- Eliminates need for periodic cleaning due to scale adhesion

■ Filters are maintenance-free

- Eliminates need to replace special filters

■ Energy-saving

- Reduces power consumption by suppressing temperature rise in cooling towers

■ Environmentally friendly

- Natural water conditioner can be drained with conventional water drainage



Water environment ecology technology systems

Plans for sales of the Weets,
our water environment ecology technology systems
(In current fiscal year)

(Reference) Size of Japan's domestic market

① Number of molding machines
owned in Japan :

Approximately **70,000**
(Toyota Boshoku's in-house survey data)

② Number of cooling towers
owned in Japan :

Approximately **186,000**

(Excerpted from results of survey of applicable facilities,
from press release on Ministry of the Environment website)



Weets

Weets : **W**ater **e**nvironment **e**cology **t**echnology **s**ystems
(Trademark registration pending)