

# Engineering Plastic Solutions for Renewable Energy Generation



Global Leader in Engineering Plastics



QUADRANT

You inspire ... we materialize®

# Quadrant Engineering Plastics for Renewable Energy Generation



## WE HELP YOU TO EXPLOIT ENERGY AT ITS FULL VALUE

Abrasion, erosion and wear of critical parts in a facility and the equipment within the production chain cause immense costs. Related maintenance services and production downtime can impact the financial performance of a project and business significantly.

Valves, bearings, seals, guiders and rolls ... Quadrant engineering plastics solutions can increase equipment life time, improve mean time between repair, reduce waste and limit replacement needs. Our plastics meet the highest challenges concerning temperatures, chemical resistance, corrosion, wear and stability.

## ENDLESS POWER SOURCES – OPPORTUNITIES FOR ENGINEERING PLASTICS

Alternative energy sources account for a significant part of the total global energy production today and their importance is constantly increasing.

Engineers are using Quadrant Engineering Plastics worldwide to improve product quality and increase profitability of manufacturing processes and equipment.

Parts and components made from Quadrant materials support the technical development in all major sectors of alternative energy generation.

Preserving and maximizing energy is your and our business, and in everyone's mind today. No matter if your focus is photovoltaic or wind energy, tidal, fuel cell or biogas power, Quadrant's superior solutions help you maximize productivity and safety – today and in the future.

## ABOUT QUADRANT

Quadrant Engineering Plastic Products (EPP) is the world's leading manufacturer of engineering plastics in stock shapes (rod, plate, tube) for machining, and leader of nylon custom castings and finished parts. Our special manufacturing capabilities include compression moulding, extrusion, custom casting, direct forming and finished parts machining. Quadrant products are available through a worldwide network of branch offices, technical support centres and authorized dealers.

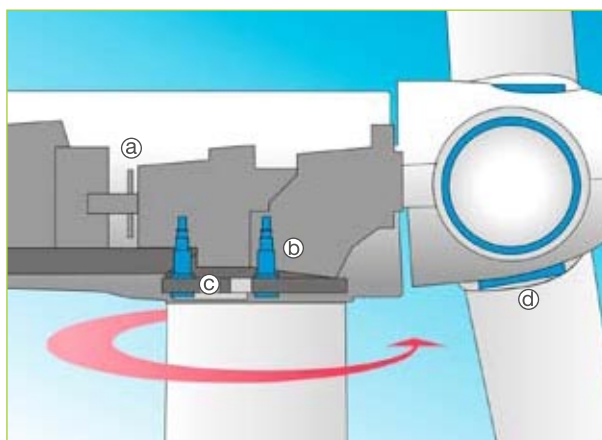
Quadrant's global presence, materials and capabilities expertise offers turn-key solutions and opportunities for the use of polymers in applications where metal and other, more 'standard' materials like ceramics were the only choice. Our materials are extensively tested and operate under extreme applications withstanding unwanted energies such as pressure, temperature ranges and hostile environments. Besides Quadrant's material know-how and choice, constant investment in innovative production capabilities allow us to respond to the most challenging requirement in this industry.

# Wind Energy Generation Equipment



Worldwide wind farms are rising from the Earth and oceans, helping to fill the increasing demand for electricity. Quadrant's Application Development Team is working with major equipment manufacturers to improve the overall efficiency and reliability, and to substantially reduce the need for e.g. giant cranes used for emergency maintenance or very costly ongoing or supplementary greasing of the turbines.

## TYPICAL APPLICATIONS FOR PARTS AND COMPONENTS MADE OF QUADRANT PLASTICS



- a) Power transmission sealing ring  
Ertalon® 6 PLA, Nylatron® GSM
- b) Yaw brake pucks in yaw braking system  
Ketron® PEEK HPV, Techtron® HPV PPS
- c) Thrust washer ring segments in yaw bearing  
Ertalyte® TX
- d) Rotor pitch bearing elements, ball bearing  
spacers Nylatron® 703 XL, Ertalon® 6PLA



### Property profile of Quadrant materials

- High wear resistance
- High temperature resistance
- High load bearing capability
- Self-lubrication
- Dimensional stability
- Low coefficient of friction
- Low weight

### Customer benefits

- Higher productivity
- Longer life in use
- Reduced maintenance costs
- Reduced noise
- Less downtime

### Recommended Quadrant Products

TIVAR® TECH 7000  
 TIVAR® Ceram P  
 Nylatron® LFX, Nylatron® NSM  
 Nylatron® 703 XL  
 Ketron® PEEK  
 Techtron® HPV PPS  
 Ertalyte® TX

### Parts and components

Sliding ring segments in yaw bearings
Power transmission sealing rings
Wear pucks in yaw bearing and breaks
Bearing cages for giant ball bearings
Bearing elements and spacers

# Photovoltaic Energy Production Equipment



Quadrant solutions help producers to improve productivity through a higher level of automation in the manufacturing and handling process. Thinner wafers require even more careful handling and exact positioning to lower breakage rates. Our materials allow a higher chemical concentration or more aggressive chemicals to shorten cleaning and etching time, and to increase deposition quality, resulting in improved efficiency of the solar cells.

## TYPICAL APPLICATION ENVIRONMENT FOR COMPONENTS AND PARTS MADE OF QUADRANT PLASTICS

### Photovoltaic production lines

- Crystalline silicon cells
- Amorphous silicon panels
- Micromorphous thin film panels

### Photovoltaic installations

- Bushings in solar tracking systems

### Property profile of Quadrant materials

- High wear resistance
- High temperature resistance
- Low out gassing
- Self-lubrication
- Dimensional stability
- Purity
- Friendly surfaces
- Low coefficient of friction
- Excellent chemical resistance

### Customer benefits

- Longer life in use
- Higher output
- Reduced cleaning and preparation effort
- Improved cell efficiency
- No contamination risk
- Higher reliability
- Lower maintenance costs

### Recommended Quadrant Products

Symalit® ECTFE, Symalit® PVDF, Symalit® PFA  
 Fluorosint® HPV, Fluorosint® 500  
 Ketron® PEEK TX, Ketron® PEEK 1000  
 Ertalyte® TX  
 Techtron® HPV PPS  
 Duratron® PBI

### Parts and components

Wafer holder	Rolls
Wet bench liners	Spray units
Bath recipients	Sprockets/Guides
Wafer combs	Bushings
Grippers	Sliders
Tips	Suction heads

## Renewable Energies



Wind Power Generation



Solar Power Generation



Tidal and Waves Power Generation



Biogas Power Generation



Fuel Cells Power Generation

Contact us for more information and for individual consulting.

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[www.quadrantplastics.com](http://www.quadrantplastics.com)

Quadrant has extensive product and machining information available online. Our website is a portal to a wealth of technical data and the easiest way to engage our application specialists. Our team stands ready to help offer solutions to your toughest problems.

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