

GP RENEWABLES GROUP

Experience Competence Passion



WTG Foundation Experts

The first Renewables Group with a service strictly dedicated to WTG foundations. Worldwide experience in foundation design connected with deep knowledge and wide range realizations in foundation repairs & soil improvement works allow us to provide a level of service unattainable for others.

SCOPE OF SERVICES

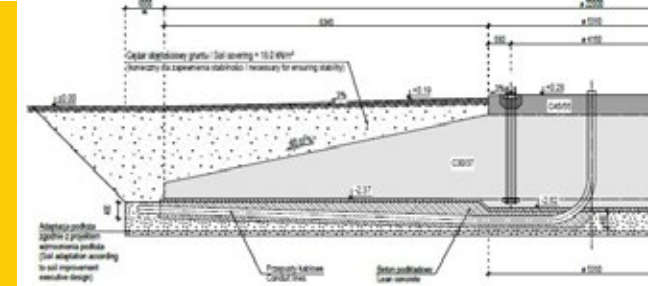
Foundation design
and optimization

Foundation repairs
and construction
inspections

Design and soil
improvement
for foundations



Foundation Design and Optimization Experts



Gravity and deep foundations represent about 95% of all solutions for onshore wind.

That is why, GP Renewables Group key goal is to bring these two foundations types as close as possible to optimal design & perfection every day while maintaining the best safety.

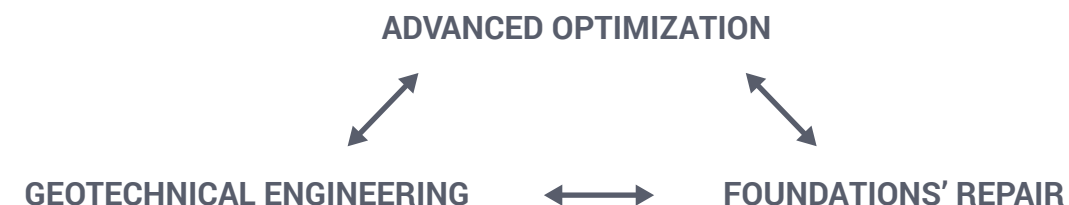
The quality of GP foundations' design is proved by the lifetime & worldwide insurance.

What's unique is the WTGs foundations are at the same time treated in very detailed and fully comprehensive way.

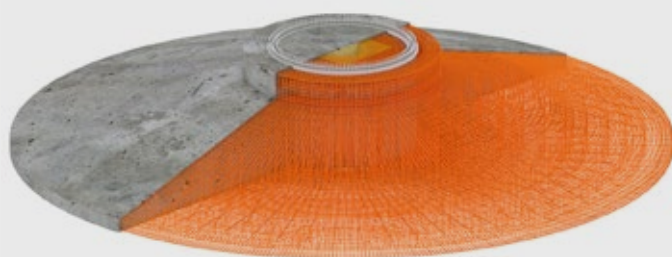
SAFETY

Our projects retain 100% error-free. No claim action and no failure status.

Foundation design, geotechnical engineering and complex repair solutions create our safety triangle.



GRAVITY FOUNDATIONS



Gravity foundation is the most commonly used WTG foundation type but only the detailed knowledge of the fatigue and dynamic phenomena enables the conscious optimization of this solution.

A priori the self-weight of the foundation & backfill must ensure safe transmission of loads from the turbine to the ground.

