DOK-ING Energo Ltd.

Hydrogen production R&D company

DOK-ING Energo Ltd.

About us

Specializes in the development and production of **organic material pyrogasification plants** which produce **hydrogen from syngas**

Aims to make final customers, private and public investors, **energy independent** while addressing the **issue of waste disposal**

Develops new products and improves existing products focused on end-user needs

Develops innovative solutions for the **exploitation of solid residues**, obtained through chemical treatment of organic waste materials

Researches advanced **water purification** systems

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Our potential

Technology that achieved **TRL 6**

Experience with drawing significant **European funds**

Connections to other sectors, e.g., defence sector

Experts in **mechanical**, **electrical** and **chemical engineering**

„In house" capacity for product development from concept to implementation

Located in Zagreb, **Croatia (EU)**

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Background

Waste

- Average **EU citizen produces 5 tonnes of waste per year** (and that number increases).
- Only **38%** of that waste is **recycled**.
- **60%** of produced waste is still **landfilled**.
- **Wasted energy potential** of landfilled waste.

Energy

- **Decarbonisation** of energy sector.
- Energy **consumption increase**.
- Energy **dependence of EU**.

Hydrogen

- **High cost** of green hydrogen production.
- **Low availability** due to limits of technologies on the market.

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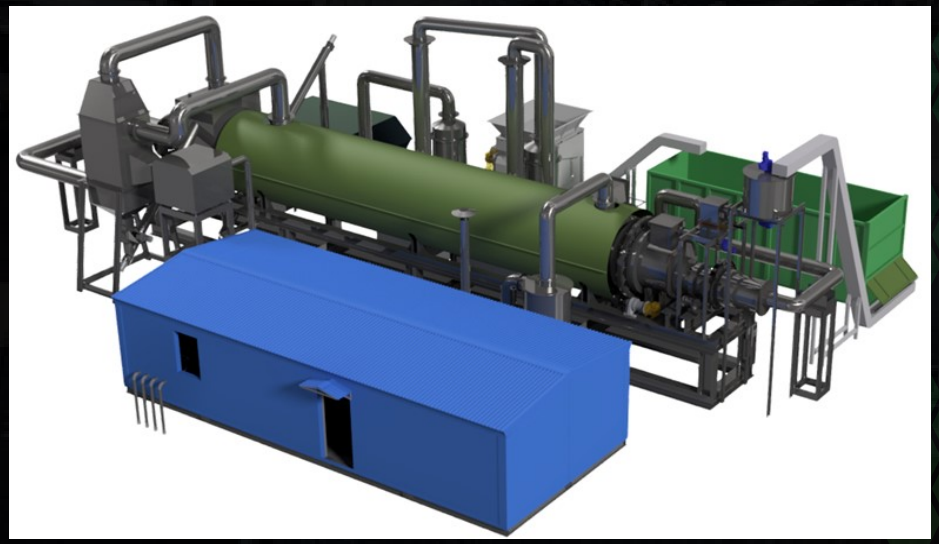
Looper-organic waste to H_2

- Significant **reduction of organic waste**.
- **Energy** (hydrogen, heat or electricity) and **solid residue production** (carbon black used in construction industry).
- **Energy self sustainable** plant.
- **No greenhouse gas emissions** (neglectable amounts).
- Innovative pyrogasification process done in **two parts** which **eliminates all harmful gases**, helps to **control the processes** and **produces hydrogen** from **syngas and carbon black**.
- Innovative **syngas purification system**.



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Looper-organic waste to H_2

Syngas storage and **utilization** (PSA unit and H_2 storage)

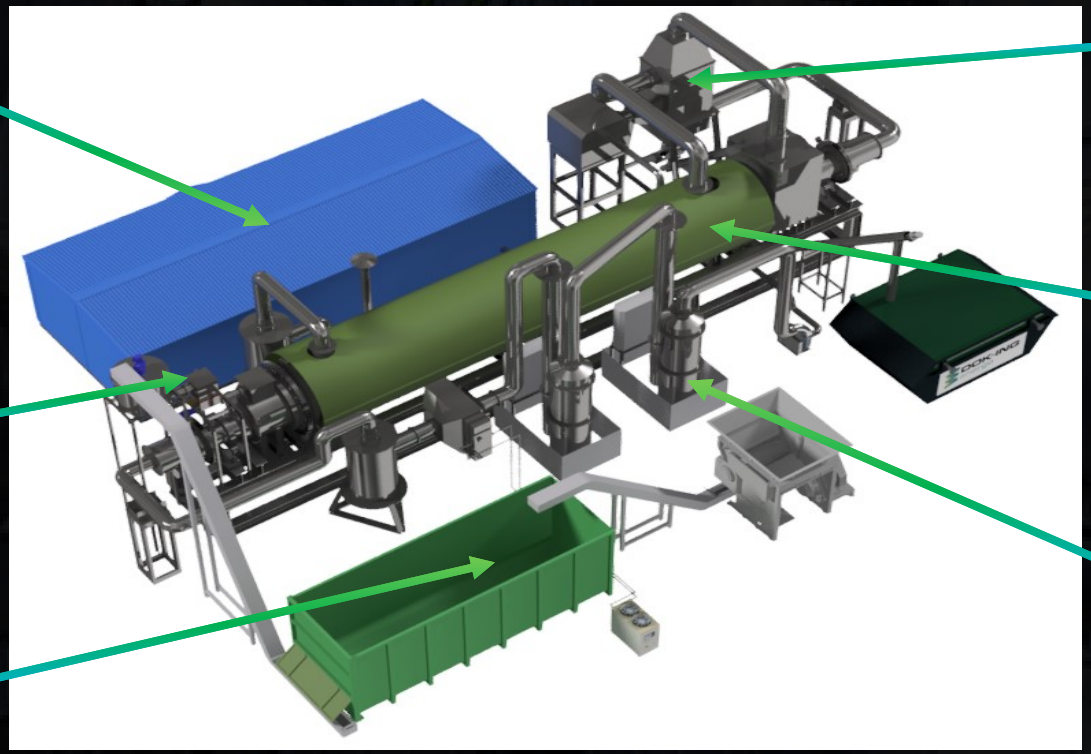
- Various possibilities for syngas utilisation (polygeneration)
- PSA unit for hydrogen extraction
- Hydrogen storage

Dosing system

- Specially constructed and connected chambers for oxygen entrance prevention

Material reception and feed

- Material can be prepared on-site if needed (shredding and/or drying)



Syngas afterheater

- Break down of the remaining hydrocarbons to maximise hydrogen content

Reactor

- Heated from the outside (flue gases) and inside (recirculating hot syngas)
- Controlled process to minimise CO_2 formation and eliminate all other harmful gases

Syngas cooling and purification

- Fast cooling to prevent formation of harmful gases
- Two step purification

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Looper-Innovation

- **Separation of reactor and afterheater**- increased **energy efficiency** and **hydrogen production**
- **Reactor heating** with hot syngas that circulates through hollow screw conveyor-high energy efficiency
- **Excess heat utilised for various purposes** such as feedstock drying or space heating

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Looper-Pilot plant

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Looper-Pilot plant

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THANK YOU FOR YOUR ATENTTION!

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