



Rarely used, often underestimated – emergency generators. Experiences from Switzerland

Simone Krähenbühl

29.10.2026





Table of contents

1. Diesel particulate filter (DPF):
 - a.) Experience with DPF retrofits
 - b.) Quality assurance for DPFs
2. Experience with selective catalytic reduction (SCR) retrofits
3. Swiss emission inventory for stationary engines
4. Number of aftertreatment equipment in Switzerland
5. Regulatory gaps
6. Conclusion

Containerised emergency generator solution.
4.5 MW_{th} (2,500 kVA),
freestanding, flue running
alongside the building.
Exhaust gas after-treatment:
DPF+SCR

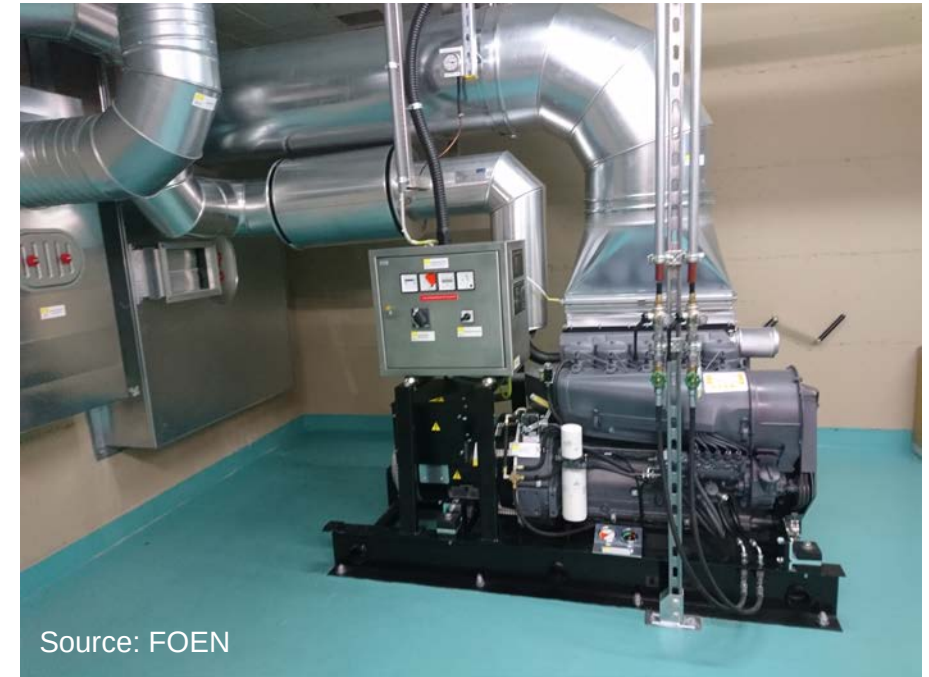


Source: AfU AG



1a) Experience with DPF retrofits

- Diesel soot: limit value and the minimisation requirement under the OAPC → DPF
- Correct design and installation location (size, coating, regeneration temperature, maximum temperature, etc. CH: experience available!)
- Load during test runs must be correct (approximately 80% load, no idling)
- With appropriate coating: reduction in CO





1b) Quality assurance of DPFs using particle number measurement: under discussion





2. Experience with SCR retrofitting

New, emission-optimised engines achieve 2'000 mg/m³ NO_x.

Several applications with SCR retrofits have been implemented, particularly for large engines and in data centres.

Example: plant in the canton of Zurich:

10 MTU engines, built in 2021, 1'880 kW_{mec}:

- Before SCR installation: 1'400 mg/m³ NO_x (average)
 - After SCR installation: 220 mg/m³ NO_x (average)
- NO_x reduction: 85% (average)