DEEP FOUNDATIONS



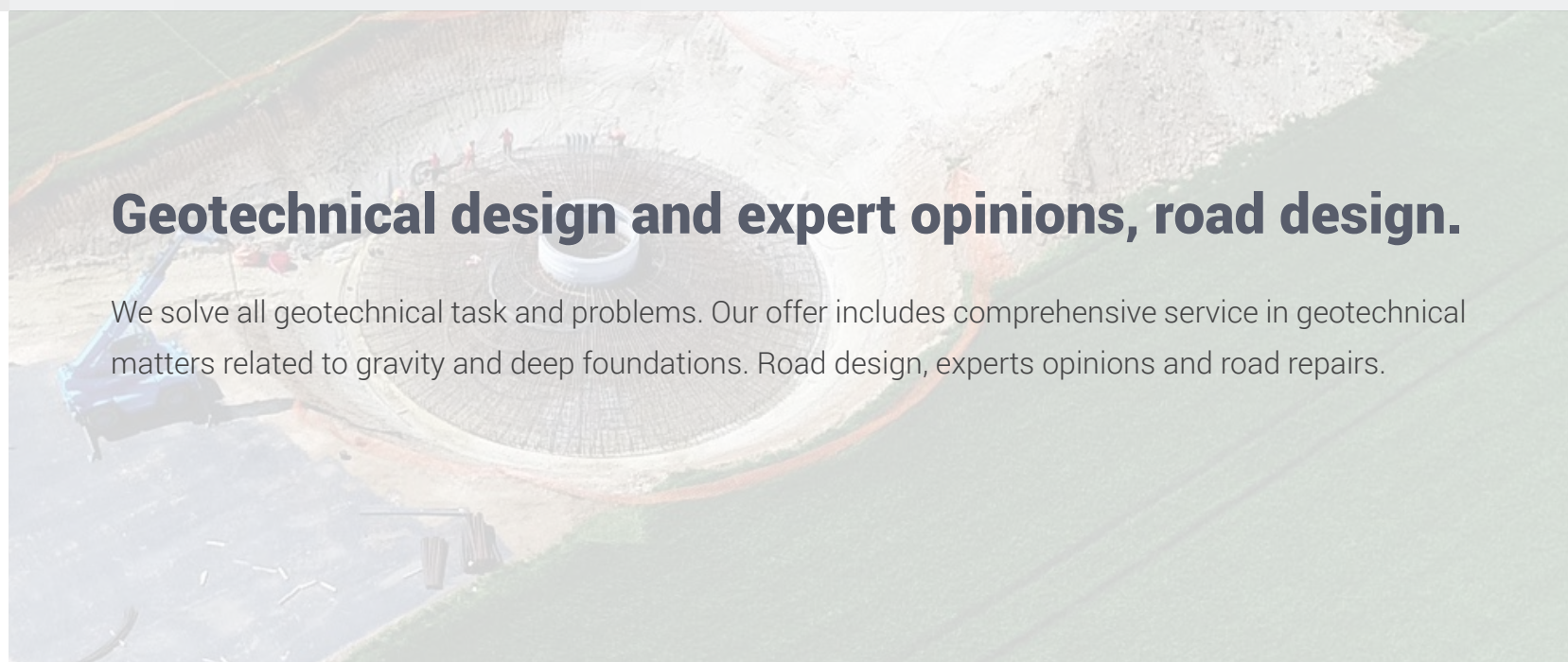
Deep foundation type is mostly used in complex ground conditions. Drilled, driven or other pile types well connected with foundation slab allow to reduce significantly volumes of concrete as well as amount of steel. Rotational spring stiffness and limited differential settlements are to be ensured then by whole composed structure.

Investor's interest in first place

Supervision, project management, technical expert surveys and expert opinions on work already completed. There is never too much engagement to reduce the risk of mistake. All those actions ensure that the general contractor carries out the project in accordance with the objectives and guidelines, with the investor's interest in mind.

Geotechnical design and expert opinions, road design.

We solve all geotechnical task and problems. Our offer includes comprehensive service in geotechnical matters related to gravity and deep foundations. Road design, experts opinions and road repairs.





