

### About us

Kanadevia Inova is a global Greentech company operating in Waste to Energy (WtE) and Renewable Gas (RG). Our roots are in Switzerland, where we were established in 1933 as "L. von Roll AG", later known as Von Roll Inova. Since 2010 we have been part of the Kanadevia Corporation, one of Japan's largest industrial and engineering firms and a longstanding partner and licensee of Von Roll Inova. To this day we foster the spirit of a traditional Swiss company combined with the know-how and economic strength of an international group.

### Turnkey solutions

Our approach and plant design are based on our tried and tested technologies, which we optimise on an ongoing basis. Our solutions are compliant with all the relevant legal requirements, designed for optimum operation in economic and environmental terms, and offer maximum flexibility. All projects are delivered in accordance with defined business process within our ISO 9001 and ISO 45001-certified project management system. The business process defines the workflow, identifies the relevant tasks and assigns responsibilities.

Waste to X	Renewable Gas
<ul style="list-style-type: none"> <li>• Grate combustion</li> <li>• Hazardous waste treatment</li> <li>• Boiler island solutions</li> <li>• Flue gas treatment</li> <li>• <b>Carbon Capture</b></li> <li>• Energy recovery</li> <li>• Residue treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Dry anaerobic digestion</li> <li>• Wet anaerobic digestion</li> <li>• <b>Gas upgrading, recovery of CO<sub>2</sub></b></li> <li>• Power-to-Gas</li> <li>• <b>Liquefaction of CO<sub>2</sub> and CH<sub>4</sub></b></li> </ul>

### The right service at every phase of the plant life cycle

High availability is crucial to a plant's successful operation. Kanadevia Inova's Service Group is an expert partner providing outstanding support, no matter if you like to operate your plant or Kanadevia Inova shall operate it on behalf of you.

We provide effective, expert advice and support throughout the life cycle of your plant. We draw on many years of experience and in-depth know-how gathered during our R&D to keep your plant in-line with the specific local and operational requirements and regulations. Besides service and maintenance, we also have expertise in analyses and studies, modernisation work, enhancing performance and efficiency, together with experience in reducing emissions, spare and wear part procurement and logistics.

[Get in touch with our Service teams](#)

### COMPANY INFORMATION

- A Kanadevia Corporation subsidiary.
- Zurich-headquartered Kanadevia Inova is a global vertically integrated Greentech company, an innovation leader in the waste infrastructure space, driving resource circularity, decarbonisation and supply security, for present and future generations.
- Conversion of solid and organic waste streams to valuable end commodities, including electricity, heat, renewable hydrogen and methane, carbon dioxide, metals, and salts.
- Project development, SPV\*, EPC\*\*, O&M\*\*\*, and life cycle service solutions for new plants and existing assets.
- Present in 17 countries with >3,200 employees.
- Over 90 years of experience.
- More than 1,600 reference projects worldwide.

### OUR MISSION

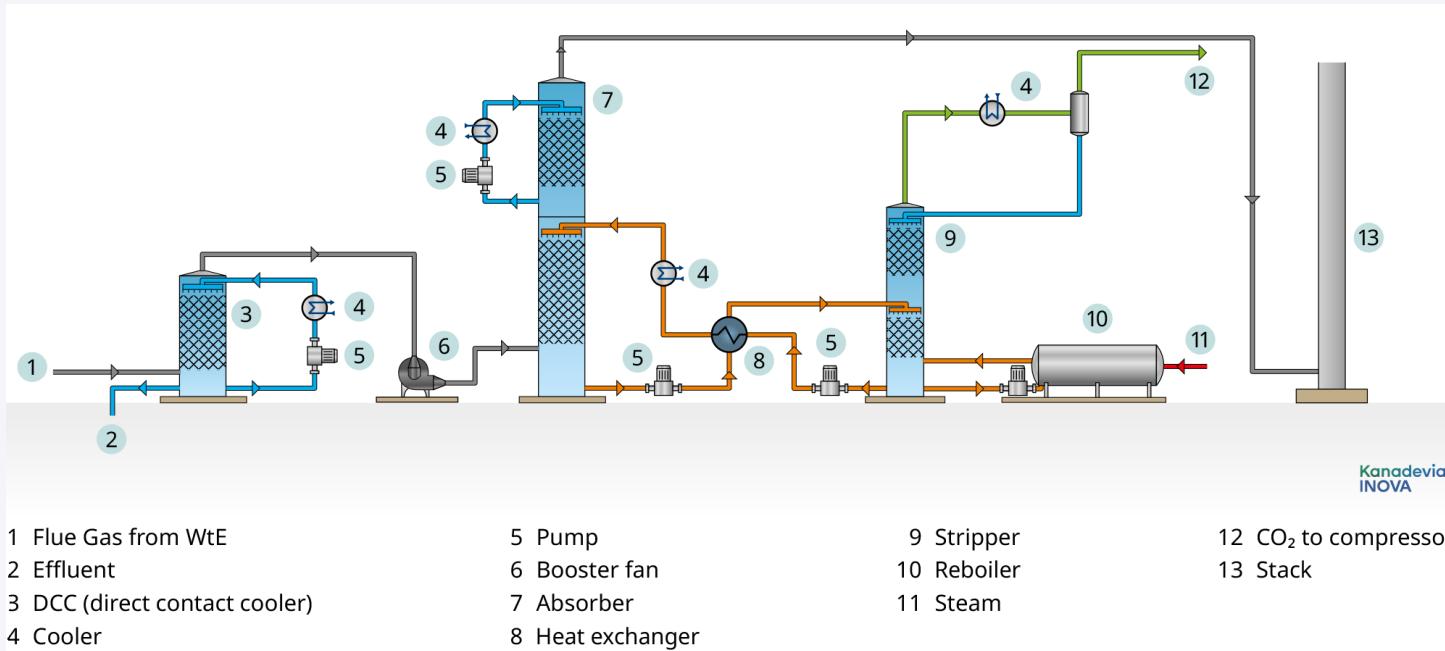
We create value for communities, contributing to a future free of wasted waste.

