



CO₂ ECO-FRIENDLY: SIAD innovative project in Rosignano

Engineering

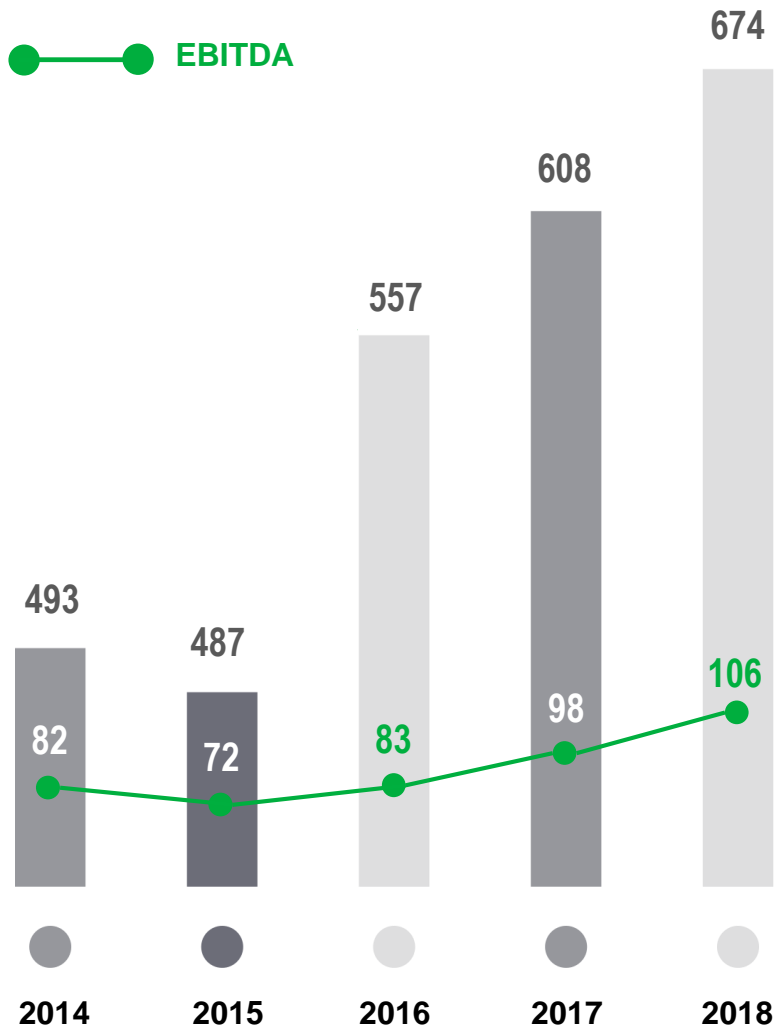
Technical gases



LPG and Natural Gas

Healthcare

SIAD Group results (€ millions)





WHO: SOLVAY for its production needs and SIAD for its technologies and operation knowledge

WHAT: Create synergism between industrial production needs (pure CO₂ supply) and environmental impact improvement (reduction of the emission of CO₂ in the atmosphere)

WHERE: Project developed in Rosignano Solvay

HOW: Capture CO₂ from the industrial process emission and after purification to re-use in the production process

