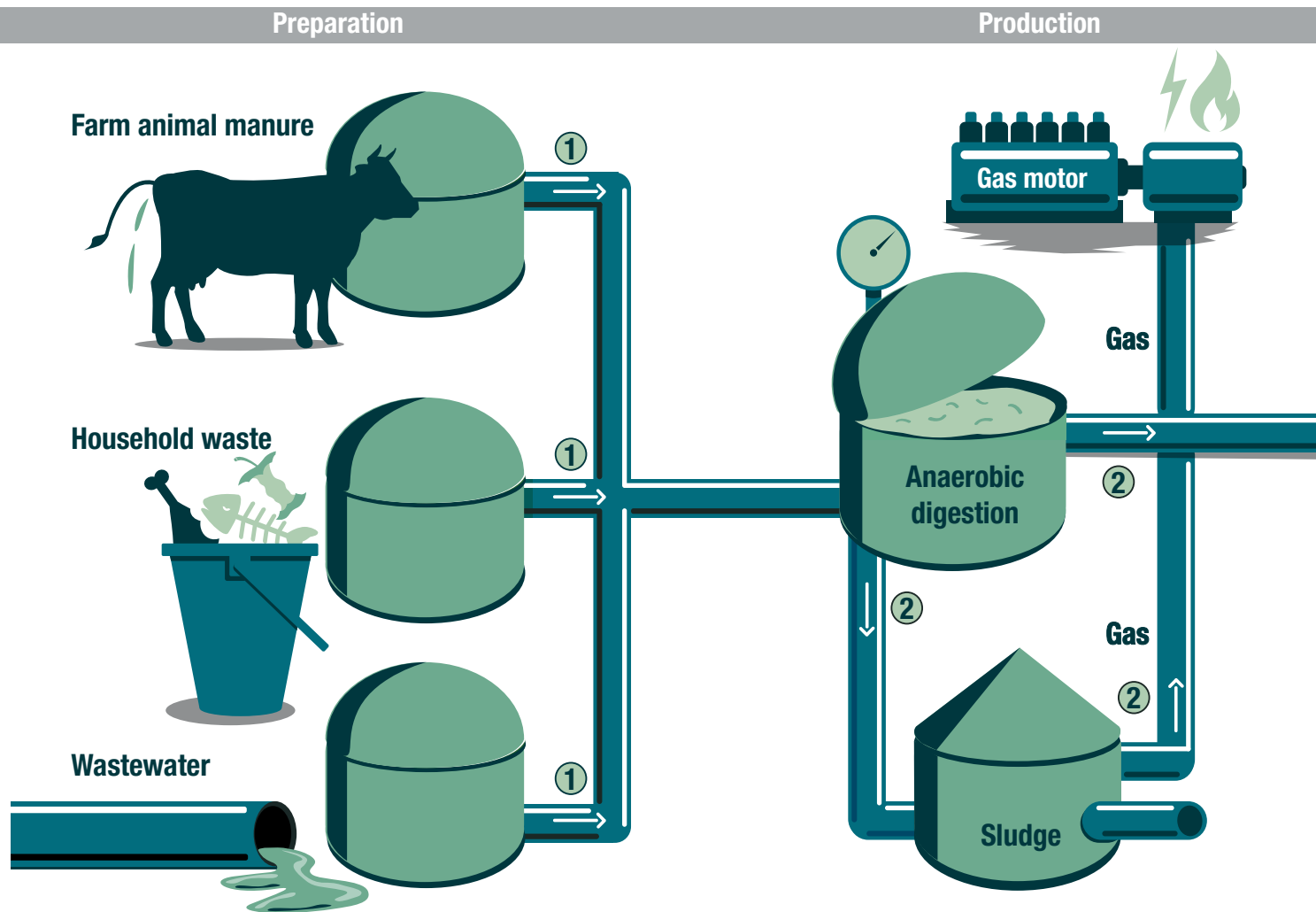




**BIOGAS
FOR A GREENER FUTURE
WITH AVK VALVES**



AVK VALVES IN BIOGAS PLANT PROCESSES



1. Preparation

First stage is handling and preparing the different types of organic matter for the biogas plant. Examples of input materials are liquid manure, agricultural material, organic household waste and waste from the food industry.

