NOx sensor repaired

I finally managed to “repair” the NOx sensor. Actually, nothing was broken; probably a charcoal particle used in the main scrubber partially blocked the air flow, leading to a cascade of shutdowns (heater, ozone generator etc…) The air to be sampled is sucked by a pump through the sensor chamber; there it reacts with an extremely high ozone enriched air, and the chemiluscence of the reaction O3 + NO (detected by a photomultiplier) is the signal that is proportional to the NO concentration. The high O3 content of the air leaving the sensor and entering the pump has to be neutralized, as the aggressive O3 would rapidly eat away the membranes of the pump. This ozone destruction is done in the large charcoal filled scrubber, which is the malfunction. Usually a blocking of the air flow is readily detectable, because the flow is constantly monitored. Here flow seemed normal, but pressure was a bit too high. Whatever the real cause, removing all charcoal, cleaning everything up and refilling carefully solved the problem!

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