SATOORNIK UG – Carbon Footprint Report (Preliminary, 2025)

Technology Assessed: SGen-I – Magnetic Force-Based Filtration System
Scope: Indirect GHG reductions from system integration into high-pressure water treatment processes.

---

1. Objective

To estimate the carbon footprint reduction enabled by SGen-I compared to traditional filtration technologies such as RO, NF, UF, and MF.

---

2. Methodology

- **Functional Unit**: Filtration of 150,000 m³ water per day (city-scale system)
- **Energy Savings**: Estimated 20% energy reduction
- **Emission Factor**: 0.4 kg CO_2 per kWh (average EU grid electricity, conservative estimate)
- **Time Frame**: Annual (365 days)

---

3. Calculated Energy Savings (Annual)

Method	Net Energy Savings (kWh/day)	Annual Savings (MWh)	CO_2 Avoided (t/year)
Reverse Osmosis	60,000–135,000	21,900–49,275	8,760–19,710
Nanofiltration	15,000–75,000	5,475–27,375	2,190–10,950
Ultrafiltration	15,000–75,000	5,475–27,375	2,190–10,950
Microfiltration	3,000–15,000	1,095–5,475	438–2,190

Total Potential CO_2 Avoided Annually (All Methods Combined):

~13,578 – 43,800 tonnes CO_2 (depending on integration scale)

4. Scope 1, 2, and 3 Consideration

Scope 1: Not applicable (no direct emissions from SATOORNIK’s operations)

Scope 2: Minimal – office use only, not included here.

Scope 3: Focus on avoided emissions through customer use (energy efficiency impact).

5. Key Assumptions

Energy emission factor: 0.4 kg CO_2/kWh

Daily operation: 365 days/year

Performance data from internal tests and market benchmarks

6. Conclusion

SGen-I offers a measurable reduction in energy use and associated emissions. In large-scale integration, it could contribute to tens of thousands of tonnes of CO_2 avoidance annually. This supports climate goals of utilities and industries aiming for carbon neutrality.