Hitachi Zosen
INOVA

Hitachi Zosen Introduction

Hitachi Zosen Inova
Global leader in Energy from Waste

Hitachi Zosen INOVA

Hitachi Zosen Corporation (Hitz)

- Founded in 1881, 9500 employees
- Osaka, Japan based industrial and engineering company focused on the waste and environmental business sectors.
- Revenue ~3.7 billion USD (3/16)

Hitachi Zosen Inova (HZI)

- 100% wholly owned subsidiary of Hitachi Zosen
- HZI is the global market leader in energy from waste solutions; over a $1 BUSD in annual Order Intake
- HZI is headquartered in Zurich, Switzerland with offices in Germany, Italy, Slovakia, Sweden, China, Australia, USA, Canada, etc…
- HZI with proprietary products span incineration, anaerobic digestion, renewable natural gas processing, and moving quickly into methanation, hydrogen and CO2
- Over 500 reference projects worldwide
- Dedicated R&D continuously improving and expanding

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HZI North America

- USA office established in 1975 (former A&E Von Roll)
- North American HQ is in Knoxville, TN
- Approx. 50 employees (‘20) w/ growth to ~100 2021(‘21)
- Full Sales and Business Development Capabilities
- Full Engineering, Procurement, and Construction Capabilities
- Full Project Financing Capabilities
- Diverse Approach - Design and Supply, Design and Build, and Build Own Operate Approach

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HZI North America

- **San Luis Obispo AD Plant (‘18) – San Luis Obispo, California**
  - Built, Own and Operate an Anaerobic Digestion Plant in San Luis Obispo, California in 2018
  - 20yr Waste Supply Agreement with WCI and 20 yr Power Purchase Agreement with PG&E
  - Received a Cal Recycle Grant (maximum award of $3M USD)
- **Enbridge Biogas Upgrading Plant (‘20) – London, Ontario Canada**
  - Designed, Supplied, and Constructed a biogas processing and compression plant
  - Met all Customer performance guarantees
- **Escondido AD Plant (‘21) – Escondido, California**
  - Currently Constructing and Commissioning an Anaerobic Digestion and Biogas Upgrading for a Large Southern California Waste Hauler
  - Received a Cal Recycle Grant (maximum award of $3M USD)
- **Lancaster AD Plant (‘24) – Lancaster / Palmdale, California**
  - Currently Developing an HZI Owned and Operated Anaerobic Digestion and Biogas Upgrading Plant for the Largest Waste Hauler in the United States
  - Received a Cal Recycle Grant (maximum award of $3M USD)

Intend to Place $1 Billion of Renewable Gas Asset in the USA/Canada in the Next Decade

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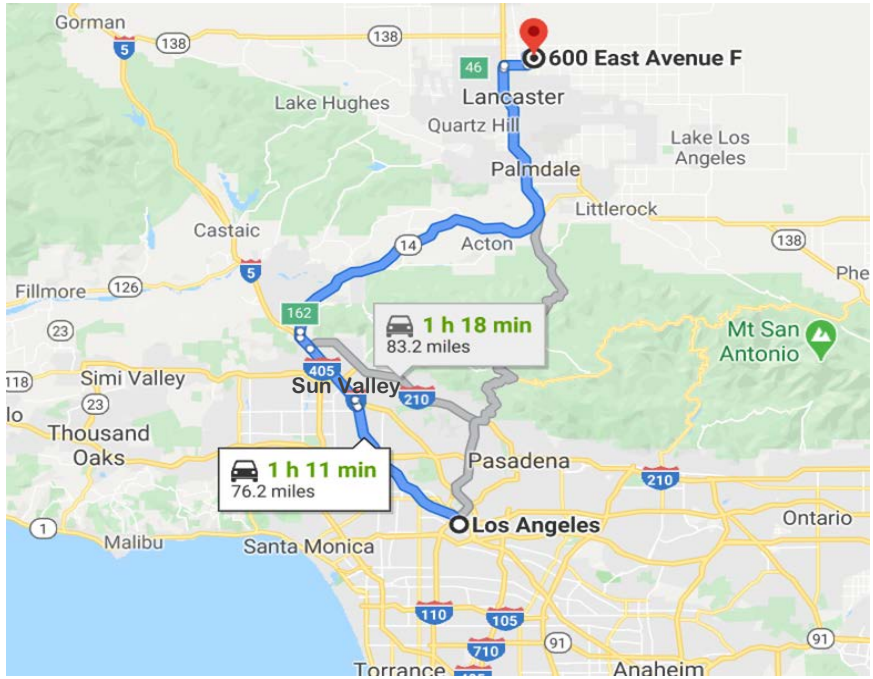
Lancaster - Antelope Valley, CA