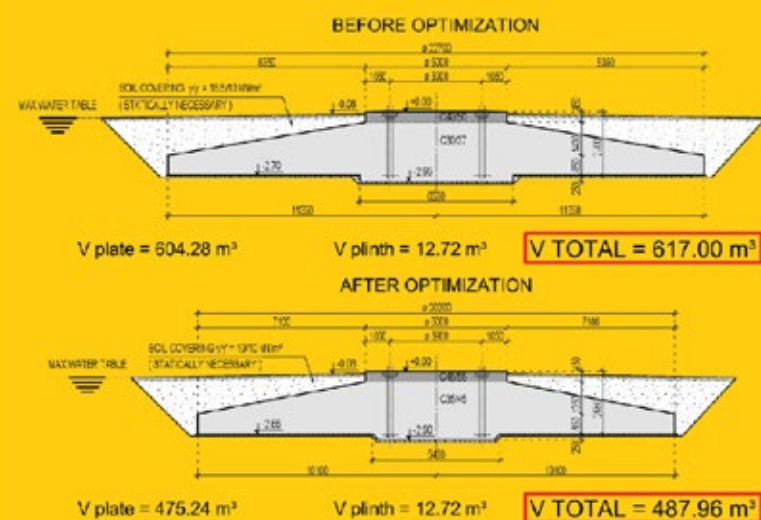
EFFICIENCY & OPTIMIZATION

Efficiency in costs

By choosing experts from GP RENEWAGLES GROUP as your foundation partners, you can optimise foundations in terms of technology and economics. We take into account local circumstances and specific considerations. Experienced with all types of turbines. Preliminary design we made free of charge in one day.

Efficiency in time

Short Time lead Times is our hallmark. We are faster than our deadlines. Always meet them thanks to our experienced teams in 4 worldwide Offices in Europe and Brasil.



Efficiency in design optimization

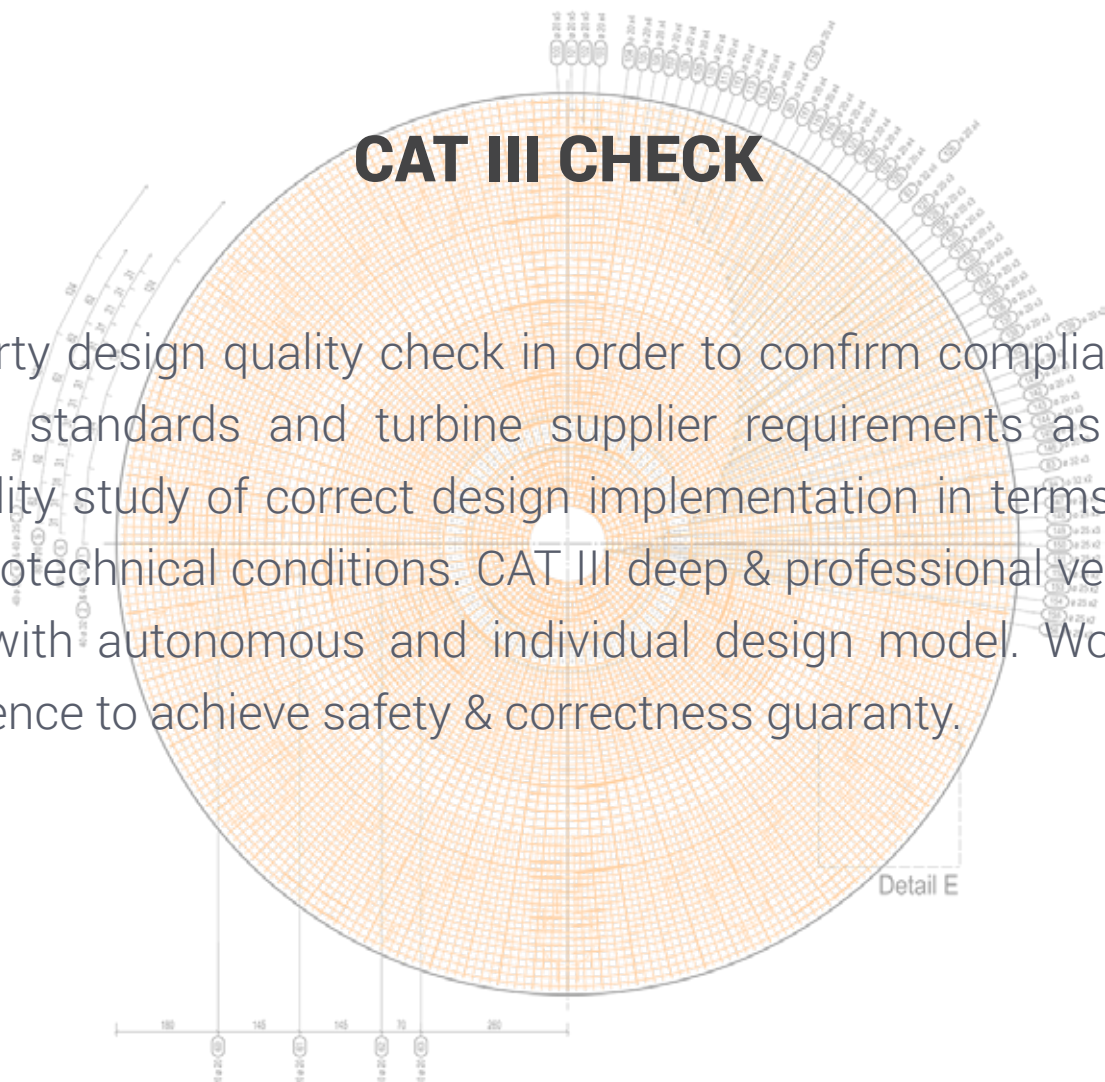
We choose the most optimized solution, by savings on steel ratio and concrete volume. Specialization in all types of design analyses. Project verification in terms of technical and engineering aspects, safety of use and feasibility, as well implementation price reduction. We understand well the need to optimize design solutions to make wind energy business as profitable and safe as possible.

