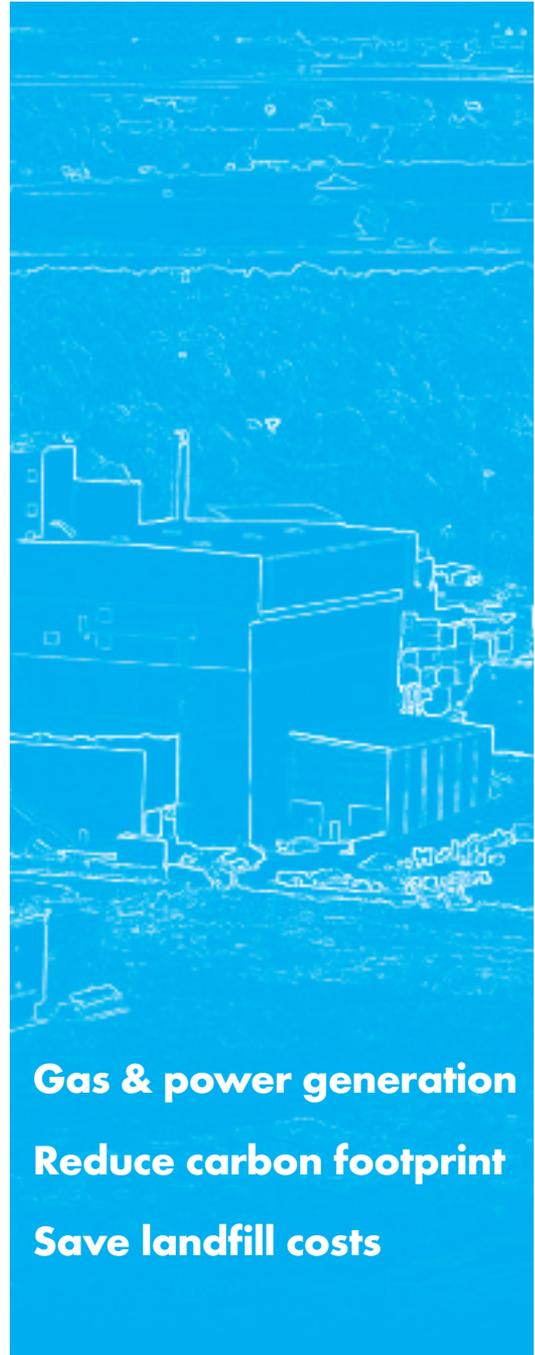


# VALUABLE MATERIALS

recovered from the raw material source waste



**Gas & power generation**

**Reduce carbon footprint**

**Save landfill costs**

**KÜTTNER**

## ANAEROBIC “DRY” & “WET” DIGESTION

KÜTTNER designs and supplies both “dry” and “wet” anaerobic digestion plants. In these facilities microorganisms produce an energy-rich biogas from organic waste. Digestate from domestic waste (MSW) is stabilized in a composting plant. When treating segregated biogeneous waste, the resulting digestate can be composted and utilized as high-quality fertilizer or growing-media.

KÜTTNER supplies turnkey plants, spanning the complete processing route from waste reception through to biogas utilization. KÜTTNER digestion plants comply with all disposal and landfill regulations.

Biogas from MSW



### “Dry” Digestion Plants

KÜTTNER erected a 40,000 t/a Dry-AD plant for processing the organic and wet fractions of residual waste for the recycling service provider EVG Rostock. The plant operates using the KOMPOGAS principle of “dry” digestion. Biogas arising from the digestion of the waste is used in a co-generation plant for the production of electricity and heat. Digestate from the digester is dewatered and subjected to intensive enclosed aerobic biostabilisation (biodrying). Capacity of such plants is unlimited due to the modular design.

Biogas from food waste



### “Wet” Digestion Plants

ESCHMALD is a Mesophilic Anaerobic Liquid Digestion system by Kuttner. Typical feedstocks are agricultural byproducts as well as food waste with a relatively high water content. Technology consists of three units: the combined mixing and hydrolysis tank (CMHT), the 1st step digester which is the main digestion zone, and the 2nd step digester where the final digestion process proceeds. Again, capacity of these plants is unlimited due to modular design.

## ■ BIOGAS UTILIZATION

Biogas consists mainly of methane which can be used, for example, in co-generation plants for producing electricity and heat. Alternatively, cleaned biogas can be used as CNG fuel or fed into the natural-gas grid.