Anaerobic Digestion and Biogas Upgrading project

PROJECT BACKGROUND - GENERAL



- Located 6 miles East of Lancaster / 13 miles North of Palmdale / 70 miles North of Los Angeles.
- Strategically location with large service territory of Northeast Los Angeles and Antelope Valley.

PROJECT BACKGROUND - GENERAL

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Item	Population
City of Lancaster	160,300
City of Palmdale	152,750
Los Angeles County	10,160,000
Los Angeles Metro Area	18,788,800

- Site is in second largest metropolitan region in the U.S. (pop. >18M).
- Strong and diverse regional economy provides ample feedstock supply.
- Demand for AD increasing ahead of 2022 organics landfill diversion compliance deadlines.

PROJECT SUMMARY

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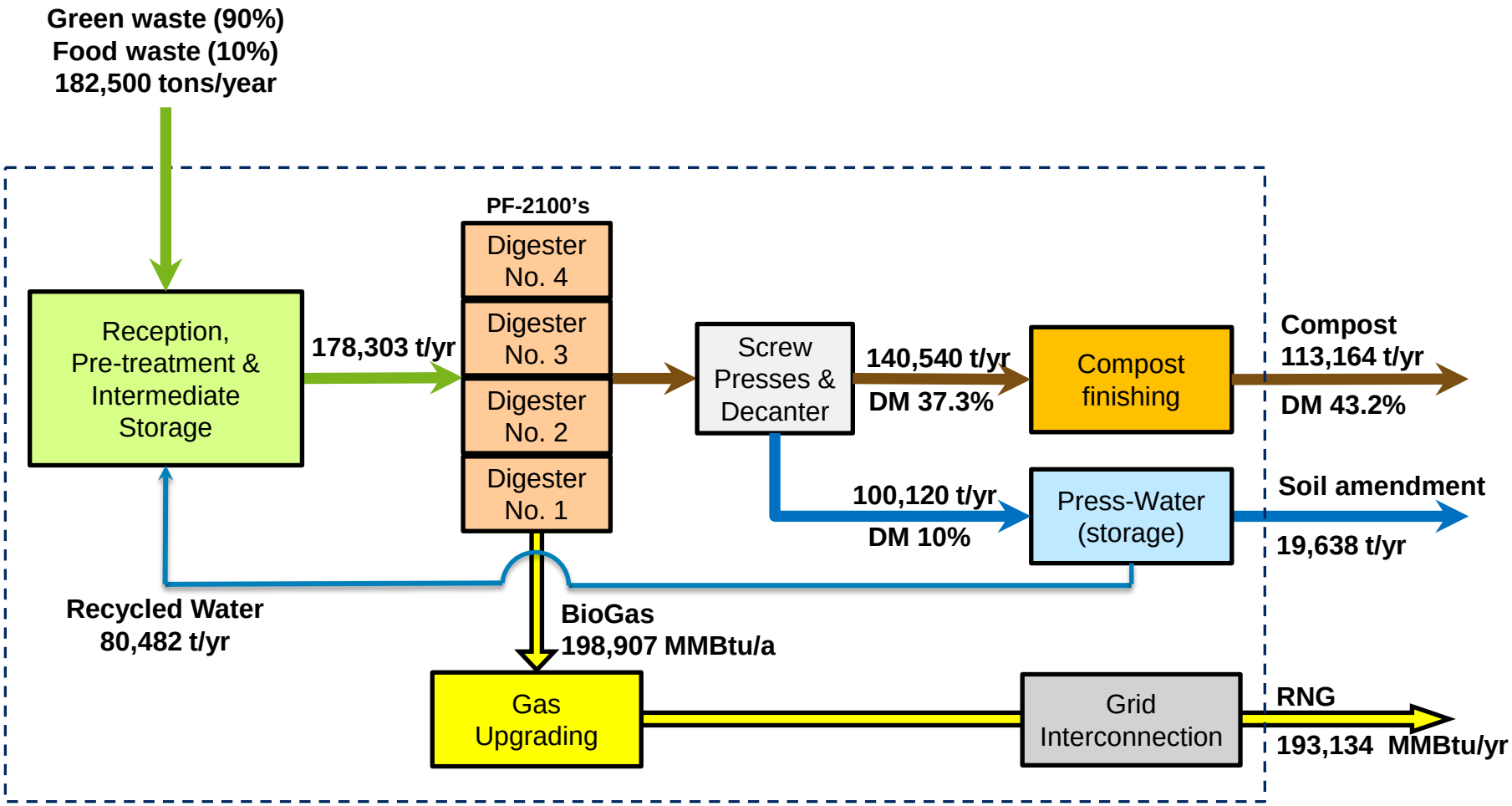
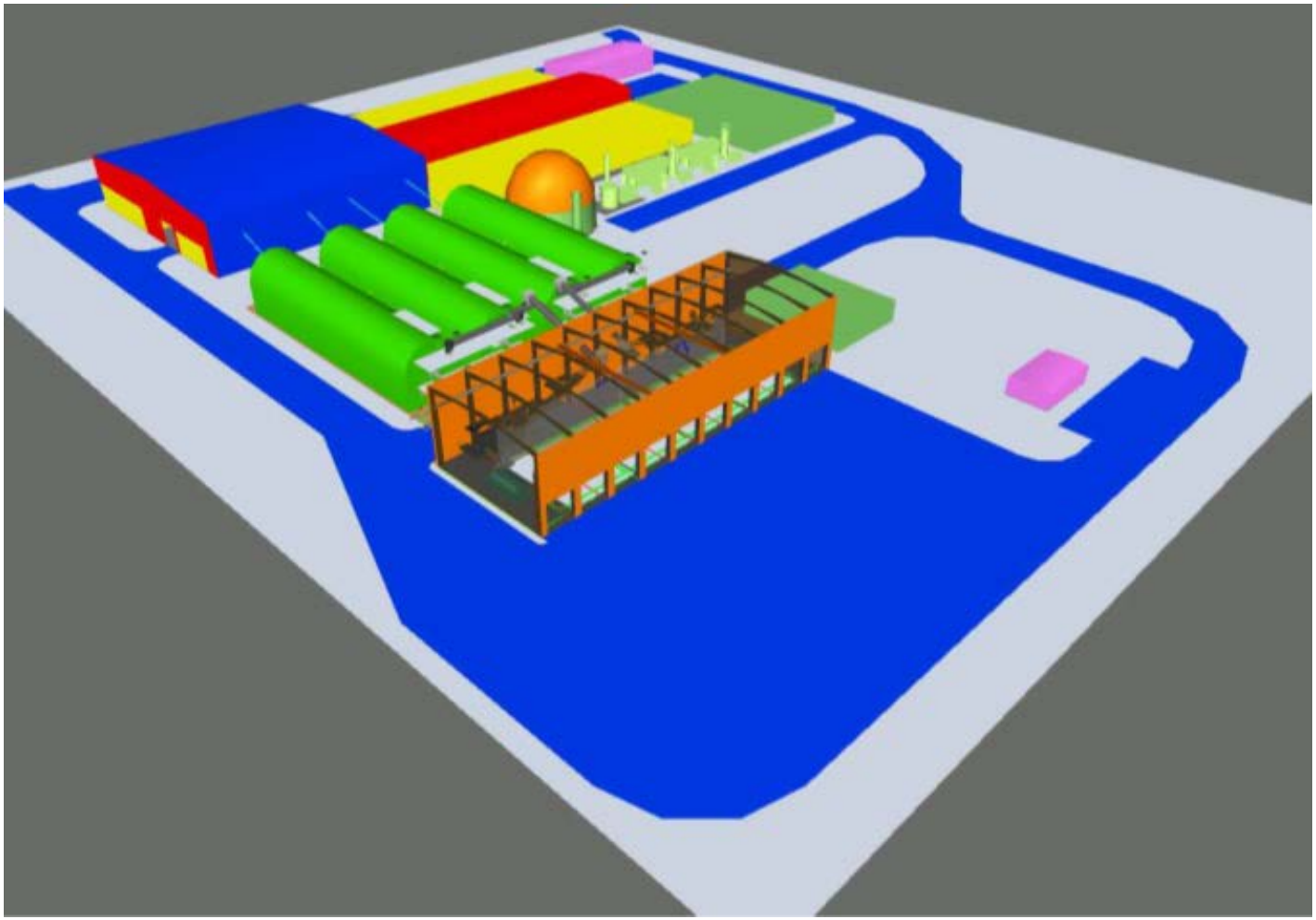
Item	Contents
SPV	HZIU BioEnergy Lancaster LLC
Plant	HZI Kompogas AD with Biogas Upgrading
Site	600 East Avenue F, Lancaster, California, 93535 (Los Angeles County)
Capacity / Digester	182,500 tpa (500 tpd) organic waste, PF2100 x 4
Waste Composition	Green waste (90%), food waste (10%)
Biogas Production	866 SCFM
Biomethane (RNG)	193,134 MMbtu/a
Compost	Local agriculture and offered to community at no cost.
Liquid fertilizer	Processed liquid digestate for dust control at LF site and agricultural use

