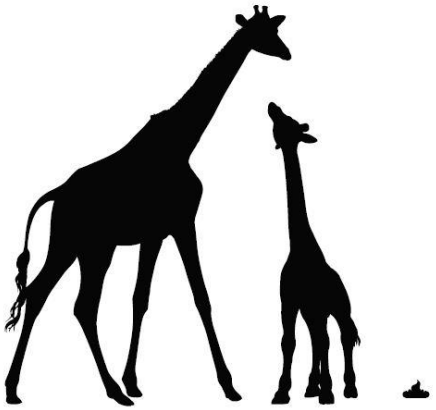
FITEC ENVIRONMENTAL TECHNOLOGIES INC.



ZOOSHARE

biogas co-operative

ZOO SHARE BIOGAS
A FITEC ANAEROBIC DIGESTION SYSTEM

Fitec Environmental Technologies

- Fitec designs, builds and operates Anaerobic Digestion Systems across North America
- Fitec currently provides operations support for 8 biogas plants totaling 4MW of electrical output and over 120,000 tonnes/yr of organics processed.
- Fitec currently has 4 projects under various stages of design, construction and installation:
  - A BioSqueeze high solids contaminant separation system for commercial and municipal organic wastes
  - Zoo Share anaerobic digester-material handling, high TS pasteurizing and Self-Cleaning digester
  - Escarpment Renewables-new receiving, material handling, high TS pasteurizing and in-vessel plastics removal systems
  - Bromont, QC-process design and Fitec Self Cleaning Digester System

About Zoo Share Biogas

- ZooShare Biogas Co-operative is a non-profit renewable energy cooperative, the Executive Director is Daniel Bida
- The biogas plant is 51% owned by the co-operative and its members/community bondholders
- 49% owned by Oshawa Power, a local electrical distribution company
- Stonecrest Engineering is the site and civil firm working on the project
- Construction firm for civil and concrete works is Northern Building contractors
- Fitec Environmental Technologies is the biogas system designer, process equipment supplier and technical supervisor to the project

UNDERSTANDING FEEDSTOCK IS KEY

Need to match the right solutions to the waste stream

Physical Composition

Municipal SSO TS: 25-35%;
Contaminants up to 35% of the TS

Kitchens, restaurants & supermarkets TS: 20-30%; Contaminants up to 25% of the TS

Packaged & expired food wastes TS 20-35%; Contaminants up to 35% of the TS

ORGANIC WASTE ANALYSIS

Biochemical Composition

Typical contaminants in food waste: glass, wood, sand, plates, cutlery, plastic bags, bones, egg shells, cardboard, cans etc.

All contaminants can ultimately be separated based on density differences into two categories: Light and heavy fractions.

Pre-treated slurry containing residual contaminants.

Organic waste type	Mass	TS delivered	oTS	oTSv	Protein	Fat	Biogas Yield	Methane content
	tonne/Cd	%	%TS	%oTS	%	%	Nm³/t	%
Supermarket waste-clean	10	21.0	94	95	10.0	6.0	134	53.9
Source separated organics	9	21.0	85	93	16.0	6.0	124	55.1
Food waste from restaurants	13	21.0	90	95	28.0	15.0	136	60.2
Supermarket waste-packaged goods	9	21.0	90	95	20.0	15.0	139	58.6
Solid Zoo Manure	5.5	45.0	78	73	16.0	0.0	87	53.0
Total Input	46.5	23.84					128.03	56.7

BIOTIP AD SIMULATION SOFTWARE

Determines the key AD process engineering parameters

Digester Volume	1,963	m^3	Operational Safe Limits
Organic load	4.3	kgoTS/m^3/d	< 4.0
TS Digester	5.5	%	< 10 %
NH_4	4.6	g/l	< 5.8
Average TS Input	23.8	%	< 25 %
Biogas	6,420	Nm^3/d	
Methane	56.7	%	
Energy output	613	KW	