KÜTTNER offers equipment for a wide range of process steps, e.g. desulphurization, drying, booster and backup flare systems.

### Combined Heat and Power Gas Engines (CHP)

Biogas generated in the AD-facility is supplied directly to the combined heat and power (CHP) plant. Electricity and heat is exported to the public grid. The heat demand of the AD system and the heat generation by the CHP system compose one integrated unit in a closed loop.



**CHP Biogas Engine**

### Biogas Upgrading

Raw biogas produced from digestion is roughly 60 % methane and this can be concentrated to over 98 % methane within an upgrading facility. This allows the injection of upgraded biogas into the methane grid (natural gas grid). Alternatively, upgraded biogas can be used locally as compressed natural gas (CNG), e.g. as a vehicle fuel.



**CHP Plant Rostock**

### Biogas-yield Laboratory

Energy output from individual feedstock as well as biogas quality can be readily tested and calculated for clients to assess business options. Biogas yield and quality depend on individual properties of substrates. The service-range comprises standard batch tests up to continuous pilot-scale digestion trials, analysis and a final report. Laboratory trials allow a proper basis for project development and professional support of the project.



**Laboratory trials on biogas yield and quality**



# MECHANICAL WASTE TREATMENT (MBT)

Mechanical-biological waste treatment (MBT) is material-specific waste treatment to generate recyclate efficiently and where feasible with an energy surplus. The waste to be treated is typi-

cally from households and businesses. Our technologies are matched to specific requirements of a wide range of industrial and domestic wastes.

## Mechanical Pre-Treatment

Mechanical waste treatment is used, on the one hand, for separating valuable reject materials and, on the other hand, for conditioning the waste for subsequent processing. In the screening drum, the waste is separated prior to downstream processing steps into the:

- fraction for material recycling,
- fraction for energetic recycling,
- fraction for thermal treatment,
- fraction for biological treatment,

and the residual fraction for disposal and subsequent landfill. The resulting organic fraction < 60 mm is conveyed to the digestion plant.



Push trays,  
ladder conveyor



Screening drum

## Intermediate Storage

KÜTTNER supplies unmanned crane systems which continuously feed waste material to the treatment plant. The automatic control of the crane equipment ensures optimal distribution, intermediate storage of the waste and highly reliable charging of the downstream conveying equipment. Alternatively, push-trays and ladder conveyors can be installed for automatic feeding, e.g. to an AD (anaerobic digestion) system.



Automatic crane

# WASTE IS A PRECIOUS ENERGY RESOURCE

Fraction of domestic waste



Domestic and industrial waste including biowaste are important raw materials and potential energy sources. Numerous outputs can be recycled from waste. Most importantly, gas, electricity and heat can be generated from various waste fractions.

Turnkey and at one stop, KÜTTNER offers plant and equipment not only for solving disposal and recycling problems but also for making waste treatment and processing an attractive field of business for customers, both economically and ecologically. Projects span waste reception through processing to the production of power and heat.

As the physical and chemical properties of waste can vary considerably, methods of waste treatment must be adapted to the individual task at hand. To achieve this, KÜTTNER provides a wide range of

processes specially developed for mechanical, biological and thermal waste treatment.

These processes can be combined to perfectly match the requirements of any specific task. Based on very great experience of designing industrial plant and equipment, KÜTTNER engineers create technical solutions to exactly match their clients' individual needs.

For our customers this means: one principal person of contact spearheading the KÜTTNER team, with personal experience and in-depth know-how; short decision-making processes and clear responsibilities.



# KÜTTNER ENERGY & ENVIRONMENT GMBH

## Subsidiary of Küttner GmbH & Co. KG

A globally acting group of companies has developed from the engineering company once founded in 1949 by Dr. Carl Küttner.

Nowadays, their main focus is on building turn-key plants for the iron & steel producing industry, foundry and NF (non-ferrous) industry, especially in the fields of process and smelting technology, materials handling as well as of energy and environmental technologies.

Küttner Energy & Environment is one of the leading global players in developing and implementing innovative and sustainable energy and environmental technologies for efficient

energy use, reductions in environmental impacts and optimisation of material cycles.

Our scope of services comprises the design and engineering, construction, delivery, assembly, as well as the start-up and commissioning of the entire plant including control system and data processing.

Küttner systems can be found in almost all industrial sectors. Worldwide Küttner-Group personnel counts more than 650 employees, their owners themselves being active within the company.