PROJECT BACKGROUND – PROCESS FLOW



PROJECT GENERAL ARRANGEMENT



PROJECT SCHEDULE

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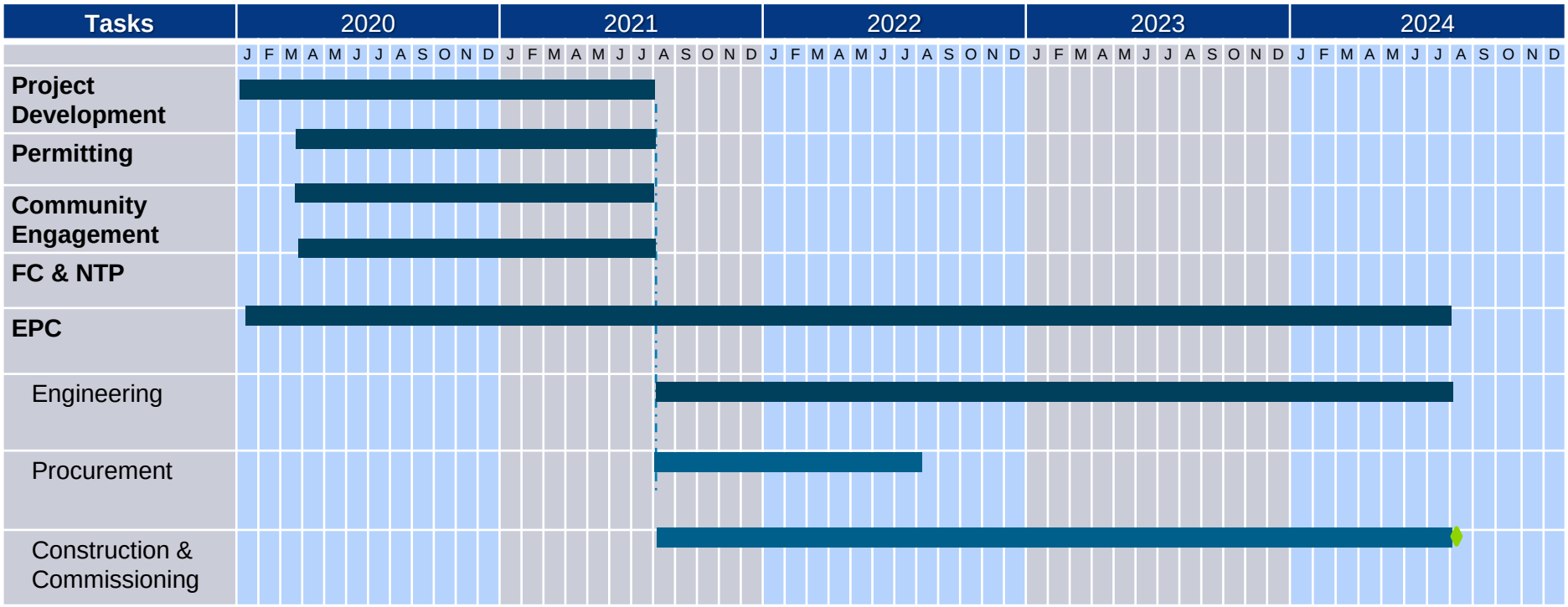