MASS BALANCE WITH THE FITEC SYSTEM

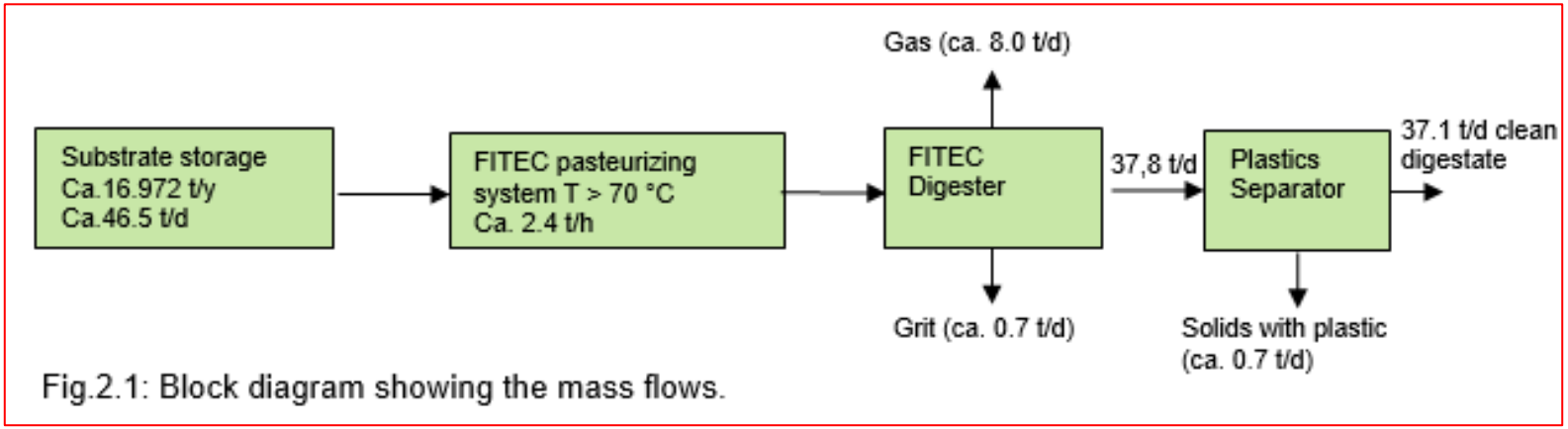


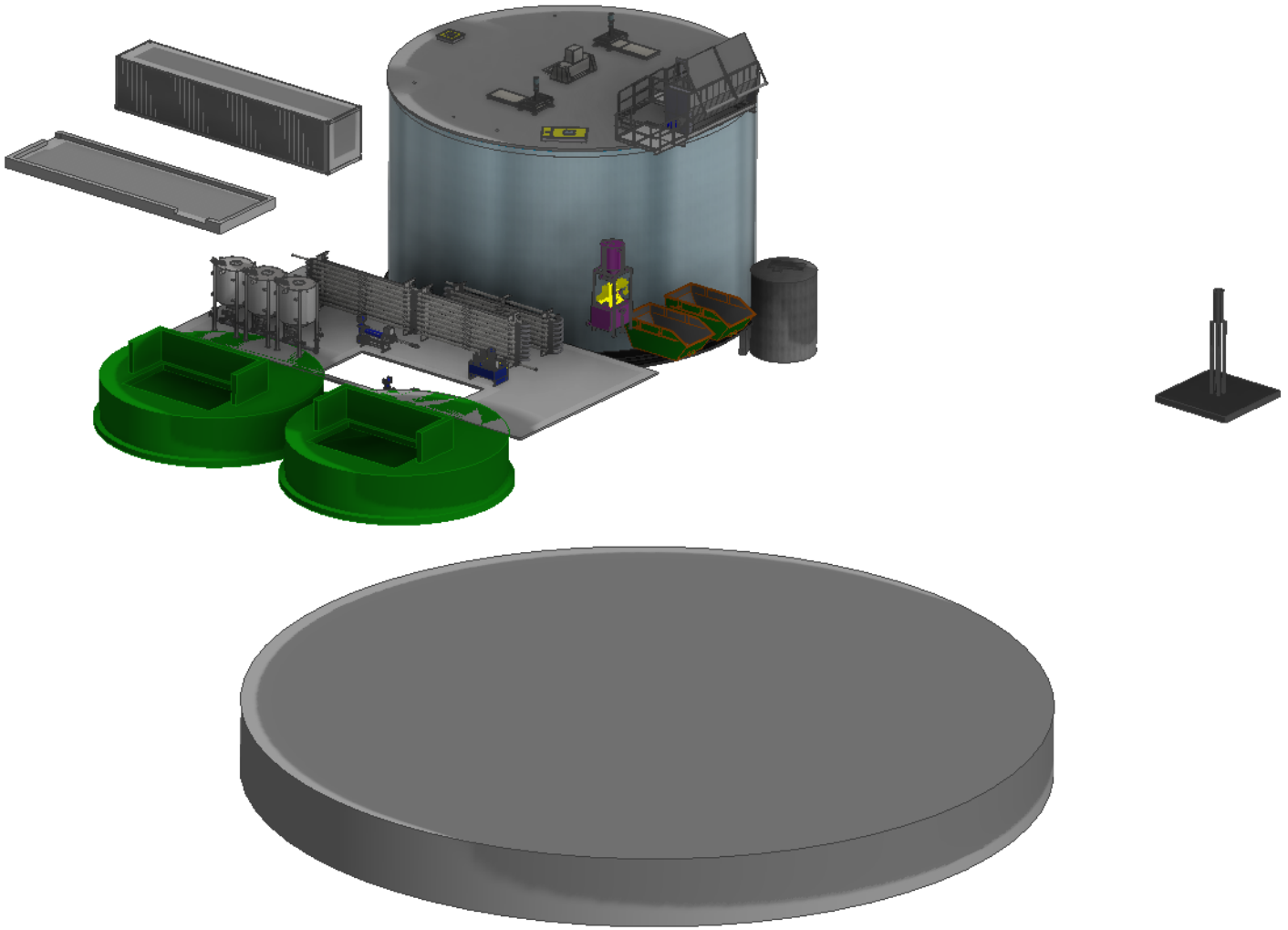
Fig.2.1: Block diagram showing the mass flows.

