



STRABAG LARAN ANAEROBIC DIGESTION

WASTE-TO-COMPOST AND GREEN ENERGY,
SEPTEMBER 2020

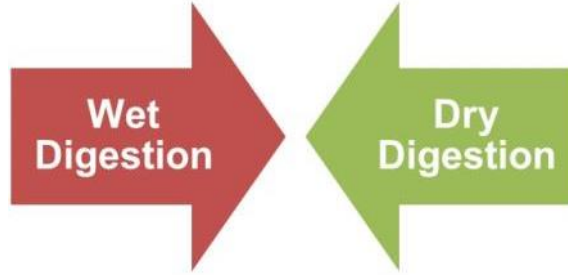
STRABAG UMWELTTECHNIK GMBH



STRABAG
TEAMS WORK.



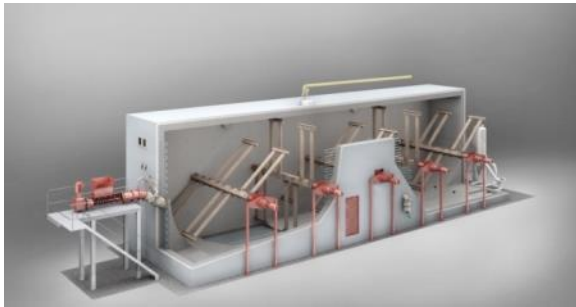
1 STRABAG AT A GLANCE



2 COMPARISON OF AD - TECHNOLOGIES



3 ANAEROBIC WET DIGESTION



4 ANAEROBIC DRY DIGESTION



5 BIOGAS UPGRADING



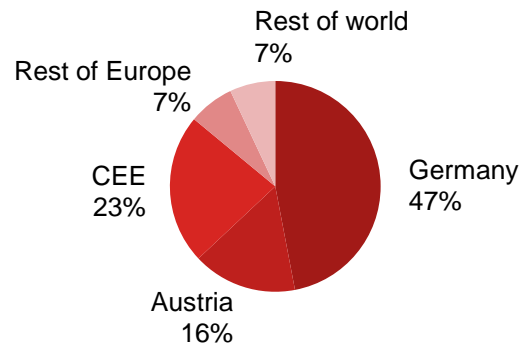
● **FACTS AND FIGURES**

STRABAG AT A GLANCE

● FACTS & FIGURES

- Output volume: € 16.6 billion
- Net income: € 379 million
- 76,919 employees
- >700 locations in more than 80 countries
- Highly innovative: Central Technical Division with over 1,000 engineers, TPA (Quality & Innovation) with about 950 people
- Equity ratio: >30%
- Investment grade rating by S&P: BBB, outlook stable
- Strong brands: STRABAG & ZÜBLIN

● OUTPUT VOLUME BY REGION (2019)



● MARKETS



CORE BUSINESS

MECHANICAL BIOLOGICAL TREATMENT (MBT)

- Mechanical segregation
- Anaerobic digestion/
biogas
- Composting
- Biodrying



Leading in mechanical and biological solid waste treatment

- Numerous MBT plants in the past 40 years
- Own technology, not only license holder
- Strong company background
- Experience in engineering, built and start up

Patented and proven technologies for anaerobic digestion and composting:

- **Wet digestion** – leftover food or food waste, manure, sewage sludge
- **Dry digestion** – organics from MSW or source separated bio waste

2 COMPARISSON OF DIGESTION - TECHNOLOGIES

Wet
gestion

Dry
Digestio

COMPARISSON OF DIGESTION TECHNOLOGIES

	Wet Digestion	Dry Digestion
Definition of technology	3-15% DM (slurry in digester)	25-35% DM (slurry in digester)
Experience, history, references	Experience with MSW since 1990s. Since then, mostly used for food waste and similar liquid waste streams. Perfectly suitable for restaurant waste and sludge from WWTP.	Technology since end of 1990 for structure rich waste (MSW, bio waste). Experience almost 30 years. Today most tenders for MSW or bio waste ask for dry digestion systems.
Feedstock preparation	Wet-mechanical systems using fresh/process water to dilute the waste and to wash impurities out.	Simple dry mechanical process, usually by crushing and screening. No water is added.
Biogas yield	Same biological process, same biogas yield – only depending on feedstock and retention time.	

