



RODOPI BLADES  
GMBH

REAL  
PEOPLE,  
REAL  
WORK.





## Full Wind Energy Ahead!

We at Rodopi Blades specialize in making service an integral part of our production of rotor blades for wind power installations. We build, repair, finish and pre-finish those blades. We are also equipped to organize and execute decentralized retrofits as well as take over particular production steps by accepting outsourcing contracts.

In addition, we manufacture components for wind power rotor blades as well as other GRP components for our customers. In this case, working closely with our factory in Ringe, Denmark is the key to our success.

As a potential customer of ours in the wind energy industry, it is reassuring for you to know that Rodopi has under its command the appropriate experts so that it can react effortlessly to extreme fluctuations in the number of employees needed for a given job.

Whether it takes teams of 50 persons or, when time pressure becomes severe, as many as 200 employees on-site, we know our business and can supply them. So why not give us a chance to have a personal conversation? We are excited by the prospect of taking on a project for you.

*Ercan K. Osman,  
Director Rodopi Blades GmbH*



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# BACK BREEZE

The economy is pressing ahead, any yet politics is slowing things down. That's how the scenario for the expansion of wind energy looks to us right now. Whatever the effect is on the overall development of renewable energy, it is currently providing the largest contribution to Germany's electricity supply. Wind energy continues to be a significant part of that.

Whether offshore, onshore or nearshore, the business of wind power remains attractive to investors, operators and developers alike; there is no doubt that the energy

revolution will continue to move inexorably forward.

In Rodopi Blades, you will have at your side a partner that will make sure that your wind power installations get onto the network quickly while maintaining an eye on resource savings.

More important, you can be sure that your investment will, over the long term, do exactly what you want: use clean wind energy to produce electrical power.



# INSIDERS ONLY

Rodopi Blades has been in operation since 2007 and has wasted no time making a name for itself. Regardless of whether it was a solution for improved surface treatment, a difficult special assignment or some complex major project, our customers have been pleased and remained loyal to us — without exception.

To industry insiders, it is clear that alongside the level of technical innovation, it is the efficiency of wind power installations that is decisive. Protecting blades against

the weather using a high-performance finish is good business too. For this, Rodopi Blades provides up to 10 years warranty.

Throwing blades away is so yesterday; at Rodopi Blades, we repair your incorrectly laminated or defective blade to the highest standard—naturally, with full stability and with all its former qualities restored. In addition, we see to it that we carry out this work for you as cost-effectively as possible.



# PROCESSING INCLUDED

The best thing for our customers is that they hardly know we are there. That is what we mean by successful project management. Our team organizes its production sequences to be as unobtrusive as possible. At the same time, we have become accustomed to documenting every step of our work precisely, carrying out constant quality control, and insuring a properly audited acceptance procedure.

With every requirement you impose on us, we react flexibly. It can be a project delay on the customer's side that was

caused, for example, by a production back-up. Or bad atmospheric conditions that delay work in-situ, high up on the rotor.

Our teams, 50 to 200 persons strong, are well-coordinated. Our special employee rotation system organizes production time as well as bench time and thus makes flexible standby modes possible.



**Rodopi Blades:**

Production of rotor blade components; pre-finishing and finishing of the rotor blades themselves

Repair of all the usual symptoms of damage on all common blade types as well as special cases — **without loss of quality or stability**

Able to make repairs right at the tower — using our own rotor blade service lift

**Major repairs are performed in the factory** — up to 200 proven specialists, from technician to rotor blade engineer, are available on a flexible basis

**Corrosion protection** to increase service life — with warranties of **up to 10 years**

**Finishing** — if desired, sophisticated aesthetics through premium finishes for the most demanding applications

**Full Service** — project planning, costing and management; ongoing quality control as well as audited acceptance procedures

No-one can do everything but for our customers in the area of wind power installations, we do almost everything.

We of Rodopi Blades oversee every individual operation from the common

laminated-and-repair process to vacuum infusion. When measures need to be taken at dizzying heights, we use our own rotor blade service lift to complete repairs right at the tower.