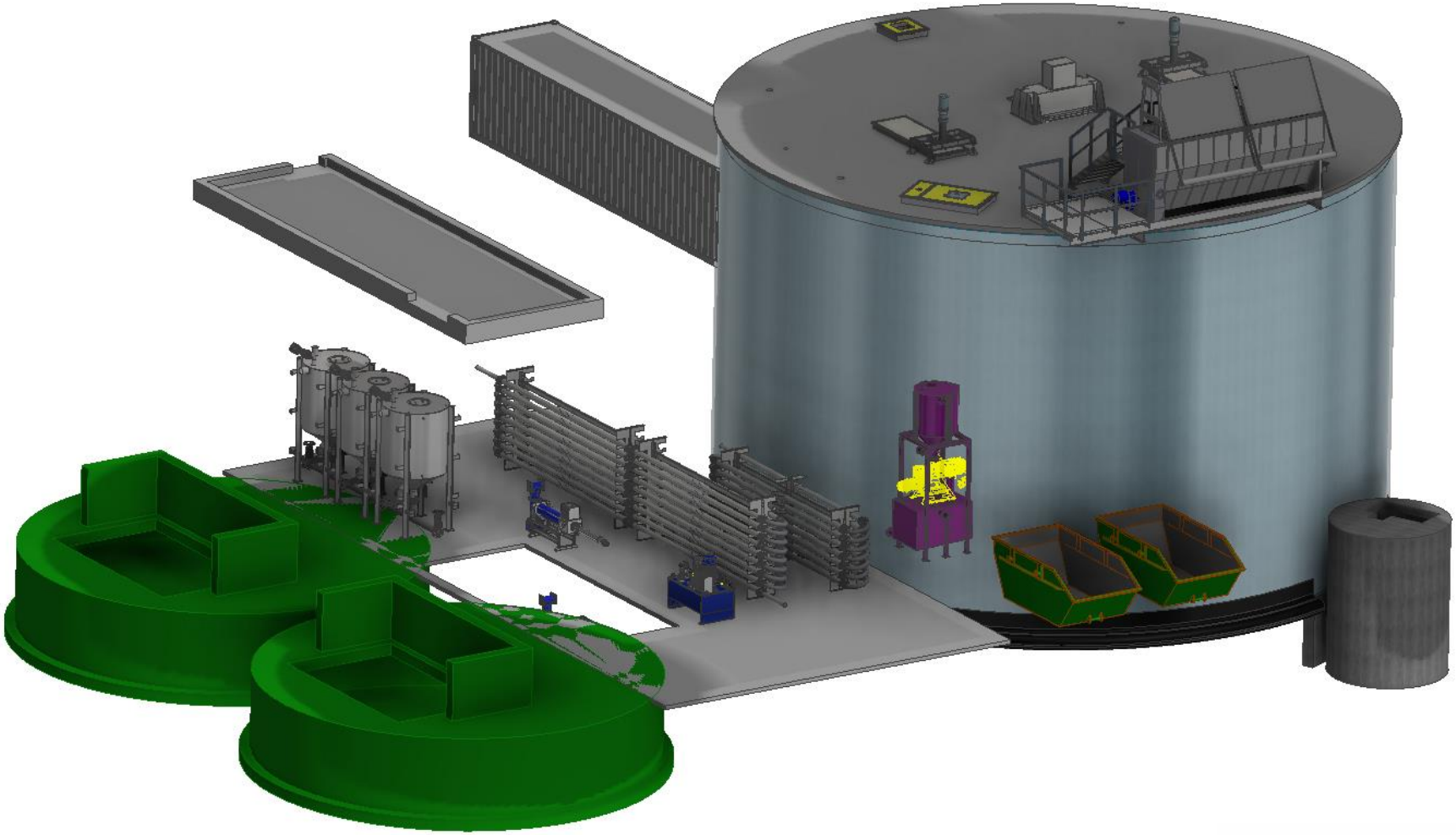
Eventually what goes in must come out

Heavy Fraction-Sedimentation

Even with pre-treatment residual contaminants remain & cause damage to