The type of organic matter affects the biogas production process as the fermentation process will differ accordingly. Therefore, it is common practice to have several preparation tanks, to ensure a homogeneous biomass composition for a stable and uniform gas production.

For this application AVK offers our standard valves and accessories:

- Knife gate valves
- Gate valves
- Butterfly valves
- Ball and swing check valves
- Repair clamps

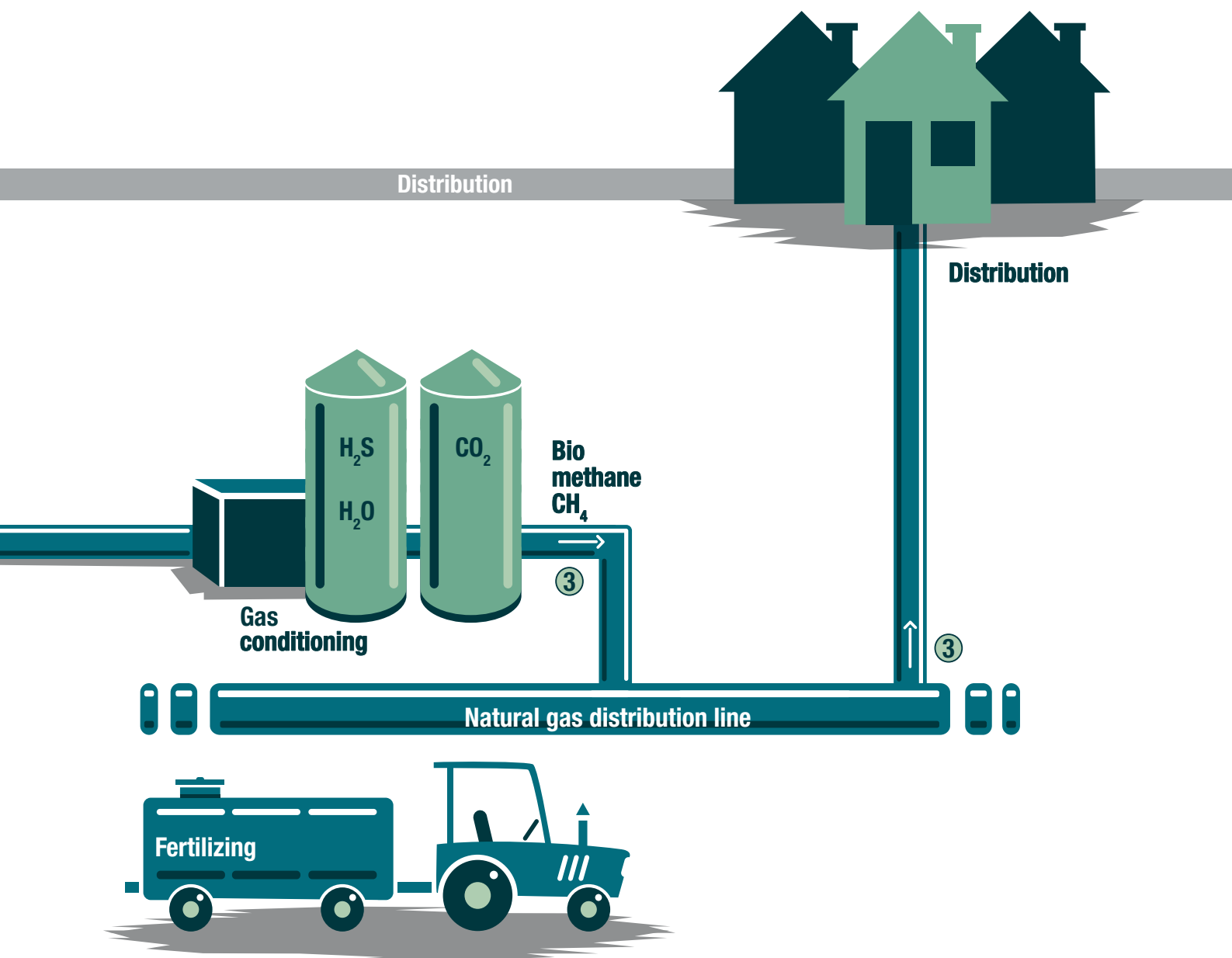
2. Production

The prepared biomass is transferred into a reactor tank, where biogas is produced as a result of an anaerobic digestion process.