**THE MORE YOU WANT,  
THE MORE YOU GET**

#### **Planning**

A skillful project plan should be drawn up without exception before everything else: Needs analysis | Feasibility check | Project cost analysis | Ongoing project management | Permanent quality control | Audited acceptance procedures

#### **At your works**

Major repairs | Correction of serial defects and faulty laminations | Opening of the area to be repaired | Precise ply-by-ply removal of damaged laminate structures | Repair of the balsa core | Manufacture of precise mountings | Lamination of the patched locations with UD/Multi-Axis glass fiber matting corresponding to the mounting relationship | Sealing of the repaired area to prepare for vacuum infusion | Rim construction | Resin infusion | Control, documentation and supervision of the infusion and hardening processes | Audited acceptance through TÜV/GL

#### **At our works**

Shape maintenance as well as repair | Maintenance | High polish to the quality desired | Surface sealing | Separation

#### **At the tower**

Thanks to our rotor blade service lift, we are able to work for you right at the tower: Removal of corrosion and paint damage | Manual over-lamination (vacuum-pressed) | Replacement of parts | Repair of lightning damage | Larger repairs with dismantling and encapsulation of the damaged blade on-site

#### **For protection**

Corrosion protection from wind and weather: Choice of corrosion protection processes | Preparation and coating operations for optimal weather protection | Elasticity of the surfaces | Increase in service life | Warranty periods of up to 10 years

#### **For the eye**

And now Rodopi Blades can also undertake finishing work for you: GRP post-lamination | Grinding | Smoothing | Production of prescribed blade contours | Primer | Sophisticated aesthetics through premium finishes to the highest standards

#### **In production**

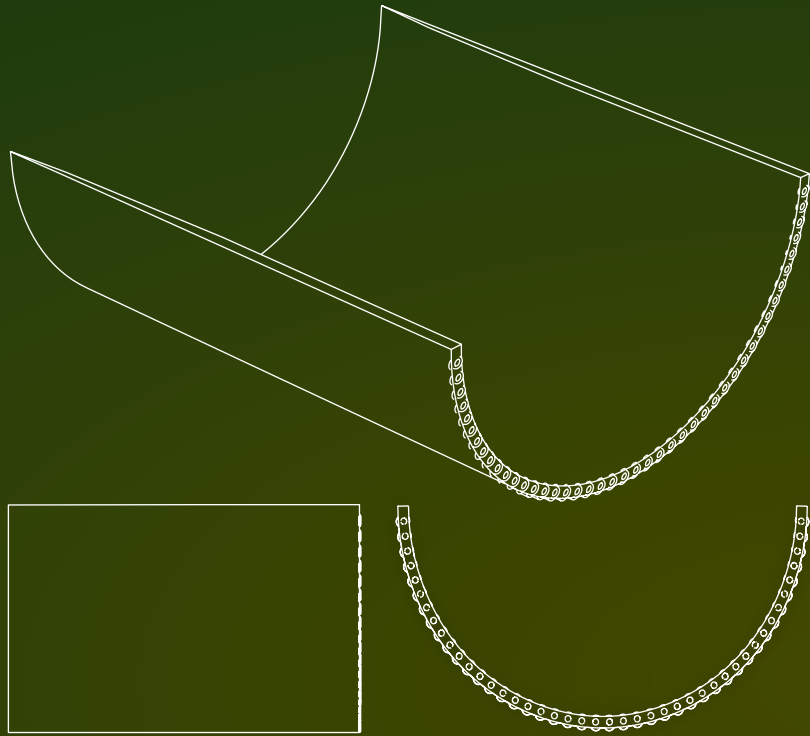
Rodopi Blades offers its customers the manufacture of components for wind power rotor blades as well as other premium GRP components in its own factory.





# MANUFACTURING AT OUR PLANT IN RINGE/DK





We manufacture components for wind power rotor blades as well as other GRP components in our own factory in Ringe, Denmark. On the spacious production area, there is a modern annealing furnace for the manufacture of fiber composite components.

Through our flexible production and delivery capabilities, we are in a position to supply our customers with premium GRP components promptly and at competitive prices. In addition, we can provide, upon request, additional ma-

nufacturing capacities for all of Europe and complete the work within the shortest period of time.

Speed and flexibility represent a commitment to us: As an example, we built our production area in Ringe in only three months measured from the time the decision was made to build it until it was ready for use. Its purpose was to allow us to deliver to our customers ready-to-install components for wind power installations promptly.



After lamination, the fiber composite components that we manufacture are cured under vacuum in our annealing furnace and if circumstances require, they undergo subsequent heat treatment to guarantee optimal stability.

