

NAWROCKI PELLETING
TECHNOLOGY LTD

CATALOG

2017

LOW COST, TURNKEY
DENSIFICATION
TECHNOLOGIES





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ABOUT OUR COMPANY

Nawrocki Pelleting Technology Ltd (UK) is a daughter company of a Polish manufacturer of specialist pelleting equipment -Nawrocki Pelleting Technology Poland. Our headquarter is located in UK , Buckinghamshire. We exclusively represent NPT Poland overseas, supporting our distribution partners and clients with full customer service and comprehensive advice, helping them developing most efficient pelleting solutions based on our product range.

Our mother company - Nawrocki Pelleting Technology Poland, which was founded in 1996 by Boleslaw Nawrocki - an expert in pelleting technologies ,for more than 40 year has been designing and delivering individual solutions for feed mills and pelleting industry. Our wide experience goes back to the 70s, when we designed

first Polish pellet mill and other associated components.

INNOVATION & EXPERIENCE IN PELLETING INDUSTRY

We deliver the whole range of functional subsystems like weighing, dozing, mixing, grinding, sterilizing, conditioning, pelleting, crumbling, cooling, cleaning, packaging etc.

Our production plants work under automatic control system which incorporate latest technologies and software solutions.



GR2 RR SERIES HEAVY DUTY PELLET MILLS

Our range of pellet mills offers very high pelleting performance, quality, and controllability.

Nawrocki's Pellet Mills are equipped with Single or Double Direct Drive - DDD. Its characteristic feature is the huge belt pulley, of the highest torque in its class. Directly connected by driving belts, the pelleting set is provided with huge power, which enables pelleting very difficult raw materials with no capacity loss.

ABS system – driving belts are protected against slipping – safe and controlled maximal possible capacity. The operator can experiment with the raw material and manually lift the pellet mill load to the higher value than threshold parameters, specified in an automatic system. In this way, you can increase annual production even by 2% – 4%. You gain additional thousands of tons, make profit and receive fast reimbursement.

Capacity Optimization System (abbr. SOW in Polish) constantly monitors operation parameters and controls drives to optimally adjust power to temporary load. For sudden change of the material parameters (it often happens with biomass) or manual control, the SOW automatically reduces or increases power and in most cases protects against pouring and blocking the pelleting chamber.

Cruise Control, in the automatic system, increases load to the value specified earlier by the operator.

Huge belt pulley, even 20% bigger than at other competitive companies, is provided with full motor power. The larger pulley is driven by more V-belts. Therefore, our pelleting mills are more resistant to sudden temporary loads of the pelleting set. It means smaller losses due to breakdowns caused by unblocking the pelleting chamber.

Solid construction and Single or Double Direct Drive along with a huge belt pulley make it possible to apply large-operation-area dies, which directly affects the pellet mill capacity.



Raw Material Feeding System for a pelleting chamber directs the material to scrapers and then under rollers. In combination with arch rollers (our patent), the capacity of the pellet mill operation increases.

Safely adjust the gap in seconds. Nawrocki has developed, designed and manufactured the revolutionary all-in Active Roller Gap Adjustment System (ARGAS) with motor driven trouble-free system. The adjustment of the distance between rollers and die has never been easier. All remotely controlled, with a click of a mouse, your operators can change the gap for specific feeds with different properties. Moreover operators can do it all at the full speed.

Increase the lifetime of die and rollers. The system of sensors prevent rollers to hit the die and destroy the inlet cones. Once the gap limits are set operators can safely work with any recipes, for which the production parameters were established in the database.

Once the work is done the system can enter into switch-off mode. This feature enables an easy start-up with a new batch. The switch-off mode prevents the die from creation of cake around the matrix die.

The software combined with robust mechanical design bring to feed manufacturers a complete solution for multi-feed production plan.

We deliver an easy to manage database system, which enables operators and nutrition experts to create a set of feeds with already set distance between rollers and die.

When operator enters a recipe and the batch, the software automatically sets the gap for the given mixture. That's the way you save time and money.

The Capacity Optimisation System monitors the dosing screw, steriliser, conditioner and AGRAS to reach the maximum power and production level.

WE GUARANTEE OUR CUSTOMERS:

- highest purity of feeds,
- high quality of product,
- shortest return on investment,
- high efficiency,
- easy operation,
- easy maintenance,
- the best hardware - software compatibility,
- low operating costs



GR2 SERIES OUTPUT CAPACITIES

Depending on the feedstock, our industrial heavy duty pelleting presses achieve different output capacities.

On the right hand side we indicated estimated output values depending on the model and feedstock of our GR2 range.