equipment, accumulate in the digester and reduce digestate quality.

Light Fraction-Floating Layer





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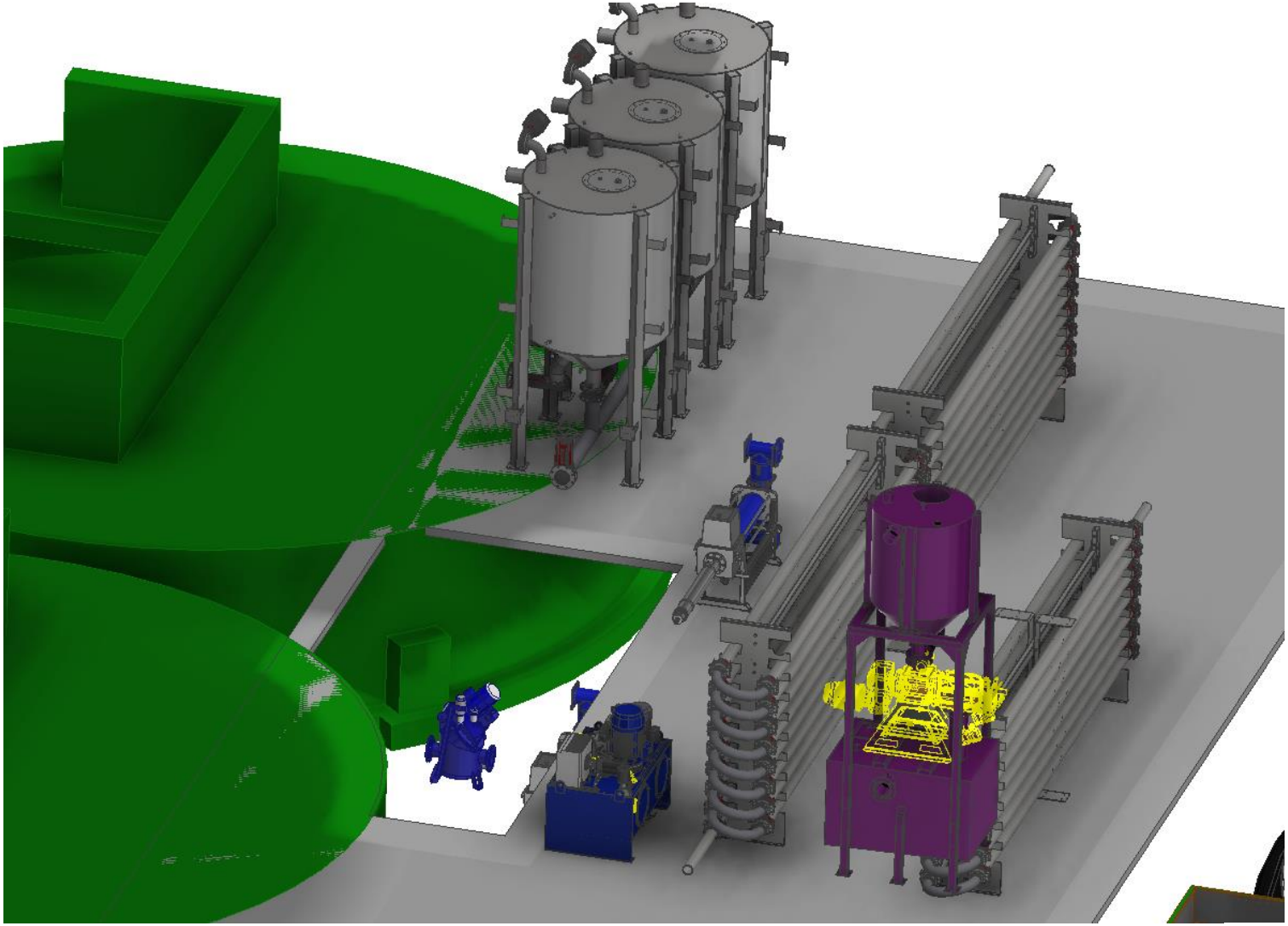