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Kompogas® - Anaerobic Digestion Technology

Kompogas AD
First class technologies combined with HZI turn-key capability

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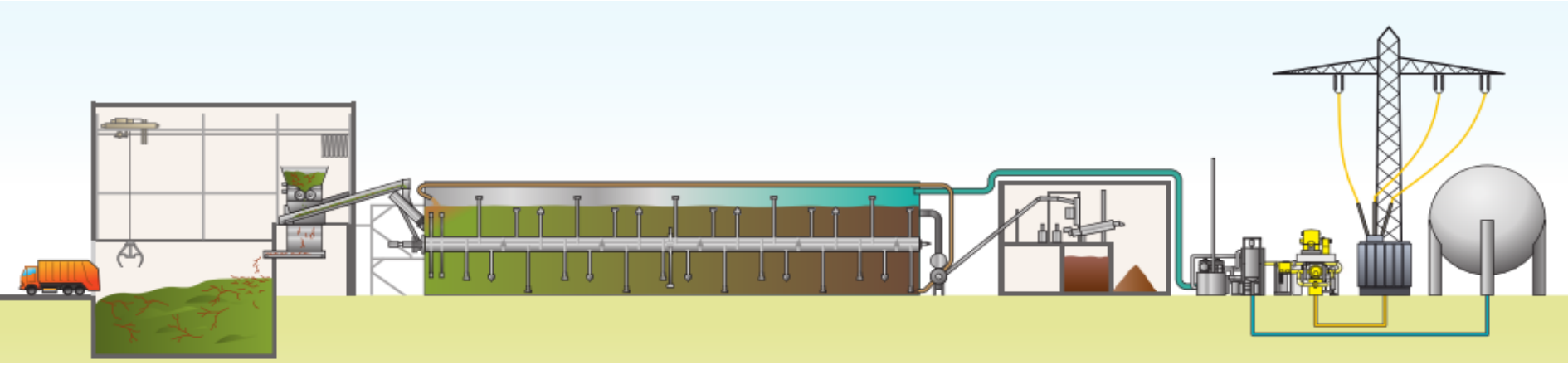

Proprietary Technology from HZI

Engineered by HZI

Managed by HZI

Project, Site and Construction Management

Feeding System	Digester	Discharge System	Dewatering	Gas Utilization

Electrical, Instrumentation and Controls

Balance of Plant and Energy Utilization

Site and Building Services

Civil

Integrated Solution

Maximized Efficiency

Reliable Execution

Kompogas steel digester
Robust and reliable, available in various sizes

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- Digester sizes: PF1200, PF1500, PF1800, PF 2100, PF 2500
- Modular design for fast installation
- High and constant biogas yield from anaerobic degradable inputs
- Continuous process and stable biology
- Safe and emissions-free

References

First in US : Kompogas-SLO, San Luis Obispo, CA

References

Currently under commissioning: Escondido, CA

References

Biogas Zurich
Werthoelzli (CH)
built 2014

Advantages

- KOMPOGAS ensures very short construction times
- Standardization of basic modules
- KOMPOGAS reduces the investment costs
- Easy integration of KOMPOGAS in existing plants
- Easy extension of capacity utilizing the modular system
- KOMPOGAS digester offers flexibility of accepting different waste streams over the course of the useful plant life
- Robust design and construction minimizes OPEX and maintenance cost

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Waste is our Energy.
Engineering is our Business.
Sustainable Solutions are our Mission.

Thomas F Gratz
E-mail: Thomas.gratz@hz-inova.com