Efficiency in execution and supervision

We will make sure that the general contractor carries out the project in accordance with the objectives and guidelines, with the investor's interest in mind. We will prepare expert opinions on the work already completed.

CAT III CHECK

3rd party design quality check in order to confirm compliance with norms, standards and turbine supplier requirements as well as feasibility study of correct design implementation in terms of local and geotechnical conditions. CAT III deep & professional verification done with autonomous and individual design model. World wide experience to achieve safety & correctness guaranty.



Consulting and support in the process of purchase/sale of wind farms

We offer technical due-diligence analysis, designs and execution evaluation, diagnose and minimize potential risks at purchase.



Thousands of wind turbines around the world, from **New Caledonia to Brazil, France and Poland**, stand on foundations designed by us.



WE ENJOY TRUST AND HAVE REFERENCES FROM THE BIGGEST GROUPS:

Qair

ERG

NORDEX

edp renováveis

SIEMENS Gamesa
RENEWABLE ENERGY

VSB

POLENERGIA

edf

ABO
WIND

wpd

OX2

TOTAL eren

NEOEN

EUROPEAN
ENERGY

SPIE

RWE

Vestas

EUROWIND
ENERGY A/S

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Membership in Wind Europe and PWEA

Wind
EUROPE

PWEA



Foundation Repairs Experts



WHY TO CHOOSE US

Savings by correct diagnosis

Thanks to our services you can be sure of the correct diagnosis. The experience of our engineers allows us to spot the smallest faults to remove them at an early stage when its cheapest. Once you see the level of our services, you will always choose us. We have 100% of satisfied customers.

Savings by time

Quick mobilization and smooth repair to prevent from long term turbine productivity shutdowns while maintaining high standards of construction and OHS. We always care about adjusting the date of work to minimize costs for our clients.

Warranty for works – certainty and security

Longest warranty on market. We are so sure of our works that we offer the longest warranty terms. Experience, number of repairs carried out and efficiency are features that make us BETTER.