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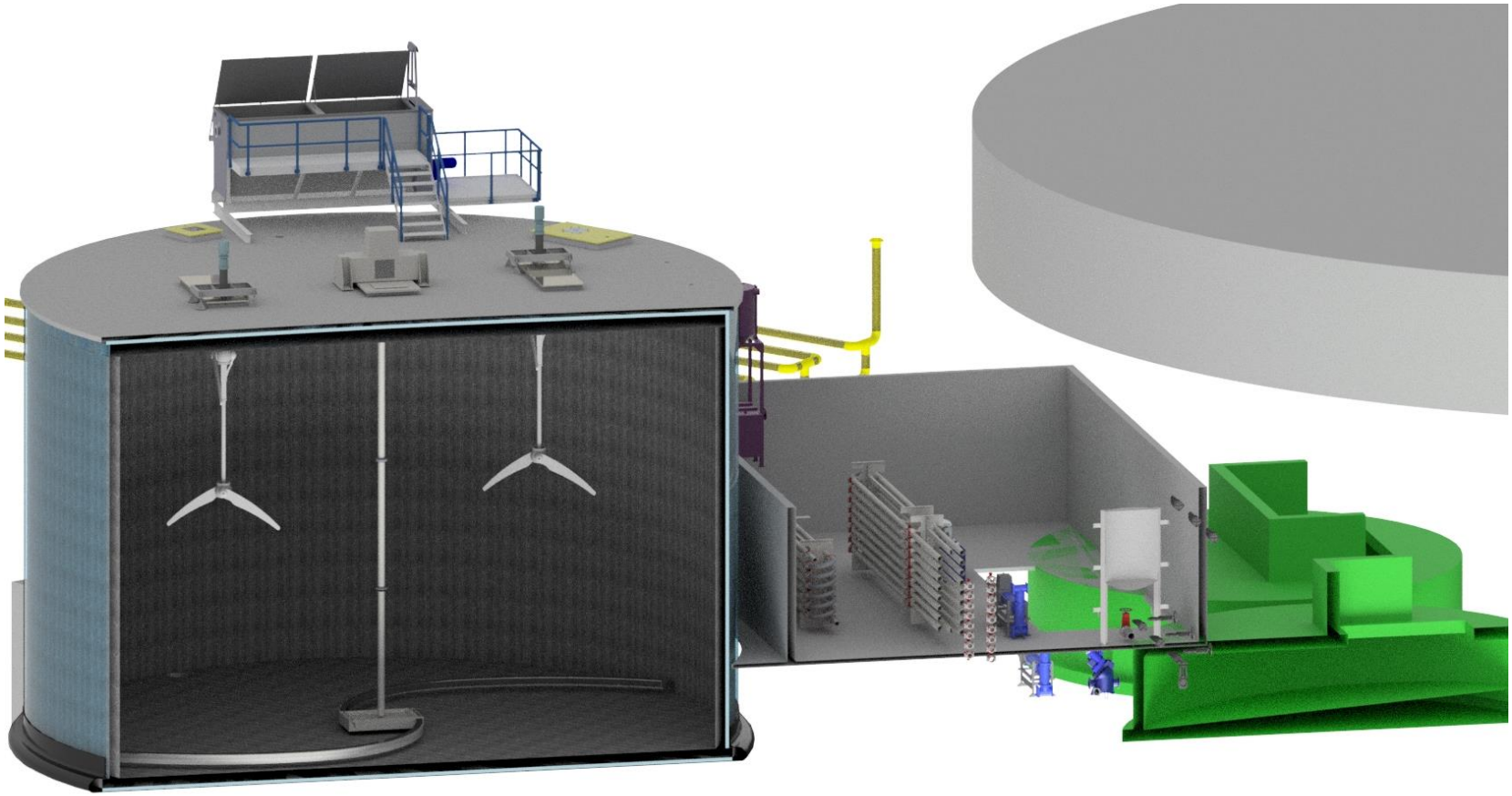