3

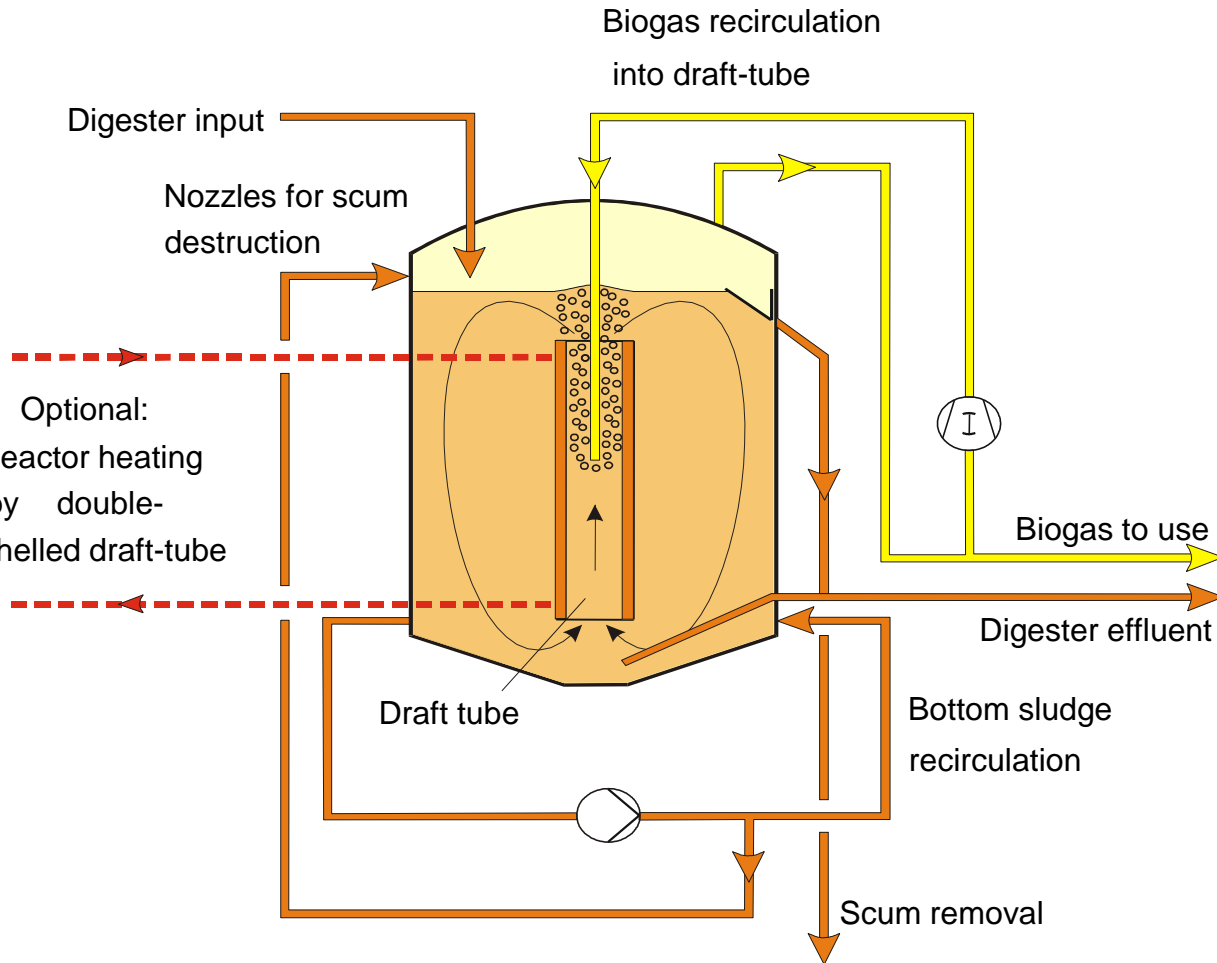
WET DIGESTION



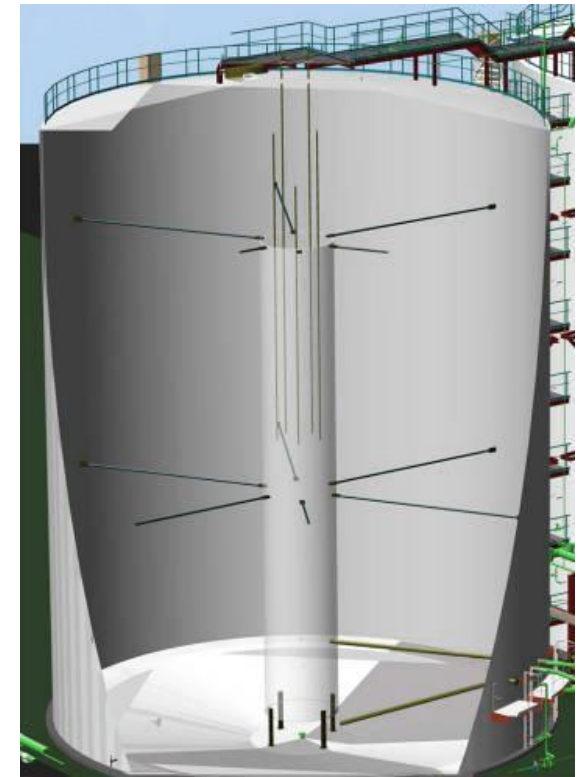
STRABAG
TEAMS WORK.

