

# THE GREAT TOLERANCING CONTROVERSY

from *The Tao of Tolerancing*, by Alex Krulikowski

## Current Tolerancing Methods and Their Results

METHOD	RESULTS
<b>TBR TOLERANCED BY REFERENCE</b>	<ul style="list-style-type: none"> <li>• A tolerancing scheme that may not be related to the functional requirements of the component</li> <li>• A designer or engineer who only understands the component tolerancing at a superficial level</li> <li>• Vague, incomplete, or illegal component tolerance specifications</li> <li>• Confusion and poor drawing specifications—or—an organization that exists in Tolerancing Hell</li> </ul>
<b>TBM TOLERANCED BY METHOD</b>	<ul style="list-style-type: none"> <li>• A tolerancing scheme that may not be related to the functional requirements of the component</li> <li>• Vague, incomplete, or illegal component tolerance specifications</li> <li>• Multiple drawings for some components (if a component is processed in multiple plants, a separate drawing is often made for each plant); when more drawings exist, there is a greater chance that an engineering change may not be updated on all the drawings.</li> <li>• Tolerances that are often tighter than they need to be</li> <li>• Lack of focus on customer requirements</li> <li>• Confusion and poor drawing specifications—or—an organization that exists in Tolerancing Hell</li> </ul>
<b>TBI TOLERANCED BY INSPECTION</b>	<ul style="list-style-type: none"> <li>• A tolerancing scheme that may not be related to the functional requirements of the component</li> <li>• Many dimensions measured from a single datum reference frame</li> <li>• RFS modifiers used where MMC is more appropriate</li> <li>• Less tolerance for manufacturing</li> <li>• Higher risk to the customer</li> <li>• Confusion and poor drawing specifications—or—an organization that exists in Tolerancing Hell</li> </ul>
<b>TBF TOLERANCED BY FUNCTION</b>	<ul style="list-style-type: none"> <li>• Larger tolerances for manufacturing</li> <li>• A tolerancing scheme that is related to the functional requirements of the component</li> <li>• A better understanding of how functional requirements are related to tolerance specifications</li> <li>• Clearer tolerance specifications</li> <li>• Low risk to the customer</li> <li>• Focus on customer requirements</li> </ul>
<b>TBC TOLERANCED BY COMPROMISE</b>	<ul style="list-style-type: none"> <li>• A tolerancing scheme that is not related to the functional requirements of the component</li> <li>• A combination of several methods being used, so no method is really being used</li> <li>• No accompanying guidelines on where each method should be used</li> <li>• Higher risk to the customer</li> <li>• Confusion and poor drawing specifications—or—an organization that exists in Tolerancing Hell</li> </ul>



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