WHEN: The project started in 2016 and it's in operation since June 2018

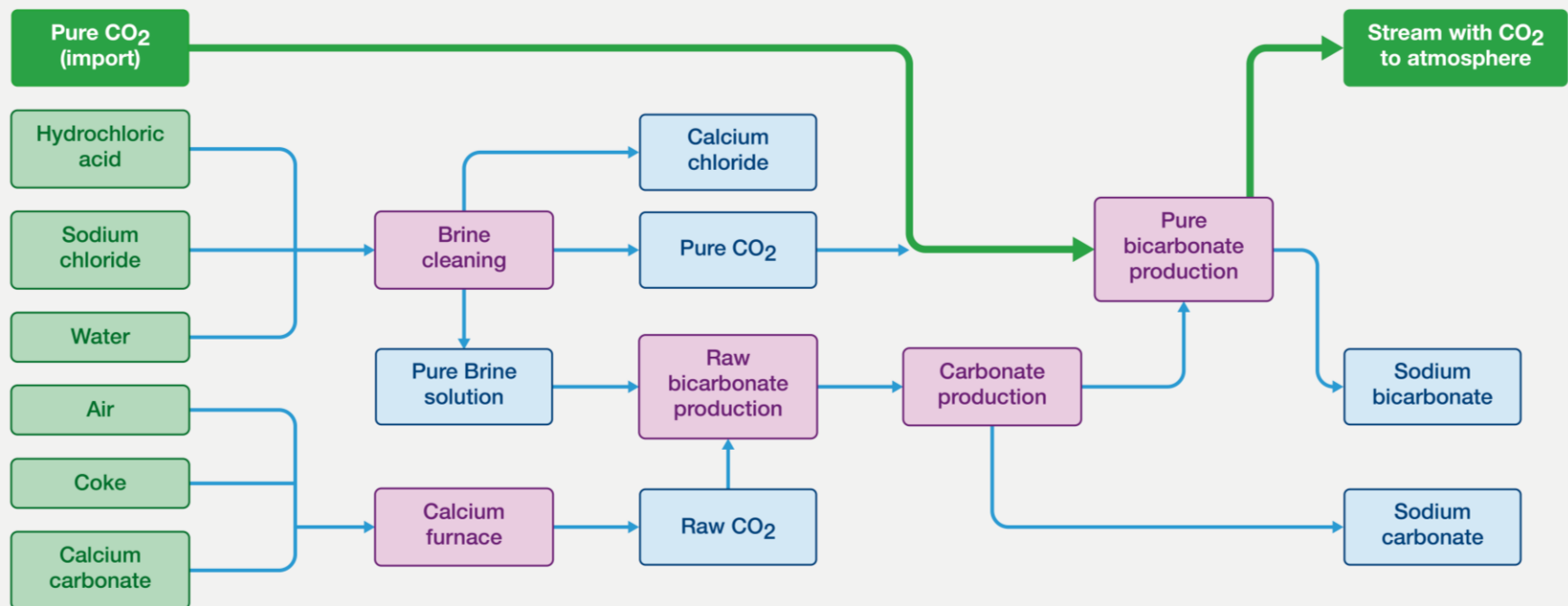
The project is an example of a **circular economy** to have an economical and technical advantages with an improvement of the environmental impact of the production process

