BUSINESS REQUIREMENT	FAILURE TO MEET BUSINESS REQUIREMENT	PROBLEM	SOLUTION
PROJECT MUST ACHIEVE FINANCIAL BREAKEVEN IN THE PLANNED PERIOD AND MOVE RAPIDLY INTO PROFITABILITY	COSTS OVERUN	over specification & tight tolerances are driving up component manufacturing costs and scrap	Identify and adopt commercial tolerances applicable for the industry or sector. Conduct tolerance analysis throughout the design phase to ensure that fit/form/function can be achieved within these commercial tolerance bands
		incorrect specification & poor tolerancing are driving down assembly efficiency and yield	
		over specification & tight tolerances are driving up equipment and tooling expenditure	
		incorrect specification & poor tolerancing are creating assembly errors which require re-work and overtime	establish the true tolerances that are needed for efficient assembly operations. Use tolerance analysis techniques throughout the design phase to prove that these are achievable at the component manufacturing stage and will not have a detrimental effect on the product performance
		inadequate specification & poor tolerancing make assembly operations difficult and cumbersome therefore requiring more operator training and development	
	SALES UNDERPERFORM	design phase runs late because of inefficiency associated with producing fully detailed drawings (over specification)	tolerance analysis considerations such as datum definition and limits & fits are excellent methods of determining what is critical to include on the component and assembly specifications. Insignificant requirements can be omitted in order to preserve a clearer, more concise specification based solely on the required fit/form/function
		first shipments are delayed while errors are corrected. Unforeseen errors and omissions in the specification only emerge as production quantities increase	using tolerance analysis techniques at an early stage in the design phase will detect many of the errors that would remain unforeseen until much later. These techniques provide an effective method of checking the validity of the design brief (establishes priorities, highlights ambiguities), clarify the design intent and allow design optimisation
		product is late to market because component manufacture and assembly time is proving to be longer than estimated	tolerance analysis techniques (e.g. datuming, limits and fits) should be used to as the main method for any 'design for assembly' analysis
		over specification & tight tolerances have resulted in a higher number of rejects, quantities are short, deliveries are late and orders cannot be fulfilled	tolerance analysis techniques used correctly will determine those tolerances necessary to achieve fit/form/function. Other more randomly applied tolerancing techniques may lead to unnecessary rejects even though components are perfectly serviceable
		failure to rigorously specify and tolerance important characteristics (USPs) has resulted in a product that is uncompetitive in the market	Identify the true, functional tolerances needed in order deliver the required fit/form/function. Directly represent these tolerances and dimensions in the component specifications.
		failure to set commercial specifications & tolerances have driven the price higher than the market can bare, margins are squeezed	ensure that the tolerance strategy adopted can be implemented in the supplier base
		poor specification & tolerancing results in undesirable cosmetic defects such as poor alignment, unsightly gaps etc. Customer perception is that build quality is poor.	tolerance analysis techniques are well suited to predicting cosmetic gaps and alignments. The results of such analysis can be fed directly into the component/assembly specifications
ENHANCE THE COMPANY'S REPUTATION IN ORDER TO SECURE FUTURE BUSINESS	PRODUCT DOES NOT PERFORM AS INTENDED	insufficient attention to functional specification and realistic manufacturing tolerances has resulted in a product that cannot perform as intended. Product may even fail to meet statutary requirements and cannot be shipped.	critical dimensions and characteristics that affect the product performance can be identified and analysed using tolerance analysis techniques. Used early on in the design phase these will ensure that risks can be predicted and actions put in place
	PRODUCT HAS INTERMITTANT FAULTS	insufficient attention to realistic specification and realistic manufacturing tolerances has resulted in a product that is vulnerable to normal manufacturing and assembly variation	tolerancing can be used to make allowance for irregular variations such as distortion, float and the effects of pre-load.
	PRODUCT FAILS DURING WARRANTY PERIOD	insufficient attention to realistic specification and realistic manufacturing tolerances has resulted in a product that is not robust in the normal operating environment	tolerancing can be used to take into consideration long term factors such as temperature, chemical and humidity effects on dimensional stability
	PRODUCT MAINTENANCE AND REPAIR IS UNACCEPTABLY DIFFICULT, TIME CONSUMING AND COSTLY	insufficient attention to specifications and realistic manufacturing tolerances has resulted in flawed component interchangeability. Spares have to be customised in the field or the whole product returned to a fully equipped repair depot	in the same way that tolerance analysis techniques aid the 'design for assembly' of a product they deliver the same benefits when used for 'design for dis-assembly'