

MyGregor



Natural Ventilation System

Fresh Air Indoors?



- People spend 90% of their time indoors

<https://www.buildinggreen.com/blog/we-spend-90-our-time-indoors-says-who>

- Researches show that indoor air pollution is 3 to 5 times higher than outdoor air

<https://www.iqair.com/newsroom/how-does-outdoor-air-pollution-affect-my-indoor-air-quality>

- One of the main recommendations for improving indoor air quality is ventilation

https://www.epa.gov/indoor-air-quality-iaq/improving-indoor-air-quality#Ventilation_Improvements

Causes of Indoor Air Quality Problems

Inadequate ventilation	53%
Inside contamination	15%
Unknown causes	13%
Outside contamination	10%
Bioaerosols	5%
Building products	4%



Source: National Institute of Occupational Safety and Health

<https://www.lcbcontracting.com/heating-and-cooling/indoor-air-quality/>

- CO₂ level is used to measure the level of stale air indoors

CO₂ level indoors

	Level associated with headaches, sleepiness and loss of concentration	>2000 ppm
	Level associated with complaints of poor air and drowsiness	1200-2000 ppm
	Normal level indoors (Outside air is 400 ppm)	400 - 1200 ppm

<https://jwcn-urasipjournals.springeropen.com/articles/10.1186/s13638-021-02030-1>

<https://axiomet.eu/gb/en/page/1954/air-quality-monitoring-indoors/>

Indoor CO2 Level Standards:

Table C1. Some international standards and guidelines for CO₂

Country	Value	Organization/ Standard/ Regulation	Reference	Note
United States	No more than about 700 ppm above outdoor ambient levels	ASHRAE	ASHRAE (2016)	Ambient levels: immediate environment levels of air quality (odour)
New Zealand	1000 ppm	Mechanical ventilation standard	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
European Union	< 400 ppm above outdoor level	NF EN 13779 standard	CSTB (2011) (cited in ANSES 2013)	Excellent indoor air quality
	400–600 ppm above outdoor level			Average indoor air quality
	600–1000 ppm above outdoor level			Moderate indoor air quality
	> 1000 ppm above outdoor level			Low indoor air quality
France	1000 ppm	Memorandum dated August 9, 1978.	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school and office buildings
Austria	1000 or 1500 ppm (under discussion)	AIVC 2000	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
United Kingdom	1500 ppm (school day average) 5000 ppm (maximum)	Building Bulletin 101	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Belgium (Flemish region)	500 ppm	Flemish government decree	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for residential, school and office buildings
Holland	1000–1500 ppm	Standard NEN 1087	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for residential buildings
	1200 ppm	Standard NEN 1089	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Denmark	1000 ppm with an upper limit of 2000 ppm	AIVC 2000	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Norway	1000 ppm	Regulations for environmental health protection in schools	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Finland	700 ppm as individual indoor climate (S1)	FISIAQ ^a	FISIAQ 2002	Category S1: it corresponds to the best quality. The indoor air quality of the space is very good and the thermal conditions are comfortable both in summer and winter.

Indoor CO2 Level Standards:



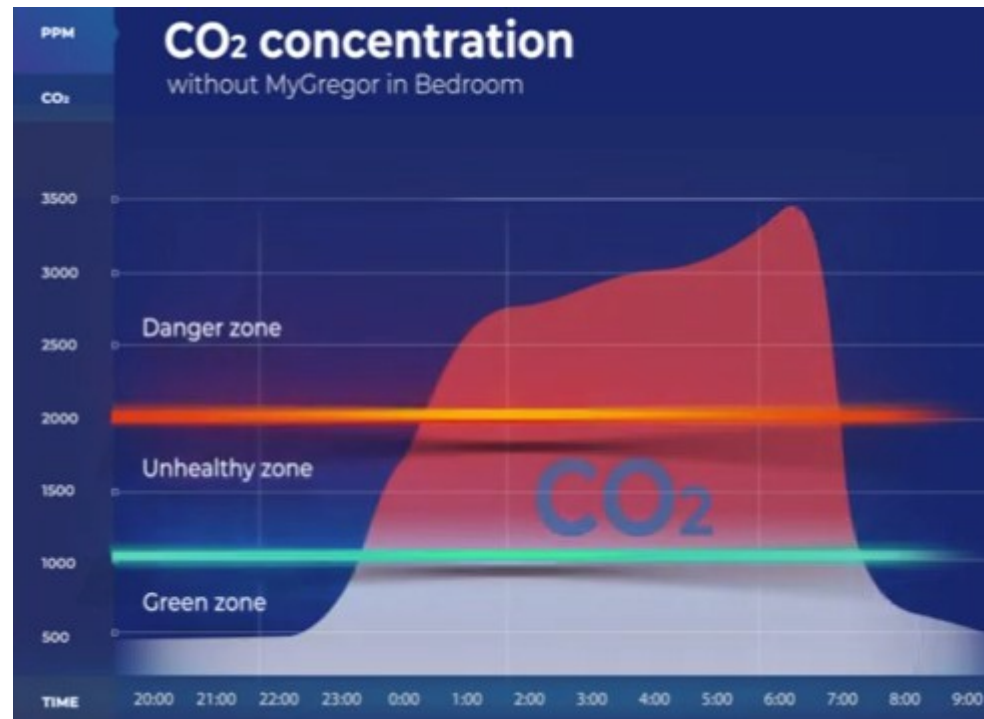
Country	Value	Organization/ Standard/ Regulation	Reference	Note
	900 ppm as good indoor climate (S2)			Category S2: the indoor air quality of the space is good and no draughts occur. The temperature may rise above comfortable levels during the hottest days of summer.
	1200 ppm as satisfactory indoor climate (S3)			Category S3: the indoor air quality and the thermal conditions of the space fulfill the requirements set by the building codes. The indoor air may occasionally feel stuffy and draughts may occur. The temperature usually rises above comfort levels on hot summer days.
	1200 ppm	D2 National Building Code	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for residential, school, and office buildings
Germany	< 1000 ppm (harmless) 1000–2000 ppm (elevated) > 2000 ppm (unacceptable)	German Committee on Indoor Guide Values	Fromme et al. (2019)	Indoor CO ₂ concentrations can be regarded as “harmless” if below 1000 ppm, “elevated” if between 1000 and 2000 ppm, and “unacceptable” if above 2000 ppm.
	1500 ppm	DIN 1946 Standard	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Portugal	≤ 984 ppm	Portuguese Ministry of Public Works, Transport and Communications	Portuguese Decree-law no. 79/2006 (cited in da Conceição Ferreira 2014)	
	1000 ppm	Regulation RSECE	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school and office buildings
Korea	1000 ppm	KEITI ^b	Jeong (2008); CSTB (2011) (cited in ANSES 2013)	Standard/guideline for residential and office buildings
		Health act in school	CSTB (2011) (cited in ANSES 2013)	Standard/guideline for school buildings
Japan	1000 ppm	MHLW ^c	CSTB (2011) (cited in ANSES 2013)	Building standard law

- <https://www.canada.ca/content/dam/hc-sc/documents/programs/consultation-residential-indoor-air-quality-guidelines>

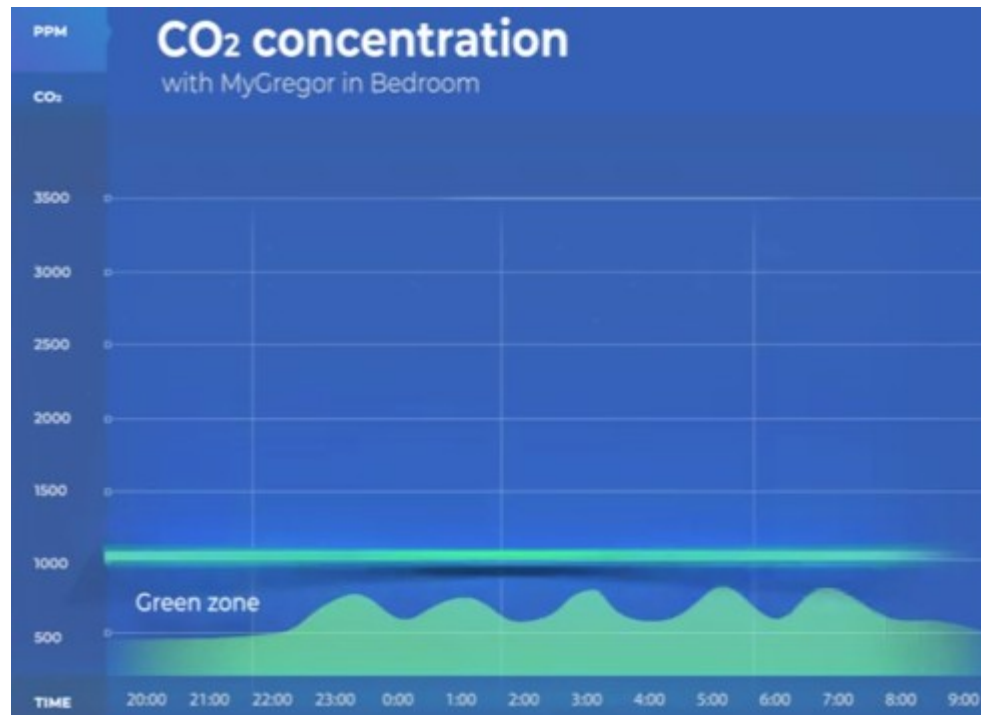
CO2 Levels Standards Summarized MyGregor®