Rosignano Solvay site

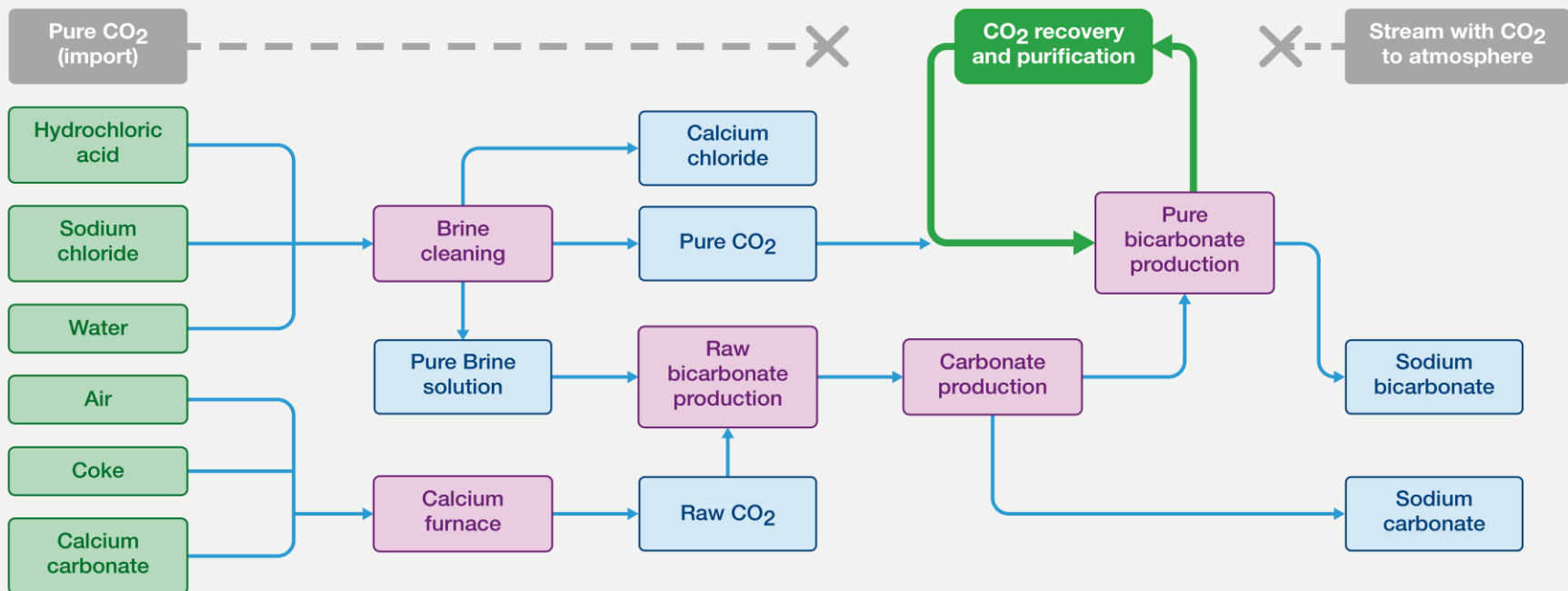


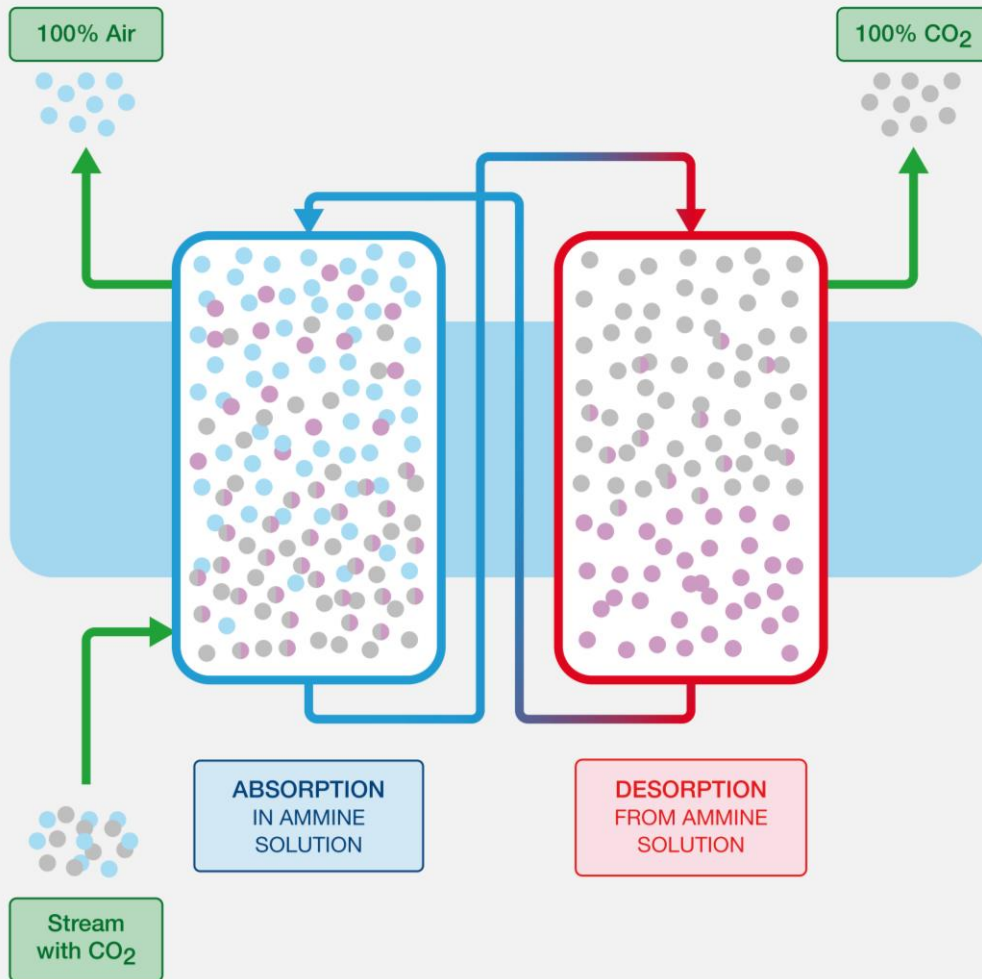
Actual Solvay process

- Solvay in Rosignano produces sodium carbonate and bicarbonate
- During production, a gaseous stream containing between 16% to 40% of CO₂ are vented into the atmosphere
- Solvay needs in its production process a CO₂ stream at 100%
- Until now the pure CO₂ was imported from other production plants in Italy and Europe



- Recovery CO₂ from the vent and produce pure CO₂ for the process
- We have the following advantages
 - Internal use of CO₂ for Solvay not linked to market shortages
 - More CO₂ available for SIAD
 - Supplying cost reduction for SIAD and purchasing cost reduction for Solvay
 - reduction on CO₂ emitted to atmosphere in the overall process



