

# AUTOMATION INDUSTRY

## CEROBEAR Bearing Solutions for Automation and Robotic Applications

**In numerous automation and robotic applications thin section bearings have to deliver high camber stiffness and load capacity at minimized rolling friction and all this in an as small as possible envelope. CEROBEAR's advanced bearing material portfolio, its state-of-the art production technology and long time engineering experience are the perfect precondition to manufacture custom engineered, hybrid ceramic thin section bearing solutions, which meet and exceed these demanding operating requirements.**

CEROBEAR hybrid ceramic thin section bearings are available in all common diameters and cross sections and also totally customized, in metric or imperial sizes. They can be sourced in the standard 5 mm or quarter inch bore size increments as well as in totally tailor made dimensions, even in small quantities, starting normally at a production lot size of 20 pieces.

Available bearing types comprise deep groove ball bearings, angular contact ball bearings and also four-point contact (QJ) bearings. CEROBEAR hybrid thin section bearings are gettable as single units or matched pairs, triplets or quadruplets, and are also available as Superduplex Bearings, a double row bearing type which features at least one ring with two parallel raceways. The Superduplex design principle offers better parallelism of the raceways than matched bearing pairs and is therefore always recommended if precision and constant bearing preload are key.

For extreme radial loads, ceramic cylindrical roller or needle roller thin section bearings are available. The bearings are offered as open, shielded or sealed designs. Seals or shields can be made from FKM (e.g. Viton), NBR, PEEK, PCTFE, stainless steel or other materials on request.

CEROBEAR thin section bearings are available in any wanted dimensions

CEROBEAR's portfolio of advanced bearing materials includes ceramics and high-grade bearing steels for races and rolling elements.

Our standard material combination for CEROBEAR hybrid thin section bearings is High-Nitrogen Steel (e.g. Cronidur 30), an extremely contact fatigue and highly corrosion resistant rolling bearing steel, for the races, in combination with silicon nitride ( $\text{Si}_3\text{N}_4$ ) ceramic rolling elements and a PEEK cage. Alternatively powder metallurgical steel (PM steel), 440C or ceramics ( $\text{Si}_3\text{N}_4$ , Y-TZP) can be chosen for the races. Ceramic races are limited in terms of available sizes (< 200 mm OD only) and design features which can be added. A variety of different materials can be used for the bearing cages, dependent if highest temperature, low friction, zero outgassing or e.g. dry running abilities are the customers' objective.



CEROBEAR hybrid thin section bearings

CEROBEAR offers a wide variety of different bearing greases, which cover vacuum applications, extreme temperature environment, are FDA approved or qualified for clean room operations. Bearings can be greased for life or can feature re-greasing ports or oil galleries to allow oil-air lubrication directly through the inner or outer race. Alternatively CEROBEAR bearings can be sourced in extra width, to allow a grease deposit for an extended bearing service life.

Collars or flanges, splines, threads or other design elements can be integrated into CEROBEAR hybrid thin section bearings, to provide an anti-rotation function or to ease the integration of the races to the mating structure.