MODEL	FEEDS POULTRY (f3.2;3.5%) t/h	FEEDS SWINE (t/h)	FEEDS CATTLE (t/h)
GRP2 850.320	22 - 28	16 - 19	13 - 14
GRP2 850.264	20 - 25	15 - 18	12 - 14
GRP2 750.220	17 - 22	12 - 16	10 - 12
GRP2 750.180	15 - 20	11 - 14	9 - 10
GRP1 650.160	12 - 16	11 - 13	8 - 10
GRP1 650.132	10 - 14	9 - 11	7 - 9
GRP1 550.160	9 - 13	8 - 10	6 - 8
GRP1 550.132	8 - 12	7 - 9	5 - 7
E.GR2 550.110	7 - 10	5 - 8	4 - 6
E.GR2 420.90	3 - 6	3 - 5	2 - 4
E.GR2 420.75	2 - 5	2 - 4	2 - 3

MODEL	POWER	WOOD	STRAW/HAY	RDF/SRF
GRB2 950.400	2 X 200KW	3.5-4.0	3.6 - 4.2	3.9 - 4.5
GRB2 850.264	2 X 132KW	3.0 - 3.5	3.3 - 3.8	3.5 - 4.0
GRB2 750.264	2 X 132KW	2.5 - 2.8	2.8 - 3.0	3.1 - 3.3
GRB2 550.132	132KW	1.3 - 1.6	1.4 - 1.8	1.6 - 2.0
E.GRD2 420.90	90KW	0.7 - 0.9	0.4 - 0.5	0.6 - 0.8

miniPELLETER ADVANCED IN SIMPLICITY, RELIABLE IN ACTION.

miniPelleters are half-industrial pellet mills for manufacturers of pellets from biomass, animal feeds and other feedstocks.

miniPelleters are manufactured from the highest quality parts produced in the European Union.

mP 18 can be easily integrated with your pelleting line. The structure of miniPelleters enables any adjustment in the present pelleting line.

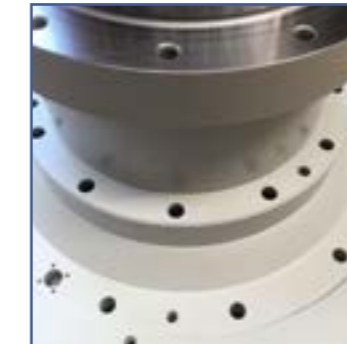
The round inlet of the pelleting chamber can be combined with every worm feeder or conditioner. If you need a square one, you'll get it. The high placed dump part of the pellet mill makes it possible to join most conveyors for receiving pellets.

No more breakdowns

We have designed miniPelleters for your satisfaction and unfailing operation. They are equipped with a professional, industrial drive, identical with that used by large pellet plants.

Our miniPelleters provide operation for 10-18 hours daily, if you run them in the proper way. It means 3,000 hours of profitable production per year.

Your target is to produce and sell and not to repair and fight for your guarantee rights with a seller.



A drive and a gear.
Capacity and reliability of miniPelleters is not only the effect of specified construction. The applied components also deserve credit.

Our customers receive a drive and a gear only from leading European manufacturers (Nord or Bonfiglioli). They guarantee many years of stable operation.

The engines 45 and 18.5 kW along with an adjusted gear make an ideal pair, allowing efficient pelleting of the most difficult raw materials. There won't be any problem with your raw material, either.

Consumables and Spare Parts.
We know how important it is to have a fast access to supplies. Rollers, scrapers and other repeating elements are available in our warehouse on the same day.

Our Clients appreciate the fact that 100% of mechanical elements for miniPelleters are manufactured in our plant in Znin, Poland.

We do not depend on any sub-suppliers. We are independent, so are our clients.

The dies... we manufacture them within 14 - 21 days. They are ready to be sent on the eighth day.

ESTIMATED OUTPUT CAPACITIES

miniPELLETER18		miniPELLETER45	
SOFTWOOD	200-270KG/H	SOFTWOOD	350-450KG/H
HARDWOOD	150-200KG/H	HARDWOOD	300-400KG/H
STRAW, HAY	180-200KG/H	STRAW, HAY	350-400KG/H
DIGESTATE	250 - 300KG/H	DIGESTATE	400-500KG/H
SRF/RDF	200-250KG/H	SRF/RDF	350-450KG/H
POULTRY FEED	400-600KG/H	POULTRY FEED	800-1200KG/H
PIG FEED	250-350KHC/H	PIG FEED	500-700KG/H

COMPLETE PELLETING SOLUTIONS

FLEXIBLE SOLUTIONS FOR PELLETTIZING OF ANY FEEDSTOCK.



LARGE SCALE PELLETT PLANTS

We deliver turnkey technology that goes beyond your present demands. We explore only reliable solutions that have worked for many years and guarantee efficiency and low production costs.

Our specialty are medium size plants of 15 - 25 tph for feeds and 4 - 7 tph for biomass and other

feedstocks.