Long-term Framework contracts with industry leaders

Industry leaders place their projects in our care by signing long-term Framework contracts for repairs and maintenance of foundations across Europe. Do you need a better recommendation to trust us?



6-step approach to a successful repair are: to diagnose the real causes of failures, ensure safety, common sense and a solution to the problem.

Resin pressure injections, insulation repairs, removal of water from the foundation, cracks and scratches in concrete, movements of the tower, drainage improvements are daily part of our life.



SCOPE OF SERVICES

- Expert opinions
- Pressure resin injections
- Concrete cracks and scratches repairs
- Effective insulations
- Drainage systems
- Water removal
- Core drillings
- Endoscope inspections
- Sensor and land survey measurements of Tower deflections
- Concrete resistance testing
- Technical & civil engineering problems





What is an FMS service?

It is a professional and dedicated service ensuring the safety of foundations and compliance with the insurers' requirements. It allows to take care of the proper condition of foundations, tower elements and in the extended package also grounding, lightning protection and electrical systems. FMS minimises the risk of unexpected and costly repairs and is the only annual inspection carried out by foundation design and repair experts required by the building law.



Why is this important?

Professionally conducted inspections are not only required under the Building Law, but most of all they are necessary to detect defects at the earliest possible stage. Seemingly harmless scratches on concrete can result in a major overhaul and expensive, unforeseen repair after the winter season. This can really be avoided by intervening early enough!

The first symptoms of failure are often almost invisible and can be properly recognized by specialists in the design and repair of detail-sensitive foundations. In our opinion, only the combination of these two aspects in the experience of one company enables a comprehensive assessment of the technical condition.

We have been trusted by industry leaders, as evidenced by long-term framework contracts for the inspection of all wind parks.

Scope of the service:

Foundations only:

- Visual assessment of the technical condition of external foundations,
- Visual assessment of the technical condition of the foundations from the inside together with the inspection of the tower basement,
- Technical report together with photo documentation and recommendations. The photo report is extremely important in the context of a year-to-year comparative analysis of the state of the foundations and possibly a progressive failure in the context of planning countermeasures.

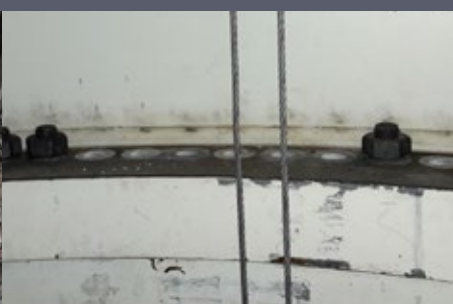
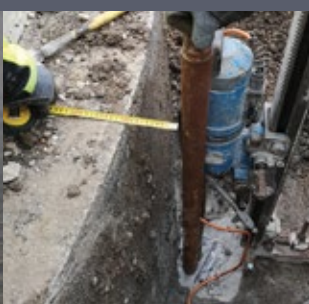
Foundations + Tower:

- All of the Foundations Only service,
- Assessment of the efficiency of the fire protection system,
- Assessment of the condition of technical elements of the tower (platforms, ladders, supporting elements),
- Visual assessment of the condition of tower segment connections, tower shell,
- Fulfils the scope of the annual building inspection regardless of interpretation.

Foundations + Tower + Basic Electrical

- All of the Foundations + Tower service,
- Measurement of the foundation's resistance to earth,
- Visual inspection of the electrical system with protocol
- Visual inspection of lightning protection and earthing systems with protocol

• Legalisation of RES electricity meters



Geotechnical Design and Execution works



Following the basics of soil mechanics and the nature of the work conditions of structure, GP Renewables engineers are able to design solution specific to client needs. We are using the most popular geotechnical software to get the optimum and safe solution.

International company character and wide know-how extends the range of geotechnical techniques used.

GP renewables possesses knowledge and experience to safely and successfully execute the project.



