

Infinite 8 Cycle PYROLYSIS TECH



CONTINUOUS PYROLYSIS TECHNOLOGY

ECO-FRIENDLY SOLID WASTE
PROCESSING PLANT
FACTOR 1

INTRODUCTION

The Infinite 8 Cycle LTD FACTOR 1 pyrolysis furnace, a state-of-the-art equipment designed for the production of valuable pyrolysis oil. This cutting-edge furnace utilizes a catalytic rupture process at high temperatures and low oxygen levels to efficiently break down heavy oil molecules, resulting in the creation of these sought-after products.

What sets this furnace apart is its versatility, as it has been specifically engineered to handle a wide range of fuels. From oil sludge and waste oil to acid tar, bitumen, fuel oil, substandard oil, and other fuels and lubricants, this furnace can handle it all. Even fuels with a water content of up to 20% can be efficiently processed.

To kickstart the furnace operation, a diesel burner is employed. Furthermore, the furnace is designed to effectively burn the associated gases that are released during the pyrolysis process, ensuring a safe and environmentally friendly operation.

It's worth noting that pyrolysis, the process of decomposing and partially gasifying materials through the application of heat, can be achieved using different fuel combustion methods. And with the Infinite 8 Cycle LTD FACTOR 1 pyrolysis furnace, you can have confidence in its ability to deliver outstanding results.

ADVANTAGES

- The system automates the control of various parameters, making operation more user-friendly and efficient.
- The furnace ensures that the loaded product is completely decomposed and automatically removes any solid residue, enabling a continuous cycle of operation.
- The combustion process of pyrolysis gases can be easily regulated and adjusted, simplifying the automation of the furnace.
- The furnace reduces emissions of harmful substances into the atmosphere by maintaining a high temperature in the upper chamber, which suppresses CO.
- The furnace complies with GOST 15150 standards for climatic modification U, UHL, and can be placed in categories 1, 2, 3, or 4.

Уловите свое

The Infinte 8 Cycle Furnace "Factor 1" is an incredibly efficient technology that can convert 30 tons of waste oil per day. After the waste oil is processed, the table below shows an estimate of the pyrolysis oil output. There will be a small amount of hard fraction semi-coal left, as well as a slight loss of 3 to 5 percent per recycled ton. The Furnace itself will require approximately 10% to 15% of the pyrolysis gas to sustain continuous production. It is important to analyse each waste product and its composition to determine the expected outcome.

Table 1

Title	Hydrocarbon type	Pyrolysis oil output
Oil waste	Waste crude oil and oil residues	70 - 80%
Oil waste	Oil sludge	20 - 70%
Oil waste	Waste oils	75 - 90%
Product group	Mazut M-100	60-85%

INPUT AND OUTPUT PRODUCT

INDUSTRY	WASTE PRODUCTS	PRODUCT	USE OF PRODUCTS
<p>Oil Production</p>  <p>Oil Logistics</p>  <p>Wind Turbines</p>  <p>Waste Oil</p> 	<p>Oil Slurry</p> <p>Oil Sludge</p> <p>Left over clean up:</p> <ul style="list-style-type: none"> • Tankers • Trucks • Trains • Storages • Refineries <p>Gearbox oil</p> <ul style="list-style-type: none"> • Motor Oil • Hydraulic Oil • Transmission Oil • Gearbox Oil • Brake Fluids 	 <p>Gas</p> <p>Coal</p> <p>Pyrolysis Oil</p> <p>Refinery</p> <p>DIESEL</p>	<p>Gas for Household</p> <ul style="list-style-type: none"> • Power supply • Heating • Cooking <p>Coal</p> <p>Heating</p> <p>Chemical Production</p> <p>Gasification</p> <p>Liquefaction</p> <p>Pyrolysis Oil</p> <ul style="list-style-type: none"> • Electric Power • Heating • Metal Factories • Cement Factories • Brick Factories • Glass Factories • Boiler Heating <p>Ships</p> <ul style="list-style-type: none"> • Tractors • Lorries • Cars • Power Generators

Atmospheric protection.

Information on maximum permissible concentrations for substances circulating in the technological process is given in Table 2.

Maximum permissible concentrations of substances circulating in the technological process. Table 2.