Capacity ranges for our largest single pellet mill GR2 1000.500:

feeds: 35 tph
biomass: 5 tph
plastic: 4 tph
digestates: 8 tph

State-of-the-art solutions.

- perfect adjustment of technology to requirements,
- highest quality feed and energetic pelleted mass,
- the estimated production capacity,

- completeness of production technology,
- full integration of machines and automation,
- relatively low production costs,
- low maintenance costs,
- moderate housing requirements,
- long life of machines and appliances.

Advantages that matter.

- relatively low power consumption,
- efficiency limited only by the quantity of the available raw material,

- complete project and delivery of machines and services,
- guarantee of the state-of-the art pellets production,
- always perfect ratio of the price to efficiency and quality,
- flexible approach to financial conditions of the client,
- effective and tested in practice technological solutions, strengthened structures,
- fully automated production processes with computer visualisation
- the ATEX version at the request,
- module structure with possibility of extension.

mini PELLETTING LINES

The miniPelletingLine contains of all subsystems like in an industrial solution, however it's been downsized for lower capacities and space required.

In the heart of the miniPelletingLine is miniPelleter 18.G2, or miniPelleter 45.G1, and for larger output; GRB1 420 or GRB1 550 pellet press.

This fully functional pelleting line is equipped with the following components which are included in the basic price:

1. Option: Screw conveyors from the main feedstock silo,
2. Hammer mill with transporting tubes,
3. Transport cyclone with air lock and reducer,
4. Dust filter with own fan,
5. Feedstock container 1 qm, 2qm, 20qm or 27qm,
6. Pellet mill (miniPelleter 18.G2 or 45.G1, GRB1 420 or 550),
7. Counterflow cooler with tubes, cyclone and fan,
8. Vibrating sifter,
9. Cooled pellets container 3qm, 7qm,
10. Half-automatic packaging system 15-25 kg/bag,
11. Big-bag loading section with automatic stop,
12. Set of sensors,
13. Full automatic control system (PLC + LCD),

14. Z-shaped bucket elevators and belt conveyors,
15. Dozing screws and screw conveyors,
16. Switch box,
17. Full wiring,
18. Comprehensive training.



APPLICATIONS

BIOMASS, FEEDS, RDF/SRF, PLASITICS, BIO-DIGESTATE

Regardless of the capacity, the pellet mills from Nawrocki PT are smartest solutions for any application.

They are used for all kinds of feeds and biomass pellets as well as RDF/SRF, MSW, digestate, foams and plastics, sewage sludge and other applications.

The whole world of pellets

- Our knowledge and practice covers technologies for the following feedstocks
- compound and mash feeds,
- premixes and concentrates,
- biomass: agri and wood,
- plastic: RDF/SRF, MSW, incl. automotive,
- sewage sludge,
- digestate and similar,
- sterilised animal beddings.



BIOMASS

Our complete wood and bio-pellet production lines are designed for industrial production to make biomass pellets from any type of agri- and forestry wastes with output capacity ranging from 0.2 to 20 ton per hour. The finished wood- or bio-pellets are widely used as a solid renewable fuel for heating purposes of industrial

boilers and large power plants, as well as home use.

Pellets are also a popular material to be used as an animal bedding. NPT has design special pellet lines allowing production of both, top quality fuel pellets, as well as completely dust- and pathogen free pellets destined for bedding industry.



Typical components we can include in our pelleting lines to meet client's requirements:

- straw shredding lines,
- wood chipping lines,
- drying lines for biomass,
- grinding systems for feed mixing plants,
- feed mixing systems,
- fluid component dosing lines,
- additional component dosing systems,
- macrocomponent dosing and weighing lines,
- microcomponent dosing and weighing lines,
- lines for dosing fats, molasses, etc
- pulsating filters and central systems for dust aspiration,
- structures for pelleting lines,
- big-bag loading system with scales or without,
- fans, cyclones, air locks, pipes,
- magnetic separators; fast cleaning or standard,
- pneumatic destoners for hammer mills,
- pellet mill buffer containers,
- transport appliances,
- semi-automatic lines for big-bag and bag packaging
- full automatic packaging lines with robots.



COMPOUND FEEDS

We deliver turnkey feed mills that comprise of machines tested under hard working conditions and technological solutions. Our feed mills are characterised by optimal capacity of technological configurations.

Nawrocki's flexible solutions guarantees the customers a

feed pelleting lines that fulfil any production plans to meet more and more demanding requirements of end users.

As our plants are future-proved, therefore during the design process, we take into consideration an increase of customer productivity in the future.

Sterilising prior to pelleting

The quality requirements for modern pelleted feeds are still increasing. It is caused by a larger number of specific feed supplements, their influence on farm animals' growth and possible allergic reactions to the meat consumed.