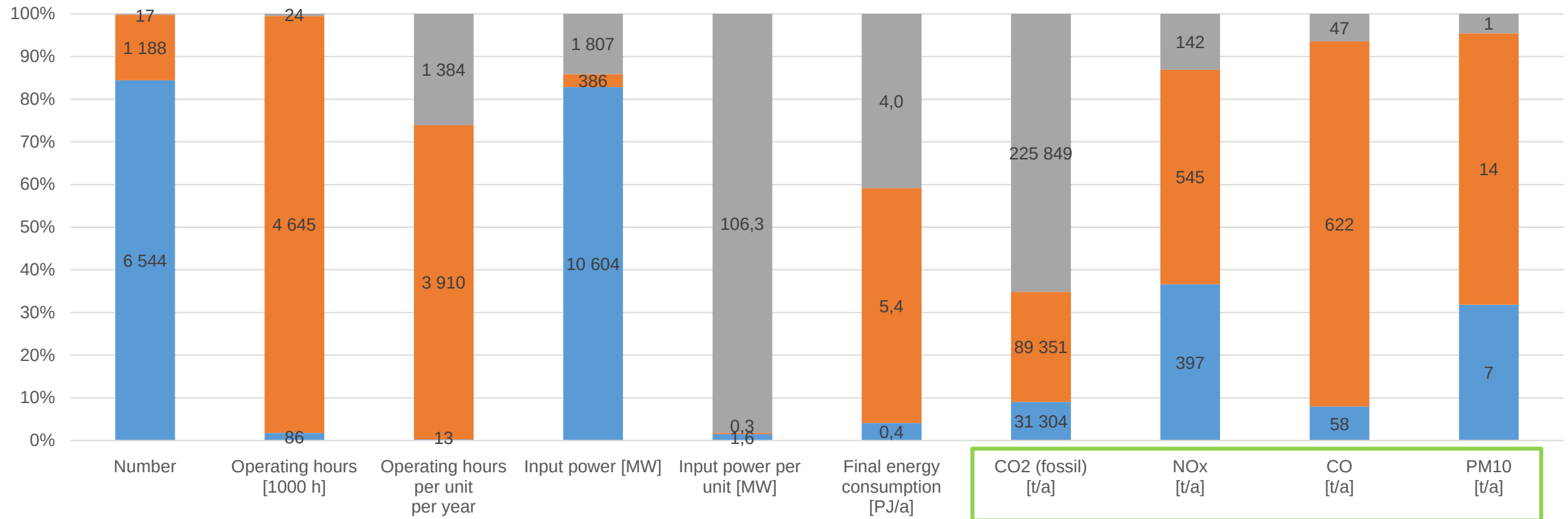




3. Swiss emission inventory for stationary engines

- Large plant (gas turbines and combined cycle gas and steam turbines)
- Small CHP plant (CHP: Combined Heat and Power)
- Generator without waste heat recovery

Source: [FOEN](#)
Reference year 2019





4. Number of aftertreatment equipment

- 2019: 19% with DPF retrofit ⁽¹⁾
- 2025: 57% with DPF retrofit ⁽²⁾
- 2025: 1% with SCR retrofit ⁽²⁾

Database:

⁽¹⁾ : all emergency gensets, estimations according
[Swiss emission inventory for stationary engines](#)

⁽²⁾ : 340 emergency gensets $> 1\text{MW}_{\text{mech}}$,
virtually pooled for power shortages



Emergency generator: 1500 kVA, $3.0\text{ MW}_{\text{th}}$
equipped with 2 DPF and a silencer



5. Regulatory gaps

- Most of the engines for emergency generators supplied ex-factory do not comply with the state of the art (no DPF, no SCR)
- There are no placing-on-the-market regulations for stationary internal combustion engines used in emergency power generators.
Medium Combustion Plant Directive ([Directive \(EU\) 2015/2193](#)) does not apply if $< 1 \text{ MW}_{\text{th}}$ or $< 500 \text{ hours/year}$
- Analogy with mobile engines and mobile generators ([Regulation \(EU\) 2016/1628](#)):
NRE between 19 and 560 kW_{mech} with DPF fitted as standard,
between 56 and 560 kW_{mech} with SCR.
NRG $> 560 \text{ kW}_{\text{mech}}$, usually without DPF and without SCR

NRE: engines for non-road mobile machinery
NRG: engines for generating sets



6. Conclusion

- Stock/number is rising, engine power increasing (Keywords: data centres, power shortages, hardening of mobile phone masts, etc.)
- Few operating hours, high emissions – and growing concerns (particularly regarding data centres)
- Permission requirements vary considerably both within Switzerland and across the EU.
- Technologies are available to reduce emissions – also for emergency power generators.

The long-term objective should be to move away from retrofitting and towards OEM solutions based on international standards.

Thank you for your attention!



Swiss Confederation
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Office for the Environment FOEN
Office fédéral de l'environnement OFEV
Ufficio federale dell'ambiente UFAM
Bundesamt für Umwelt BAFU

Simone Krähenbühl-Gammeter
Research Associate

simone.kraehenbuehl@bafu.admin.ch