Name of substance	Maximum permissible mg/m ³ , according to GOST 12.1.0C	Concentration	Note
	In the air of the working area, MPC	In the air of populated areas MPC _{ss}	
Hydrocarbon waste	100	2,9	
Mixture of heating and motor fuels	100	2,95	
Hydrocarbon gases	50	1,92	

Quality composition of emissions into the atmosphere.

During the cracking process, if the technological equipment is placed under a canopy, there will be no emissions released into the atmosphere. However, there may still be a small presence of hydrocarbon vapours in the air.

Classification of industrial waste.

During cracking and coking, low-grade coke or coke dust (when the slurry contains a high proportion of sand) is produced. Coke can be used as solid fuel, and the dust is sent for asphalt processes. A small amount of hydrocarbon gases is produced due to the "breathing" of the equipment and containers. The emitted gases are directed to emission pipelines and released into the atmosphere for dispersion.

The water phase from the separator, the overflow from the hydrocracking tank, and the drainage water from the coke dust or coke should be directed to an oil trap. The collected oil products from the oil trap should be sent for further processing, and the water phase should go to local biological treatment facilities. The water after biological treatment can be used to replenish the circulation water supply and the hydrocracking tank. Information on the solubility in water and the physical state of waste to be buried.

There is no waste to be buried.

EQUIPMENT ELEMENTS

Table 3 provides information on the hydrocarbons that are processed in the plant and the estimated volume of pyrolysis oil that is obtained from different types of waste materials.

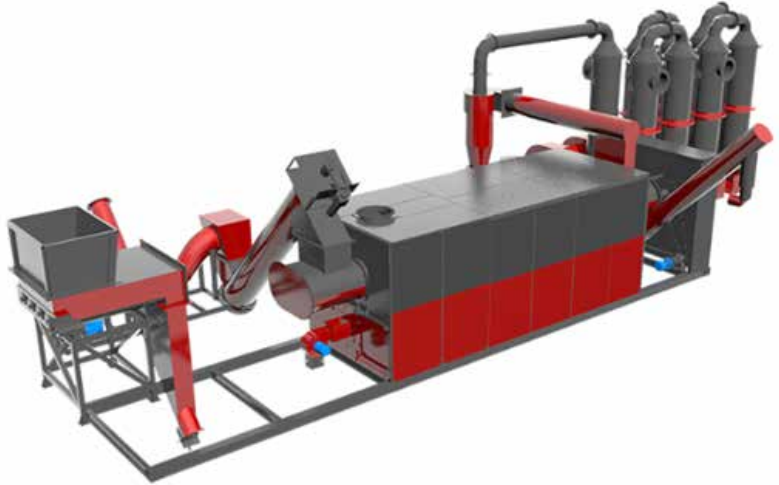


Table 3

	Title	Quantity
	A high-performance reactor equipped with four powerful augers featuring belt screws for optimal efficiency and a built-in heat generator for enhanced functionality.	1
	Exhauster	1
	Liquid fuel burner, pcs.	1
	Flue gas dilution fan with air ducts	1
	Operational documentation: passport and instructions for thermal cracking installation	1
	Cooling system (set), pcs.	1
	Cooling and carbon removal system (auger)	1

CONTROL AND MONITOR SYSTEM

The pyrolysis facility is equipped with temperature and pressure sensors that monitor the parameters of the pyrolysis process. An automatic system is used to control the burner devices.

The reactor module's scroll drive is equipped with frequency converters to manage the rotary speed. The automatic system monitors all emergency situations and alerts the operator using LED indicators.

The security system activates automatically if the specified parameters are exceeded. All control and monitoring devices are installed in a control cabinet, which also includes a grounding device and emergency stop button. In the event of an emergency, any gasoline produced is combusted on a special chimney.

All systems and processes will be monitored using specialized software displayed on a separate monitor.



OPERATING HOURS:

8 000 hours per year (2 days per month required for maintenance)

OPERATING PERIOD:

15 years (5-10 years before major overhaul)

PYROLYSIS PLANT CONSUMPTION:

Electricity: The system starts at a capacity of 40 kW/hour and is operating at a reduced rate

of 20 kW/hour

Water: appr. 5 m³ /year

Fuel: the output gas of the pyrolysis process (or other output product) is applied.

*The consumption norms depend on project specifications and should be clarified within further cooperation steps.