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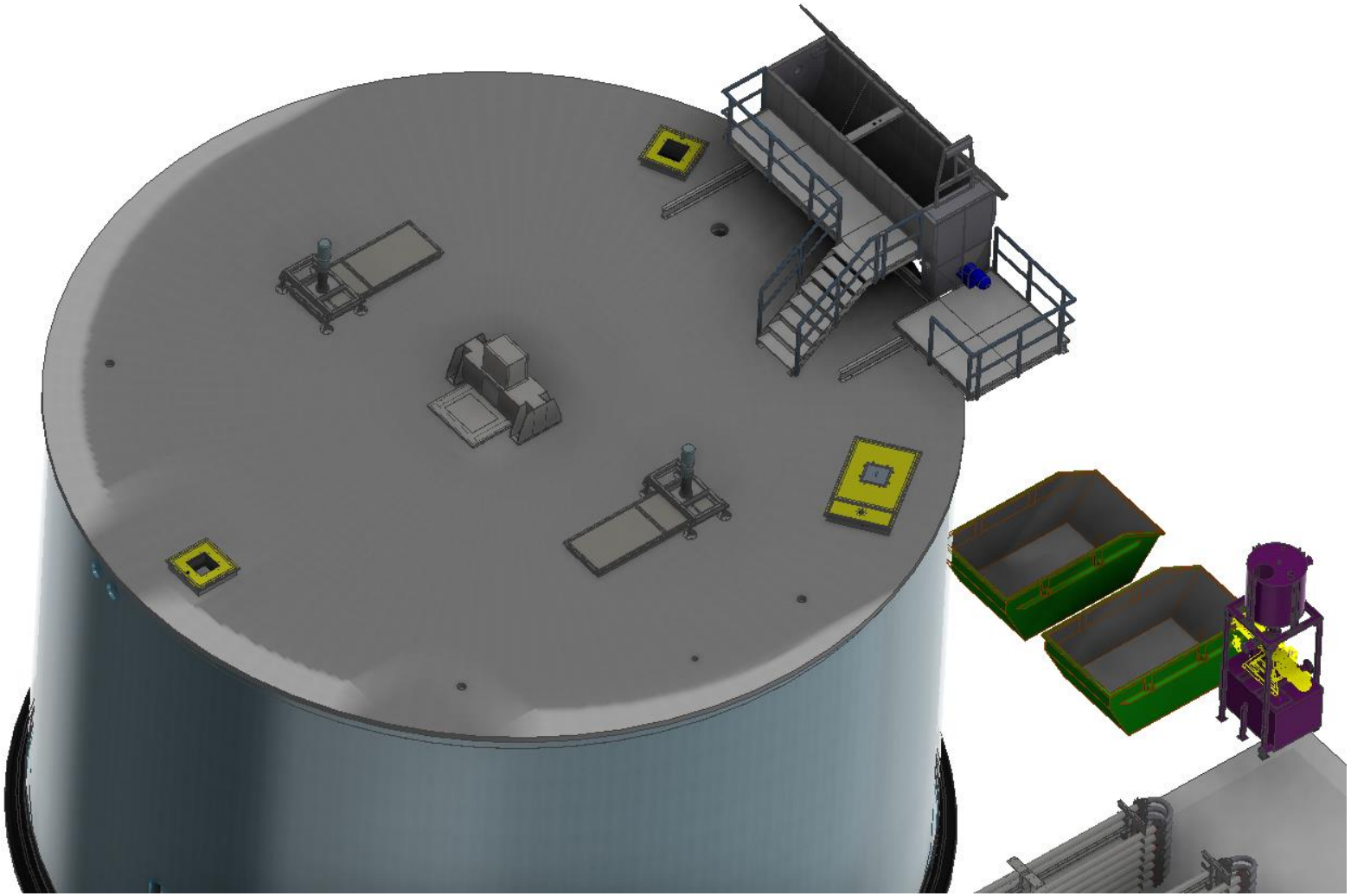

FITEC ENVIRONMENTAL TECHNOLOGIES INC.

A FITEC Self Cleaning Digester is extremely reliable, avoids costly downtime and produces clean digestate!

FITEC ENVIRONMENTAL TECHNOLOGIES INC.

THANK YOU

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