WET DIGESTION - LARAN[®] LOOP DIGESTER

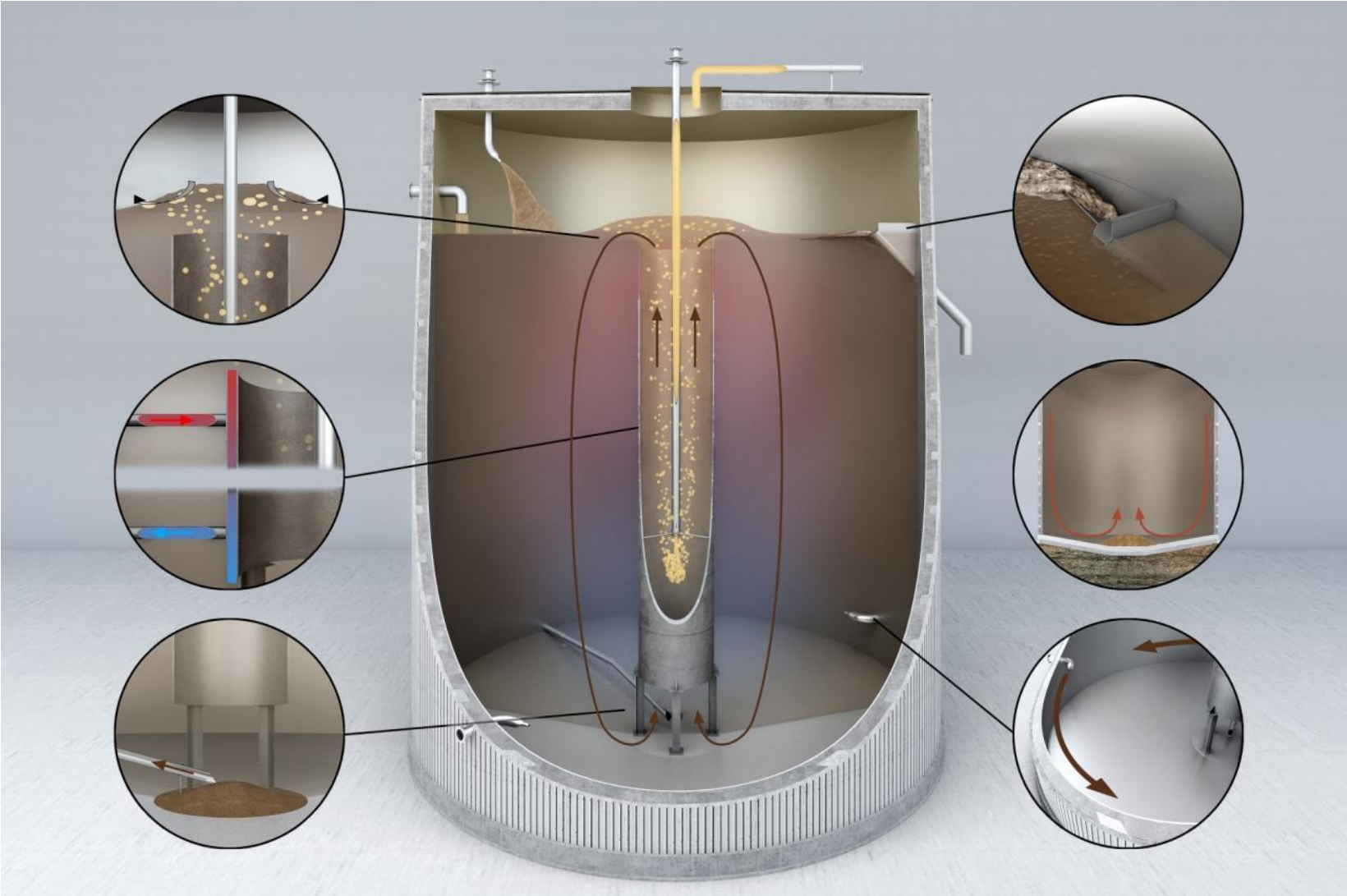
Principle of digester



Visualisation of digester



WET DIGESTION - LARAN® LOOP DIGESTER

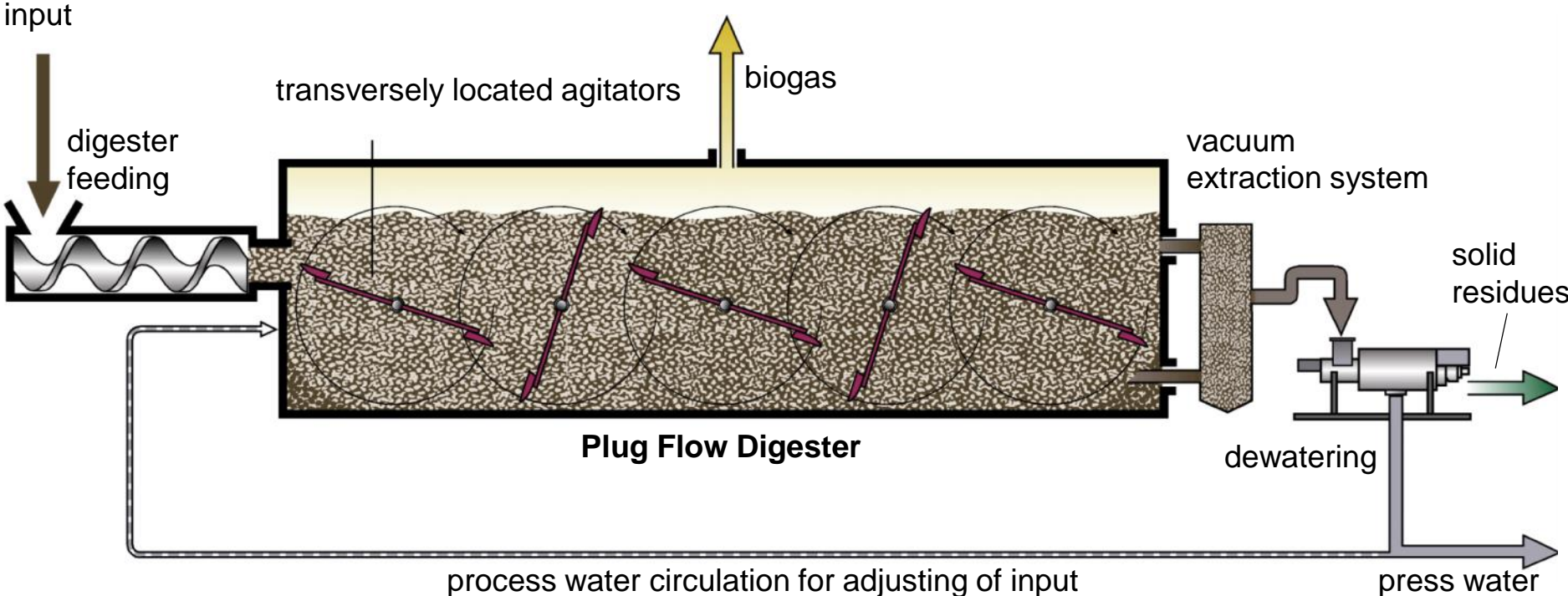


4

DRY DIGESTION

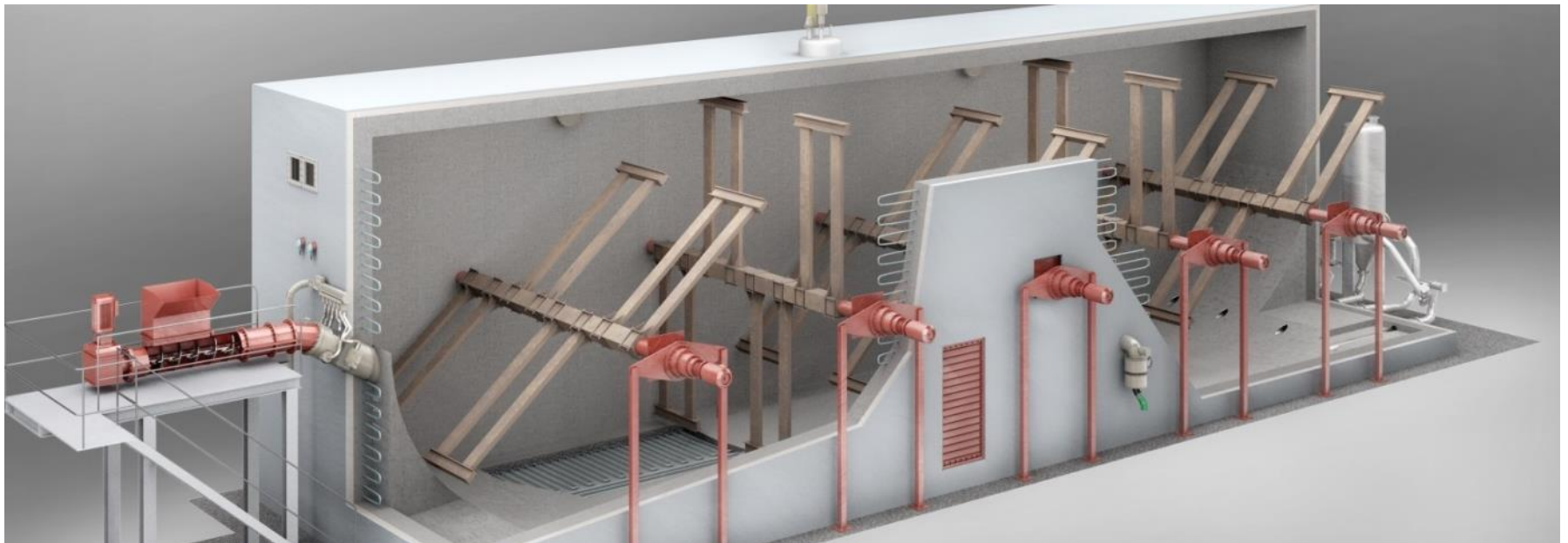


DRY DIGESTION - LARAN® PLUG FLOW DIGESTER



DRY DIGESTION - LARAN[®] PLUG FLOW DIGESTER

- **Patented process**, industrially approved almost 20 years
- **Continuous biogas** production due to own **continuous feeding system**
- **High operating reliability** through multiple, individually driven and robust agitators with short shafts
- **Local mixing** allows control of scum and sedimentation layers and **extraction of sediments**
- Unique and **wear-resistant STRABAG vacuum discharge** system
- Heating elements in the walls and floor allow **secure heat transfer**
- **Flexible application** of different substrates with variable **DS** content