If desired, we can also transport the component parts we have manufactured; we can even take over the entire logistics management process.



# BASIC FACTS, BASIC PROJECTS

It is entirely possible that you are already interested in learning more about **Rodopi Blades**. In order to give us the chance to eliminate any remaining hesitation, allow us to show you **three projects**, as an example of what we can do for you.



## **Project example #01: 400 treated rotor blades**



### **Project description**

More than 5.500 wind turbines with a total rated output of more than 9,000 megawatts are already rotating in 34 countries around the world.



### **Services**

Depending on the order situation we work 5 to 15 rotor blades a week. We do laminations, full-surface filling, sanding, base-coating, air-less-paintwork, as well as gelcoat spray, form care and repair.



### **Integrated processes**

Rodopi Blades has been integrated into the factory production of wind energy rotor blades made of glass-fibre reinforced plastic (GRP). Furthermore we are very closely involved in production planning (Forecast); the area „Finishing“ lies largely in our sphere of responsibility.



### **Flexible workforce scheduling**

30 to 60 employees are permanently assigned. At output peaks we had been able to provide with up to 100 employees on very short notice. Our client's extremely high quality standards, the strict legal and in-house occupational health and safety standards are met without any trouble.





## Project example #02: 60 repaired rotor blades within 6 months



### Project description

Our client produces high class wind energy rotor blades at the location in Northern Germany exclusively for the parent company.



### Services

Major repair of rotor blades in the main belt area in order to correct various damages. Services in detail: opening of the repair zone, layer exact removal of damaged laminate structures, repair of the balsa core if needed, production of accurate mountings, application of the repair cloth made with UD/multi-ax glass fibre mats, sealing of the repair zone in preparation of a vacuum infusion, rim installation, resin infusion, controlling, documentation and surveillance of the infusion and precipitation process, audited acceptance by TÜV.



### Flexible workforce scheduling

Despite of the short notice contract placing and an extremely short preparation phase of only a few weeks, we were able to muster an adequate team of temporarily up to 55 competent experts – and to meet the complex requirements reliably. In addition, we were able to integrate our processes into the local circumstances and the client's strict health and safety regulations smoothly.





## Project example #03: Fields of activity continuously growing



### Project description

Our client crafts high class wind energy rotor blades for notable manufacturers.



### Services

Our fields of activity are growing continuously: a highly qualified Rodopi-team performs extensive Finishing operations as well as very complex repairs. We refurbish blades, that would have been disposed of in former times, without any loss in quality – documented and monitored by TÜV. In addition, service, maintenance and repair of any kind are parts of our services.



### Integrated processes

Our services have been integrated into the client's factory production since 2011: We were able to analyze intra-company processes and create perfectly functioning gateways in a very short period of time. That is how we are capable of contributing to the improvement of production conditions. A perfect integration, whose inconspicuousness is striking.



### Flexible workforce scheduling

We are able to effectively and reliably make up for a fluctuating order situation, commonly seen within the wind energy industry, thanks to our high degree of integration. At output peaks, we can add 50 to 100 employees within a few days to the 15 - 30 assigned ones – always adhering to the strict quality, health and safety and social guidelines.



Simply scan the QR-code with your smartphone or tablet in order to visit our website at [www.rodopi-blades.de](http://www.rodopi-blades.de).



**RODOPI MARINE**  
GMBH

Whether it's shipping or construction, steel implements the ideas of builders in the most varied industries. Right behind the fascination with shape in importance, preserving that shape is the next most important. Whether it's corrosion protection or surface refinement, every surface that has to defy the elements needs the strongest possible defense.



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Rodopi Marine specializes in the surface treatment of steel on boats and structures alike. Depending on your catalog of requirements, the team from Rodopi will develop tailor-made solutions for perfect and long-lasting surface finishes.



**RODOPI PERSONAL**  
GMBH

Our customers can, depending on their specifications and needs, make use of our employee pool of 1,700 individuals. We of Rodopi Personal know every employee personally along with his abilities. In suitability interviews, employee perspectives are determined periodically; training and personal development measures are part of every employee's standard program. The worker, who keeps his own goals in



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sight, can be enthusiastic about his work and actively help shape the success of all the other team members. Maybe that is why every one of our construction teams is homogeneous, the colleagues are all friends and they derive pleasure from their work.





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