At this stage, the produced gas mainly consists of methane (CH₄) and carbon dioxide (CO₂), but it also contains small amounts of water (H₂O) and hydrogen sulfide (H₂S). Hydrogen sulfide is an aggressive gas when it occurs at high concentrations.

For these applications, AVK offers the following:

- Untreated gas: Butterfly valves "Desponia®"
- Liquids: Gate valves
- Sludge: Knife gate valves



3. Distribution

Following the anaerobic digestion, hydrogen sulfide is removed from the gas produced. The gas may then be used on site where it is converted into electricity or heating. Alternatively, the gas may undergo further clean-up processes to be upgraded to a quality level suitable for distribution to the natural gas network.

For these applications, AVK offers our standard valves and accessories for gas distribution:

- Gate valves
- PE ball valves
- Repair clamps

SELECTED AVK CASES

Biogas as a sustainable energy source is developing rapidly and plays an important role in the transition to green energy.

We are proud that our valves contribute to a greener future.

GrønGas Vrå is a large Danish biogas plant receiving slurry from 50 local farmers. AVK has delivered 36 knife gate valves to the plant.

GrønGas Vrå produces biogas primarily from cattle and pig manure, industrial waste products and food leftovers. The biogas plant treats 365,000 tons of biomass every year and supplies the natural gas network with approx. 13 million cubic meters of biomethane.

30 of the valves are installed in the manifold where manure is picked up and conveyed through the plant. Some valves are located on the outside of the containers and are used to transport beets directly into the process. Six valves are installed to fill and empty the plant's three heating modules.





At Rådalen Biogas in Bergen, Norway, organic waste is turned into biogas used as an alternative fuel for transportation.



One of the largest biogas plants in Southern Europe is located in Thessaly, Greece.



At Gemidan's pre-treatment plants, food waste is converted into a pure bio pulp. Their technology ensures a sustainable use of the waste, and AVK knife gate valves control the flow.

Gemidan has developed a technology called Ecogi for the pre-treatment of organic waste. With this Ecogi technology, source-separated household waste and discarded food still in its packaging can be turned into pure bio pulp that can be used for biogas production.

The Ecogi Egedal plant has two Ecogi lines and the capacity to treat 120,000 tons of organic waste annually. All processes at the plant are automated, and the operator can monitor the plant and control the processes electronically.

AVK butterfly valves and AVK knife gate valves are used in Gemidan Ecogi plants.



Degassing of manure in a biogas plant before it is spread in the fields minimises odour nuisance, increases the fertilizer value and lowers the impact on climate.

A Danish farmer, who runs a large pig farm and a biogas plant, has invested DKK 14m in a 20 km pipe system that transports manure from ten local farms to the biogas plant and back to the fields where degassed manure is spread out. The system processes up to 160,000 tons of biomass annually. The pipe system has reduced the local traffic load significantly, since the need for driving back and forth has been minimised – also between the fields and the storage tanks on the farms, because buffer tanks and taps have been established at the fields.

26 knife gate valves in DN200 with LINAK actuators are installed on manifolds between the farms and the biogas plant to ensure that manure is transported to the right places. Automated valves control the opening and closing of the valve and ensure that manure can be pumped in both directions in the system.

Read the full case stories here: avkvalves.eu/cases



KNIFE GATE VALVES AND GATE VALVES



Series 702/10

Knife gate valve
with non-rising stem
and handwheel
Ductile iron
DN50-1200

Options:

- other materials
- rising stem
- lever



Series 702/50

Knife gate valve
with ISO top flange
Ductile iron
DN50-1200

Options:

- other materials



Series 702/40

Knife gate valve
with double acting
pneumatic actuator
Ductile iron
DN50-1000

Options:

- other materials



Series 702/73

Knife gate valve
with linear actuator
Ductile iron
DN50-300

Options:

- other materials



Series 06/84

Flanged gate valve
Short face to face DIN F4
NBR wedge
AISI 316 stem
Ductile iron
DN40-600 and 800
From DN450 with
ISO top flange



