Automatic Control System for Indoor Air Quality

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Indoor Environmental Quality (IEQ)

- Temperature
- Humidity
- CO$_2$
- Other pollutants such as CO, VOCs, Nitrogen Oxides, Particulate Matter ...

=> Window Control
Effects of high CO$_2$ Concentration

Source: https://smartairfilters.com/en/blog/dangers-high-carbon-dioxide-co2-levels/

IAQ Control in a classroom

Arduino MKR Wi-Fi 1010

Source: https://store.arduino.cc/products/arduino-mkr-wifi-1010
Realisation of the Control System
• Temperature
• Humidity
• Light
- CO$_2$
- Actuation
CO2 sensor and actuator

- CO2 sensor
- Manual / Automatic Switch
- Open / Close window
Outside Temperature
Outside Humidity
Fuzzy Logic

[Graph showing temperature and membership functions for Cold, Comfortable, and Hot]

[Diagram illustrating fuzzy logic system with various inputs and rules]