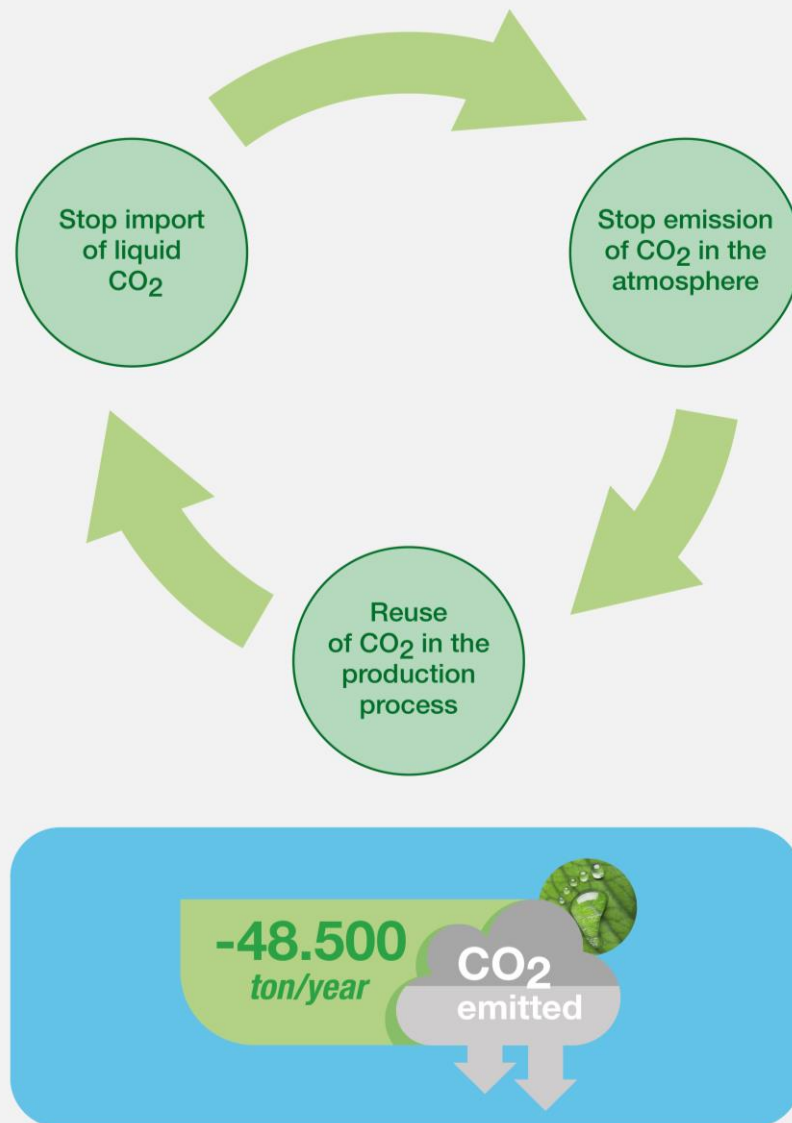


ABSORPTION AND DESORPTION MEDIA

- ***Innovative product*** developed by BASF
- Based on ***amine formula***
- Capability to adsorb high amount of CO₂ at low temperature and desorb CO₂ at higher temperature
- ***High efficiency*** in comparison to the standard process with lower energy consumption


The Chemical Company

- Emission reduction
 - Re-use of di 28.000 ton/year of CO₂ in Solvay process
 - Production of 12.000 ton/year of CO₂ for market
 - Total 40.000 ton/year captured
- Vehicular reduction avoiding import of CO₂ on road transportation:
 - Reduction of 1.400.000 km/year
 - Reduction of equivalent emitted CO₂ by 1.000 ton/year
- Emission reduction due to the substitution of less efficient CO₂ plants (no liquefaction for transportation)
 - Reduction of 7.000 ton/year