### CONTACT

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## Carbon Capture (CC) for Waste to Energy plants

Capturing carbon dioxide (CO<sub>2</sub>) from the flue gas produced in hard-to-abate industries and properly storing it (a process called carbon capture and storage or CCS) is a key component of most governments net-zero strategies. Waste to Energy (WtE) is an example of a difficult-to-abate industry. The reason is that waste must be handled and the alternative treatment option, landfill, has a worse climate-change impact than WtE. This is true even without the inclusion of CCS, as solid waste landfills release methane, which has far larger greenhouse gas (GHG) potential than CO<sub>2</sub>.



CO<sub>2</sub> in water is slightly acidic. This fact can be exploited for separation. When flue gas is washed with a amine-containing solvent (in the lower section of the absorber column), CO<sub>2</sub> is absorbed by the solvent. Certain amines have shown themselves to be effective solvents. Given that absorption works best at low temperatures, the flue gas is initially cooled using a direct contact cooler. The solvent, loaded with CO<sub>2</sub>, is pumped to the stripper, where it is boiled out. The solvent is then cooled again and returned to the absorber, resulting in a closed, resource-saving solvent cycle.

To meet air emissions regulations, flue gas is sent downstream from the absorption section through a cleaning section. Depending on the off-take requirements, final CO<sub>2</sub> treatment may include compression, liquefaction and additional cleaning processes.



## CARBON CAPTURE (CC) FOR WASTE TO ENERGY PLANTS

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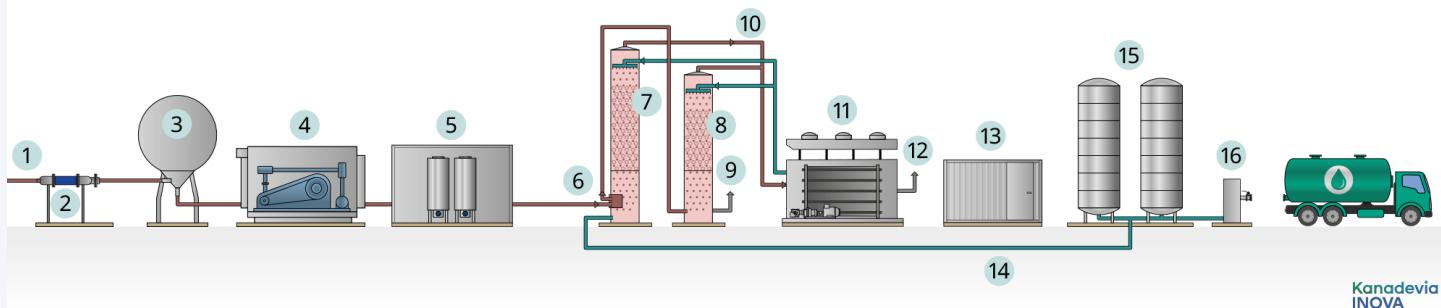
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## CO<sub>2</sub> recovery, purification and liquefaction

After the recovery from the raw Biogas via Membrane or Amine technology the purification and liquification is the final step before storage and transportation. The process of Kanadevia Inova is characterised by the highest gas quality, meeting the strictest standards, such as those for the food or pharmaceutical industry:

- ISBT (International Society of Beverage Technologists) and
- EIGA (European Industrial Gases Association)

Whether for biogas, biomethane, or other biogenic gases, retrofitting plant technology for CO<sub>2</sub> utilisation offers additional economic and climate-friendly perspectives. Users of renewable CO<sub>2</sub>, on the other hand, have the opportunity to reduce their CO<sub>2</sub> footprint by moving away from finite fossil resources.



1 Inlet gas piping	6 Reboiler	10 CH <sub>4</sub> -, N <sub>2</sub> -, O <sub>2</sub> -rich gas	15 Liquid CO <sub>2</sub> storage tank
2 Preconditioning	7 Stripper column	11 Refrigerating unit	16 Truck filling
3 Buffer tank	8 DCC column (DCC: direct contact cooler)	12 CH <sub>4</sub> -, N <sub>2</sub> -, O <sub>2</sub> -rich off-gas	
4 Compressor	9 VOC-rich off-gas	13 Quality measurement	
5 Cleaning and drying	(VOC: volatile organic components)	14 Liquid CO <sub>2</sub>	

Carbon dioxide (CO<sub>2</sub>) is a process gas needed in numerous applications. The use of CO<sub>2</sub> from renewable sources offers numerous opportunities – both for producers and consumers.

- 100% methane recovery
- Power demand of 0.2 kWh/kg CO<sub>2</sub> input gas with CO<sub>2</sub> as natural coolant
- Liquefaction efficiency up to 94%
- CO<sub>2</sub> production capacities 550 / 1,200 / 2,300 kg/h
- Food grade product quality (ISBT/EIGA)
- Product guaranteed to have no odour, colour, or taste

Kanadevia Inova develops and manufactures systems that capture, purify, and liquefy carbon dioxide. This makes it a transportable raw material from renewable sources that can replace fossil-origin CO<sub>2</sub> in various applications and processes.



## CARBON CAPTURE AND LIQUEFACTION FOR BIOGAS PLANTS

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