5

BIOGAS UPGRADING

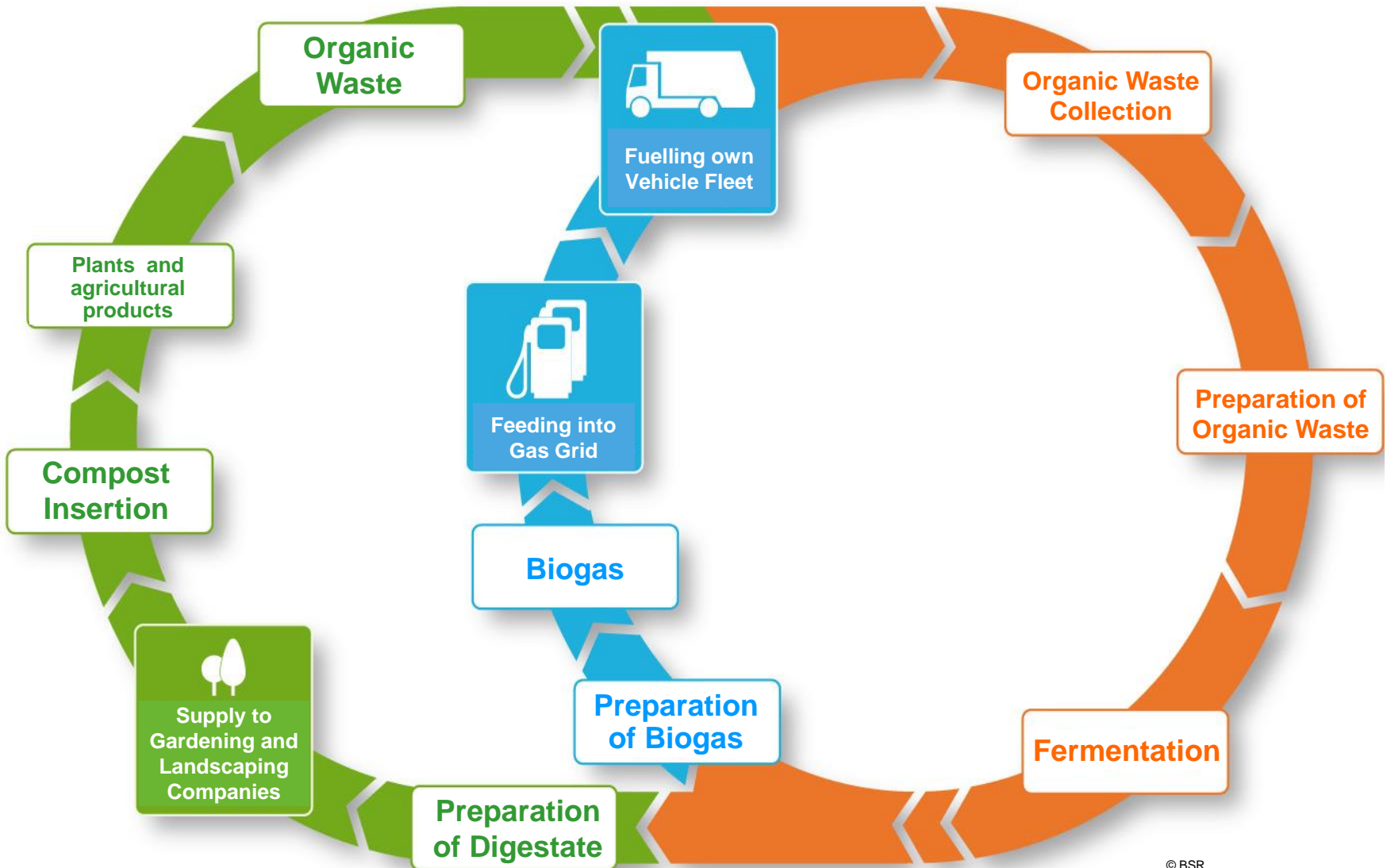
STRABAG
TEAMS WORK.

BIOGAS UPGRADING



- Long experience and references with various technologies:
 - PSA
 - Amine wash
 - Membrane
- EPC experience for implementation of biogas upgrading into an AD plant
- CNG filling stations
- Feeding of bio-Methane to public gas grid

REFERENCE PROJECT BSR BERLIN



© BSR



THANK YOU FOR YOUR ATTENTION

Contact:
axel.huber@strabag.com



STRABAG
TEAMS WORK.