

Applying Two-Parameter Envelope Theory to Determining Spherical Cam
Profile with Cylindrical Followers

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Abstract

Using the envelope theory of two-parameter family of ball surfaces, two geometric models of spherical cam can be easily obtained when the follower-motion program has been given. The results of the envelope theory are used to determine an optimal spherical cam profile with an oscillating cylindrical follower. Some investigations of geometric characteristic, such as pressure angle and cutting path, are determined using the obtained geometric model. The principle curvatures are analyzed to avoid undercutting. Finally, a numerical example is given to illustrate the application of the procedure.