Sentinel Vehicle CO₂ Water Filtration System – Nexus One Archive

Concept Overview: Water Filtration System for CO₂ Capture on Vehicles  
  
How It Works:  
1. Exhaust gases enter a water chamber or mist scrubber.  
2. CO₂ dissolves in water to form carbonic acid (H₂CO₃).  
3. An alkaline reagent (e.g., calcium carbonate or potassium hydroxide) neutralizes the acid.  
4. Clean water is recycled or discharged; carbon is trapped as solid or mineral slurry.  
  
Key Add-ons:  
- Water chamber using rainwater reservoir.  
- Nano-bubbler injection to increase gas-to-liquid interaction.  
- Alkaline neutralizer to trap carbon.  
- Carbon slurry collector for long-term storage or reuse.  
- Solar-assist circulation pump for low-energy, self-powered operation.  
  
Output Potential:  
- 30–60% CO₂ capture efficiency per mile.  
- 10–25 lbs of CO₂ captured/month per vehicle (moderate use).  
- 1–1.5 tons/month across a 100-car network.  
  
Integration with Sentinel System:  
- Algae farms convert CO₂ slurry into oil-producing biomass.  
- Forge uses recovered carbon materials or ash.  
- Sentinel Sorter recycles alkaline components, metals, and any waste.  
  
Environmental & Revenue Impact (Year 1):  
- Vehicles: 50–75 cars with CO₂ scrubbers.  
- CO₂ captured: 3–7.5 tons/year.  
- Algae oil boost: 660–1,000 gallons (15–24 barrels), adding $975–$1,560 revenue.  
- Potential carbon credits: $150–$375.  
- Vehicle pricing increase justified by sustainability upgrade ($5,500 instead of $5,000).  
- Total projected revenue including this system: $2.258M–$3.388M.  
  
Scalability:  
- Scale to 120 cars by Year 2 = 7.2–18 tons of CO₂ captured annually.  
- Additional algae oil = +24–40 barrels/year.  
- Carbon credits = $360–$900/year.  
- Broader impact = marketability, licensing appeal, and ecosystem synergy.  
  
Conclusion:  
This system transforms your vehicles into mobile CO₂ scrubbers, closes the loop with algae farms, reduces emissions, and adds long-term strategic value to your SCP plan and $22.5M revenue target.  
  
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