

Engineering Plastics for Wind Turbines



Yaw Brake Pucks in Yaw Drives

WIND INDUSTRY TRENDS

Wear pucks play an important role in some wind turbine constructions. They assure smooth sliding of the nacelle and at another part of the turbine act like brakes providing up to 80% of the braking force. Together with three motors they reduce the head speed in case of wind turbulences.

Sticking wear pucks may cause motor burn outs.

The puck material needs to be able to uptake and bear high loads [200 N/m]. A low coefficient of linear thermal expansion is as important as a high wear resistance and a non-stick-slip behavior at different ambient and frictional temperatures.

QUADRANT SOLUTION

The bigger the size of the turbine, the higher the existing load. For applications with very high loads like these Quadrant Engineering Plastic Products has developed ERTALYTE® TX, TECHTRON® HPV PPS and KETRON® PEEK HPV.

Among these and all Quadrant EPP plastics, KETRON® PEEK HPV offers the highest load capability with simultaneously good wear and friction properties.

CUSTOMER BENEFITS

KETRON PEEK HPV considerably extends the life time of the yaw brake pucks. Wind mill operators benefit from longer mean time between repair and consequently from reduced spare part cost. Less maintenance stops allow for a profitable system operation. High frequency sounds are eliminated, even in summer time.

Quadrant provides high performance plastic as rod, plate or tube for machining or as finished parts. Over 60 years of expertise provides the platform for bringing your concept to the production line. Let us help you build the optimum machine to increase your output, up-time and efficiency.



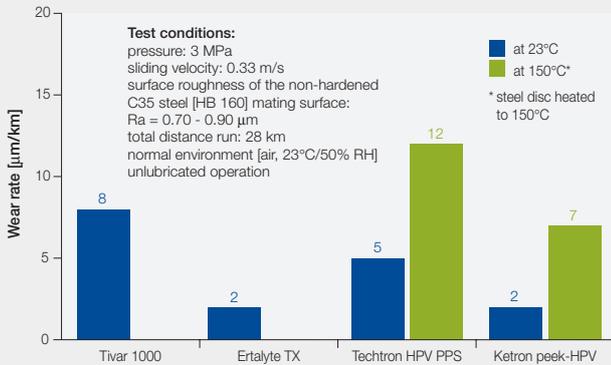
QUADRANT

You inspire ... we materialize®

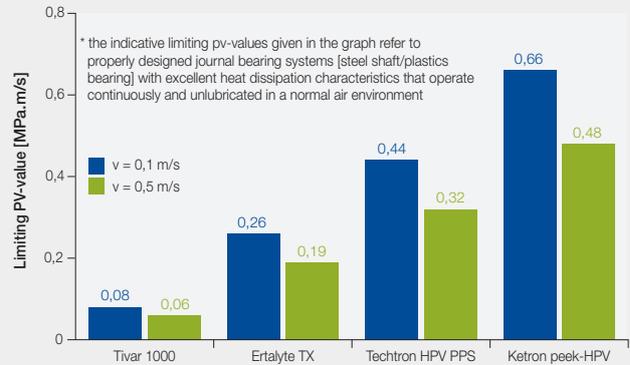
COMPARISON OF MAIN MATERIAL CHARACTERISTICS

WEAR RESISTANCE

[measured on a "plastics pin on rotating steel disk" - tribo system]



PRESSURE-VELOCITY CAPABILITIES*



KETRON® PEEK HPV PPS / TECHTRON® HPV PPS

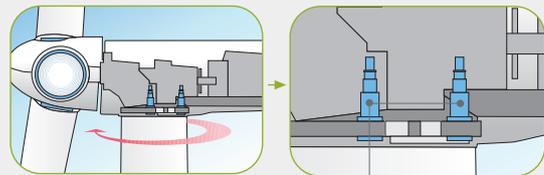
Thrust washer puck in yaw drive

Challenges:

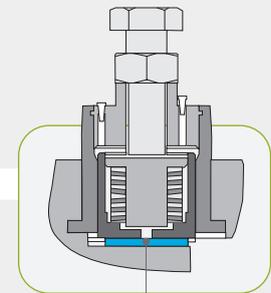
Very high static load uptake [200 N/m] over wide temperature range
Reduction/elimination of greasing and maintenance
Considerable noise reduction by avoiding stick-slip causing squeaking and juddering

Solution:

Quadrant's solid lubricant filled PEEK needs no external grease and avoids stick-slip even at low speed which is typical for yaw bearings out-performing initial solution [PMMA with PTFE] by far.



Yaw Drive



Yaw brake puck

Benefits:

Dimensional stability at high loads and varying temperatures
Longer life time and increased mean time between repair
Reduced maintenance and spare part costs
Noise reduction at system and environment

Please consult us also for solutions in off-shore wind turbines.

Quadrant has extensive product and machining resources 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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