The amount of health risks brought with new formulas, new components and the number of suppliers, makes it necessary for the production technology to use feed sterilization processes. Nawrocki's construction team has designed a series of Vertical

Sterilisers type ST-1100 of capacity from 15 t/h to 34 t/h. The retention time for bulk feed amounts to 360 seconds and is longer by 120 seconds from the world sterilisation leaders.

During sterilisation, the bulk feed is processed by hot steam that clears the feed off bacteria, fungi and other substances pathogenic for people and animals.

Even salmonella bacteria cannot resist sterilisation. The sterilised feeds produced in our mills comply with the requirements of the European Union.

RDF/SRF AND PLASTICS

Nawrocki Pelleting Technologies has developed machines and pelleting technology for new feedstock for example different types of plastics and mixtures of it.

RDF (Refuse Derived Fuel) and SRF (Solid Recovered Fuel) are relatively new feedstock for pelletizing industry. Pellets are used in incineration plants, power plants, cement factories and other places

where such a high calorific fuels can be combusted.

We designed special solutions to make sure, that processing runs smoothly with assumed capacities. We are aware how hard is to achieve both, the capacity and quality of pellets, that's why we adjust extremely precisely the technology, machines, devices, their sizes and power.

Different contaminants of the RDF/SRF feedstock can be dangerous for machines and operators. Therefore a pelleting system requires the best possible protection.

Our waste pelleting lines are equipped with state-of-the-art magnetic separators, de-stoners and pneumatic transport systems. Sparkle detectors and automatic fire extinguishers are also most recommended optional components.

Plastic and RDF pelleting plants are built in modules of 2 pellet mills - GRB2 750 or GRB2 850.

Depending on the feedstock the capacities of a module reach from 3 tph to 5



t/h. To determine the power and pellet mills please contact our Sales Department

NPT has also got an experience in the field of densification of plastic and packaging waste, as well as light fraction of waste generated by automotive and paper industry.

From the above material a very high calorific solid fuel can be produced and used as a solid renewable fuel in different Waste to Energy plants across the world. Together with its partners, NPT can design, develop and project manage a bespoke solution, allowing a complete utilization of waste generated on-site by any small, medium, or even large business.

SERVICES

When a Project becomes product.

At Nawrocki Pelleting Technology Ltd. you will get the full range of services leading to successful operation of your pellet plant.

At every stage of Customer Service we provide our clients with our in-depth knowledge and perfect technology customization. For every project we

offer our clients:

- requirements recognition,
- contact with top experts,
- implementing of the best practices,
- optimal choice of machines and solutions
- full integration of machines and automation,
- 24/7 aftersales technical support,
- spare parts delivery in 10 days or less,
- training on demand for new operators,
- periodical machinery audit, performance monitoring.

Repair service.

In case of any technical problems we can quickly help our Customers in very friendly manner. Parts and spares for our machinery are made in-house and we can access them immediately. Usually we can start with repairs work on the next business day.

Our online control system offers a phone or Internet connection to our experts, which can solve most of the problems in a very short time. Moreover we are able to adjust a vital work

parameters of all machines and production systems remotely, what significantly reduces the response time.

Trainings.

Training is the most crucial stage of the project for the staff to work safely and with the expected productivity. We train your operators before the commissioning, so they start ready to work.

In-house training

- theory of technology,
- influence of feedstock on productivity,
- introduction of TPM,
- training in our pilot plant.

On-site training

- operating of machines,
- control system and visu,
- practical exploitation.

Maintenance.

Periodical and planned maintenance is the best way to extend machine's lifetime, operate at highest productivity and keep operators' safety at the highest level.

We offer a maintenance of single machines or production lines for the highest availability and productivity. Usually we do it in a 3000h or 6 months' time period.

Along with our standard service we also recommend implementation of maintenance system like TPM (Total Productive Maintenance), which is one of the key management aspects for highest productivity of machines.



SPARE PARTS

Ring & Flat Dies.

Our durable dies with unique pattern produce even 12% more pellets than others.

Try our ring dies made of European X46Cr13 steel.

Dies Refurbishing.

The whole range of services with ring and flat dies cover:

- refurbishing of working surface,
- compression ratio reduction,
- repairing of the working surface,
- renewing of the inlet cones,
- redesigning of the inlet cones,
- removing broken bolts.

Parts for pellet mills & Bearings & Greases.

With our 40-year expertise in mechanics, CNC machines and experienced designers and operators we are able to re-produce any part for any pellet mill. We produce: complete standing shafts, complete rotating shafts, indirect shafts, sealing rings, adjusting rings, reinforcing rings, rollers shafts, rear and front rollers supports, main pulleys, clutches, greasing heads, conditioner shafts.



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