OPERATING STAFF:

Required to operate one-reactor pyrolysis facility:

- Pyrolysis process operators (2 workers, day shifts);
- Administrative staff, repair group (welder, electrician).

*Please, notify that the amount, of workers required depends on project specifications and national regulations, and should be clarified within further cooperation steps.

FEATURES OF OPERATION.

The machinery should be operated in stationary conditions, with:

- height above sea level up to 1000 m
- ambient temperature from + 5 ° C to + 40 ° C
- relative humidity of the ambient air not exceeding 80% at + 25 ° C
- the environment is non-explosive, without a significant amount of conductive dust, water vapours, aggressive gases in concentrations that are harmful to the components and materials of the installation.

When stopping in winter, it is necessary to drain water from all containers of the machinery.

The installation must not be subjected to sudden jolts, impacts, and vibrations.



*The footprint of the installation site depends on project specifications and should be clarified within further cooperation steps.

TECHNICAL SPECIFICATIONS

The furnace complies with all the technical specifications and design documentation requirements. It is suitable for use in tropical climates and is manufactured according to the standards of GOST 15151. Table 4.

Characteristics		
1	The maximum productivity when processing oil sludge or fuel oil m-100 is kg/hr.	1250
2	Expected yield of products (fuel oil m-100 at a temperature of 440-460 °C), in terms of weight percentage: - Pyrolysis oil: X% - Coke: Y% - Paraffins: Z% - Losses: A%	70 22 2 6
3	The temperature within the core of the reactor remains below °C	580
4	The pressure in the radiation section of the reactor no more than Pa	150
5	Filling the radiation part of the reactor with coke and liquid waste oil products not exceeding % of the total volume.	25
6	The maximum temperature of the heating mixture of combustion products and air at the inlet to the radiation part of the reactor not exceeding °C	1100
7	The temperature rise rate in the reactor radiation vessel not exceeding °C per minute	10
8	The required thermal power of the cogeneration unit shall be no less than kW	1000
9	The consumption of liquid fuel for the heat generator during start-up and reaching operating temperature (heat capacity 39739 kJ/kg), up to kg/hour (further, transition to self-sufficiency)	100
10	The temperature of the combustion products and air mixture at the inlet of the smoke fan not exceeding °C	250
11	Installed electric power. kW	40
12	The voltage of machinery	380
13	Frequency of amperage Hz	50
14	Overall dimensions, no more than mm: Width Length Height	2200 6200 3600
15	The combined weight of the machinery does not exceed T	20

INSTALLATION SERVICE

We are a team of highly experienced professionals dedicated to efficiently installing the waste recycling machinery that we manufacture and sell. Our goal is to provide exceptional service, ensuring that our products are installed correctly and optimally perform.

When you choose our installation service, you can expect the following:

- **Expertise and Knowledge:** Our installers have extensive experience in installing various types of waste recycling machinery. We have successfully completed numerous installations for waste management companies, and recycling facilities. Our team has the expertise and knowledge to handle any installation project.
- **Timely and Efficient Service:** We understand the importance of minimizing downtime during the installation process. We prioritize efficient and timely installations, ensuring that your waste recycling machinery is up and running as quickly as possible. Our team works diligently to complete installations within the agreed-upon timeframe.
- **Compliance with Safety Standards:** Safety is our top priority. Our team strictly adheres to safety standards and regulations during the installation process, implementing all necessary safety measures to protect both our team and your facility. We take every precaution to ensure a safe installation process.
- **Ongoing Support:** Our commitment to our clients extends beyond the installation process. We provide ongoing support and maintenance services to ensure the smooth operation of your waste recycling machinery. Our team is always available to address any concerns or provide assistance when needed. We are dedicated to ensuring that your machinery operates optimally.

By choosing our waste recycling machinery installation service, you can have peace of mind knowing that your machinery is being installed by skilled professionals dedicated to delivering exceptional service.

Please note that the installation time will vary depending on the specific circumstances of each project, including project size, complexity, and any unique considerations. We will work with you to provide a clear timeline and keep you informed throughout the machinery purchase process.



Training

Training for our waste recycling machinery typically spans a two-week period, providing ample time for participants to acquire the necessary knowledge and skills.



Maintenance

We offer tailored waste machinery checks and maintenance programs to meet our clients' specific needs and expectations. For more details, please get in touch with our office.



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