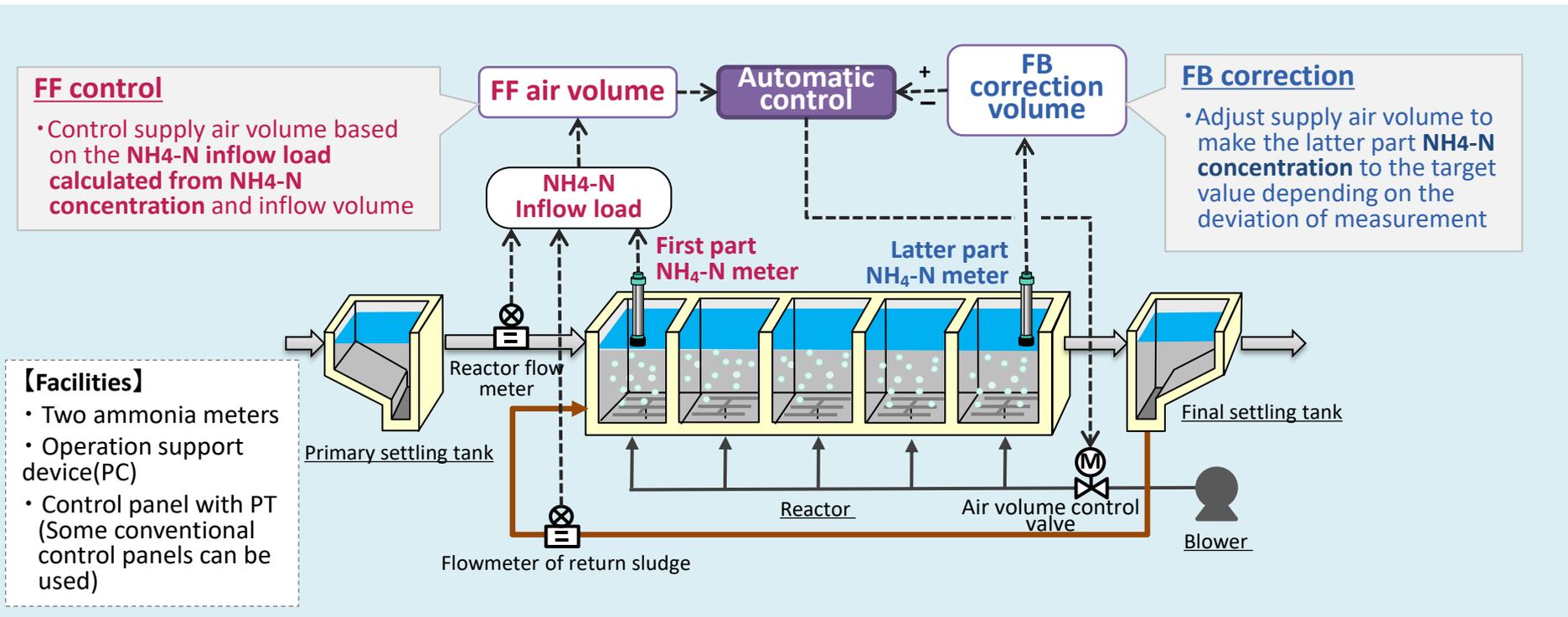


Feedforward Aeration Control by Ammonia Meter

- Reactor has two ammonia ($\text{NH}_4\text{-N}$) meters in each of the first and latter part.
- The combination of the feedforward (FF) control by the first $\text{NH}_4\text{-N}$ concentration and the feedback (FB) correction by the latter $\text{NH}_4\text{-N}$ concentration automatically controls supply air volume

- ✓ FF control taking $\text{NH}_4\text{-N}$ inflow load as a parameter \Rightarrow **Real-time following to the inflow load fluctuation**
- ✓ FB correction based on the deviation from the target $\text{NH}_4\text{-N}$ \Rightarrow **Fix $\text{NH}_4\text{-N}$ of treated water to the target value**



[Scope of application]

- ▶ Wastewater treatment process: **Activated sludge process making accelerated nitrification except for OD process** (ex. CAS process (accelerated nitrification), anaerobic-aerobic activated sludge process (accelerated nitrification), Ludzack-Ettinger process, Anaerobic –anoxic-aerobic process, Step-feed multistage nitrification/denitrification process)
- ▶ Treatment capacity: **Facility with treatment capacity of about 10,000 m³/day per control unit** ※ A control unit is a set of control facilities including two ammonia meters and a controller
- ▶ Benefits of adoption: Facilities that **FS proves the benefits of adoption such as adoption cost recovery by energy saving.**

[Benefits of adoption]

- ◆ **Energy-saving by the reduction of supplying air volume**
 - ✓ Reduce supplying air volume by more than 10% compared to DO control process, the conventional technology
- ◆ **Stabilize NH₄-N concentration of treated water**
 - ✓ Fix the latter NH₄-N concentration to near the target value ⇒ Stabilize NH₄-N of treated water at low concentration.

[Adoption example]

- ✓ New construction, extension, retrofit of reactor facilities
- ✓ Newly installation/retrofit of electric device
- ⇒ The improvement of the cost merit by optimized construction costs and energy savings