Series 06/35

Flanged gate valve
with position indicator and
handwheel
Short face to face DIN F4
NBR wedge
Ductile iron
DN50-400

Options:

- DIN F5



Series 06/42

Flanged gate valve
with ISO top flange
Short face to face DIN F4
NBR wedge
Duplex stainless steel
DN40-200



Series 06/46

Flanged gate valve with
rising stem (OS&Y)
Short face to face DIN F4
NBR wedge
Duplex stainless steel
DN40-200



Series 06/70

Flanged gate valve
Short face to face DIN F4
NBR wedge
Ductile iron
DN40-600

Options:

- long DIN F5
- position indicator and
handwheel



Series 15/78

Flanged gate valve
with ISO top flange
Short face to face DIN F4
NBR wedge
Ductile iron
DN50-400



Series 46/64

Gate valve with short
spigot ends
Steel GP240GH
DN50-300

Options:

- ISO top flange



Series 36/90

Gate valve with PE ends
NBR wedge
Ductile iron
DN65-400

Options:

- flanged X PE end
- ISO top flange

BUTTERFLY VALVES, CHECK VALVES, BALL VALVES AND REPAIR CLAMPS



Desponia® - Wafer
Centric butterfly valve
with loose NH liner or
FPM VD liner
Wafer
Ductile iron DN25-1000
With any type of actuation



Desponia® - Lug
Centric butterfly valve
with loose NH liner or
FPM VD liner
Lug
Ductile iron DN25-600
With any type of actuation



Desponia® - U-section
Centric butterfly valve
with loose NH liner or
FPM VD liner
U-section
Ductile iron DN150-1600
With any type of actuation



Series 820/00
Centric butterfly valve
with loose NBR liner
Wafer
Ductile iron
DN25-1000
With any type of
actuation



Series 820/10
Centric butterfly valve
with loose NBR liner
Lug
Ductile iron
DN25-600
With any type of
actuation



Series 820/20
Centric butterfly valve
with loose NBR liner
U-section
Ductile iron
DN150-1600
With any type of
actuation



Series 75/11
Centric butterfly valve
with fixed NBR liner
Ductile iron
With any type of
actuation

- Options:
- semi-lug
 - full lug
 - double flanged



Series 53/35
Ball check valve
with flanges
Ductile iron
DN50-600

- Options:
- in stainless steel



Series 53/40
Ball check valve
with internal BSP threads
Acid-resistant stainless
steel
DN32-80

- Options:
- in ductile iron



Series 41/60
Swing check valve
with free shaft end
Resilient seated
Ductile iron
DN50-300

- Options:
- with lever and weight
 - with lever and spring
 - with closed bushings



Series 85/30
Ball valve with spigot ends
PE100
DN25/Ø20 mm -
DN150/Ø180 mm

- Options:
- lever
 - support base



Series 748/02
Repair clamp
Double band
Stainless steel AISI 304
or AISI 316
NBR rubber

- Options:
- single band
 - triple band

RELY ON AVK VALVES FOR A GREENER FUTURE

Based on solid experience

AVK is renowned for delivering products with a long lifetime and thus cost-efficient solutions for our partners. We meet the strict safety requirements of e.g. natural gas companies worldwide and have obtained quality approvals for our valves from the leading, international testing institutes.

Our range for biogas applications includes knife gate valves, gate valves, butterfly valves, PE ball valves, check valves, couplings and repair clamps. Please find indepth product information at avkvalves.eu.

AVK International A/S is part of the AVK Group, a privately owned Danish company established 50 years ago and employing 4,800+ people in more than 100 AVK companies worldwide.

The safe choice

AVK International A/S manufactures valves and accessories in our three highly automated factories and offer additional products manufactured in 20+ AVK factories in Europe and in AVK factories worldwide. We store a broad selection of our range in a streamlined distribution centre ensuring the fastest possible lead time.

We are certified according to ISO 9001 and ISO 29001, the industry-specific standard for the oil and gas industry. Moreover, we are certified to the ISO 14001 standard for Environmental Management, the ISO 50001 standard for Energy Management and the ISO 45001 standard for Occupational Health and Safety.



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