

13. Study on Room Pressure Control Technique for High Quality Cleanliness of Rooms

Kenichi Tokuda, Masafumi Moteki

The highly efficient room pressure control technique is required for buildings such as chemical factories or food factories where cross contamination of air between adjacent rooms is a serious problem.

The results of studies on the room pressure control technique obtained up to this time are as follows:

- i) It was confirmed by simulations and proved by experiments using the actual room pressure control system that the pressure control system applied to buildings which need high quality cleanliness should be designed to control the pressure according to the relatively unvaried pressure signal such as outside air pressure. By this way, confused control caused by several types of turbulence can be avoided.
- ii) It was also confirmed by simulations and proved by experiments that the most effective method of starting fans without an extreme high or low room pressure occurrence is to start both inlet fan and outlet fan simultaneously. In cases, where room pressure is required to be lower than that of next room or outside air, the outlet fan should be started little earlier.
- iii) The performance of the low price and easy handling airtight door proposed for clean rooms was evaluated and it was confirmed that the door is suitable for actual use. The feature of the door is a magnet used for fitting the rubber to the doorframe.
- iv) To reduce the influence of wind pressure, the damper through which constant air volume passes regardless of wind pressure was developed.

Key words: room pressure control, pressure difference, airflow network, clean room, airtight door