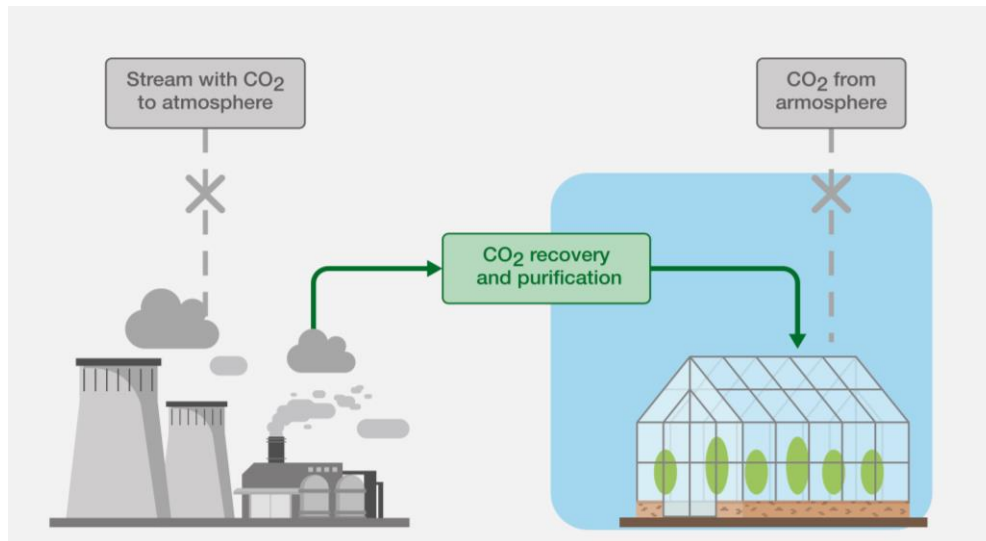




IMPIANTO RECUPERO CO₂ | ROSIGNANO SOLVAY

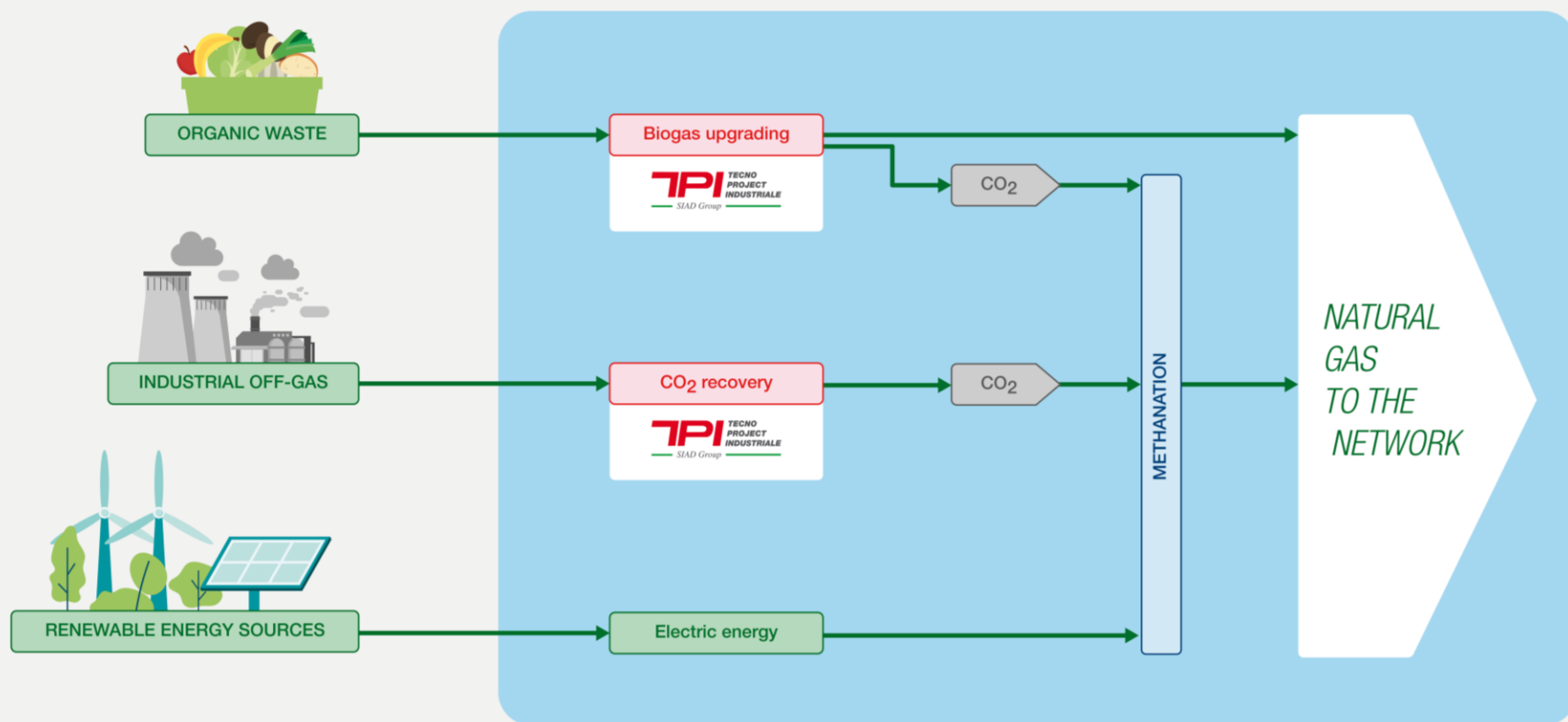
Other future potential application

- CO₂ extraction plant of AVR Netherlands.
- The plant extracts carbon dioxide from the flue-gas of a municipal waste incinerator and produces 12 t/hour of industrial grade LCO₂.
- The CO₂ is then used for carbon fertilization of vegetables in greenhouses intensive production



Other future potential application

- CO₂ recovery from biogas and industrial plant to produce methane by reaction with hydrogen from renewable source







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