- European Standard: EN13779 classifies poor air quality when CO2 is more than 1000 ppm
- American Standard: ASHRAE 62-2001 recommends maximal CO2 of 1100 ppm indoors.
- British Recommendations: DfE 2014: CO2 should not exceed 1500 ppm and exposure of level more than 2000 ppm should not be more than 20 minutes.
- Netherlands Standard 1089: This standard defines the maximum level of CO2 to 1200 ppm.
- Sweden: FoHMFS 2014:18 defines maximum acceptable level of CO2 to 1000 ppm.
- Australia and New Zealand follow the American standard.
- <https://www.airgradient.com/blog/classroom-co2-standards/>

CO₂ in the bedroom



CO₂ in the bedroom with MyGregor



- MyGregor patent is № EP 3 921 706 B1
- The patent guarantees that there are no similar inventions in the world
- Tested and improved more than 5 years
- CE marking (the system has been evaluated by the manufacturer and meets EU requirements for safety, health and environmental protection)

Natural ventilation system, including:

- MyGregor Drive – device, which is positioned on the window joinery and opens and closes the window
- MyGregor Station – sensor unit, which measures environmental characteristics
- MyGregor App – app, which manages the system and visualizes the indoor air quality

MyGregor Drive



- MyGregor Drive is an actuator, which opens and closes a window in order to provide ventilation.
- Works quietly and is easy to install (without drilling holes and without construction works).
- Uses natural convection to ventilate indoor premises.

Video:

- <https://www.youtube.com/watch?v=U2oI3DgpeHE>

Installation instruction:

- <https://www.youtube.com/watch?v=N-9y6rFEruc>



MyGregor Station



MyGregor Station is a sensor unit,
which measures:

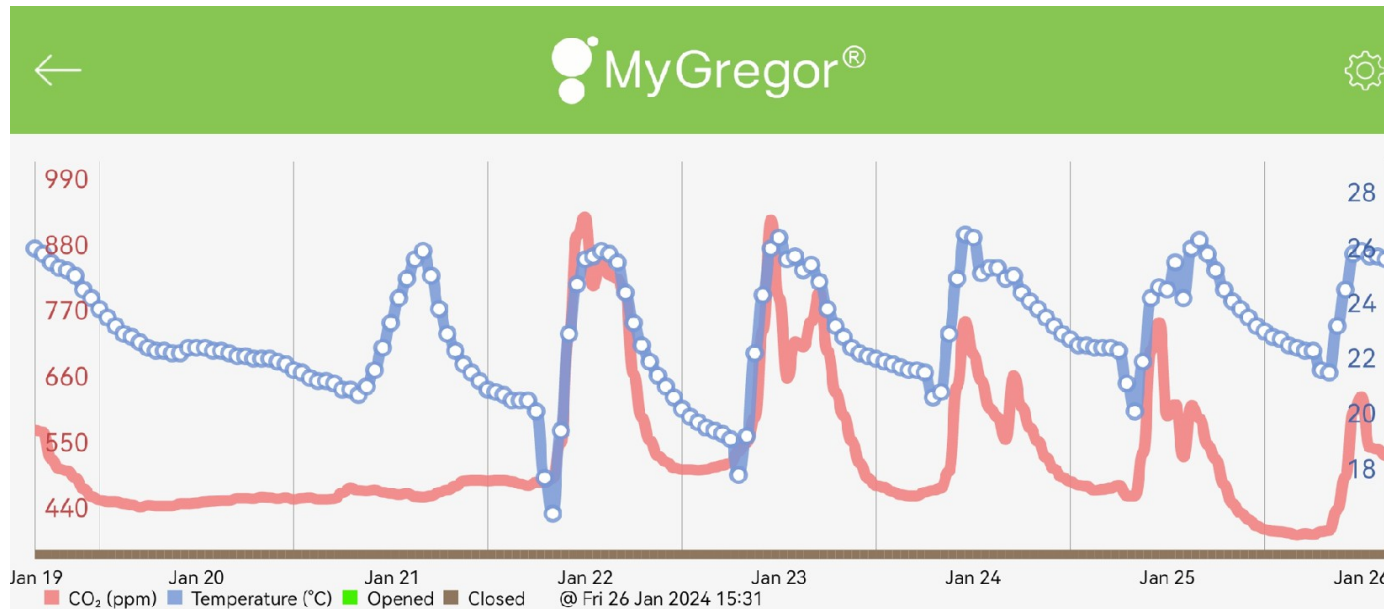
- Carbon dioxide (CO₂)
- Moisture
- Temperature
- Noise
- Light
- Radiation (option) – measures alpha, beta and gamma (α , β и γ) radiation (through Geiger-Mueller tube)



MyGregor App



- The app manages and sets up the operation of MyGregor Drive and MyGregor Station
- In it there are profiles, schedules, charts and operating modes.



More information at: www.mygregor.com