Comprehensive design and execution services for:

SOIL IMPROVEMENT

Rigid Inclusion(FDC columns)
Deep Soil Mixing

PILING

CFA piles
Driven precast piles
Micropiles

EARTH RETENTION

Pile walls
Ground Anchors
Soil nails



Modern and reliable machines

We are using only modern and professional machines. Three Bauer BG 23 H Rotary Drilling Rig, Premium Line machines are at our disposal. Each of them is almost Brand new, from 2019 and 2020 year. Our clients can be sure that our engineers and equipment will complete the order on time.

CSR and Innovation:

Re-using of recycled wind blades in urban architecture

GP RENEWABLES GROUP solutions for circular economy and wind energy education

GP RENEWABLES GROUP



Arranging public and private space with our furniture

Arranging public and private space with furniture made out of recycled materials has unlimited potential. Transformation towards zero-emission energy resources and waste reuse are strong global trends that have become a part of our lives for good. On this basis arose the idea of manufacturing small urban architecture structures derived from used wind turbine blades.



Our products can be used in all public spaces (streets, parking lots, squares, parks). We provide solutions for the management of lentic and lotic water quays. Our clients include local governments, large corporations as well as private investors.



The wind blade is made of glass fibres, combined with epoxy resin. Together they form an extremely durable, weather-resistant and environmentally-friendly composite that does not react with the earth or the environment. Reuse of blades from wind farms gives great opportunities to promote an environmentally friendly image of the investor, by creating characteristic points of architecture.

GP RENEWABLES GROUP



GP EARTH



GP WIND

Be eko
Choose the circural economy

From recycled wind blades we can make all types of unique (made according to individual design) furniture adapted to urban, hotel or private space, and simultaneously resistant to changing weather conditions. The dimensions and colours of the furniture can be adjusted to the investor's needs, as well as their logo can be applied in a visible place.

These are massive, although very lightweight-looking and modern structures, which are difficult to destroy or move. Each product is provided with information on which wind farm the reused composite comes from and how much green energy the wind blade generated in its first life. This allows to arrange e.g. a square, a park or a garden in a unique style and make the idea of the "second life" of a turbine real. Our product portfolio currently includes: benches, loungers, seats, platforms, footbridges, sheds, geotechnical blocks and even changing tables for a parent and a child. We are currently working on a car crossing bridge and an observation tower, but in the diversity of projects we are only limited by... our and your imagination.

Stand out with a smart idea and interesting design

We are the first in the world to have in this matter solutions that are already ready for application. Developed together with experts from the Department of Roads and Bridges of the Rzeszów University of Technology, the footbridge is a solution with media potential, modern, ecological and unique in the world. A recycled blade from a wind power plant is the load-bearing element of the footbridge.

The solution is visually unique and can become a landmark of urban architecture and a tourist attraction. The footbridge has successfully passed the load tests and has all public use approvals..



What makes such a structure a landmark in the area. The wind blade, hidden under the deck boards, is also an element that gives the platform load capacity.



There is a possibility of making in the same technology a footbridge connecting two sides of the water reservoir. We can reach up to 25 meters in length without support points. Our platforms and footbridges are perfect solutions in the development of ponds and lakes, as well as terraces or viewpoints in the hotel and business buildings. For several years now, both environmental and health awareness have been growing in society.

We implement complex arrangements of urban space. Around the pond or within the park there can be benches, tables, shelters and other furniture made of wind blades, as well as footbridges and platforms, or even modern and comfortable stations for mothers to feed and change a baby. We also create design of the observation tower made of recycled wind blades. 20-35 meters high!



The life span of the footbridge is estimated for at least 80 years. Its dimensions can be tailor-made to individual needs. The design of the footbridge provides for pedestrian or bicycle and pedestrian traffic, as well as observation seats for visitors. Also an interesting solution are visually attractive piers, intended for stagnant waters. **The pylons of the platform are up to 12 m high!**



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