

Function of the Generators and CALFAC in PRICE H

The MCPLXS and MCPLXE Generators are used in PRICE H to develop industry average complexity values based on physical descriptors. With CALFAC values, these Generators can be calibrated to reflect an organization's manufacturing process.

MCPLXS can be determined by using either the Conceptual or Detail Generators. The Conceptual Generator provides a generic list from which the analyst can select Construction Methods, Function, Weight Range and Primary Material of the structural item. The analyst's selections determine the MCPLXS and is especially useful in estimating early concept stages when the end item is not well defined. See Figure 1.

	PRICE	Input
PLTFM	1.800	0.000
No of Parts:	5	0
Machin	150	0
Cal Factor:		0.000
Cal MCPLXS:		0.000
Calculated MCPLXS:		5.752

Figure 1

The Detail Generator allows the analyst to specify more definitive parts than the Concept Generator. Required inputs for the Detail Generator are the weight, precision tolerances, maturity process, material type, and part count for each structural component that comprises the end item (up to 20 components). Though the Detail Generator requires more explicit information to calculate MCPLXS, it is still possible to use it in early concept phases. Figure 2 demonstrates an example of the composite MCPLXS calculated for an enclosure modeled as two structural components (50% each), each with different precisions and part counts.

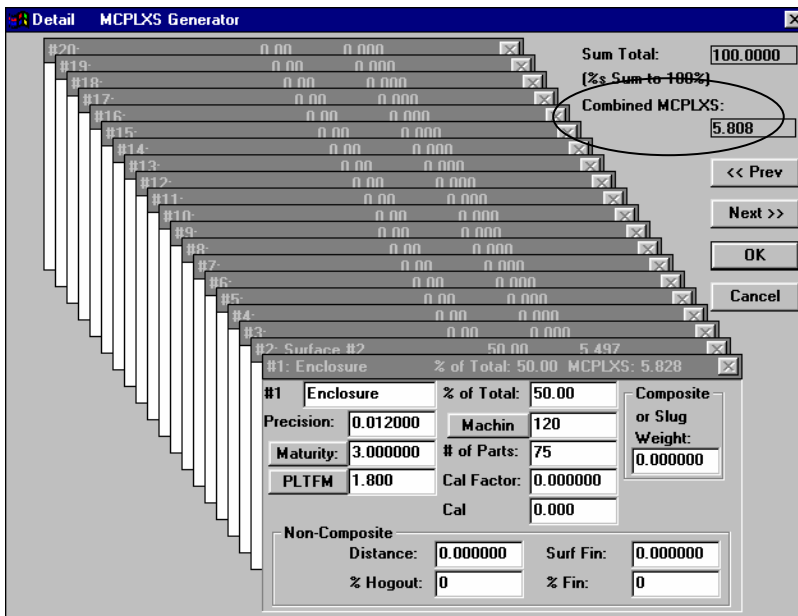


Figure 2

The MCPLXE Generator functions similarly to the MCPLXS Detail Generator: the electronic component mix is entered (summing to 100%) and an MCPLXE is calculated by the generator for the electronic item. See Figure 3.

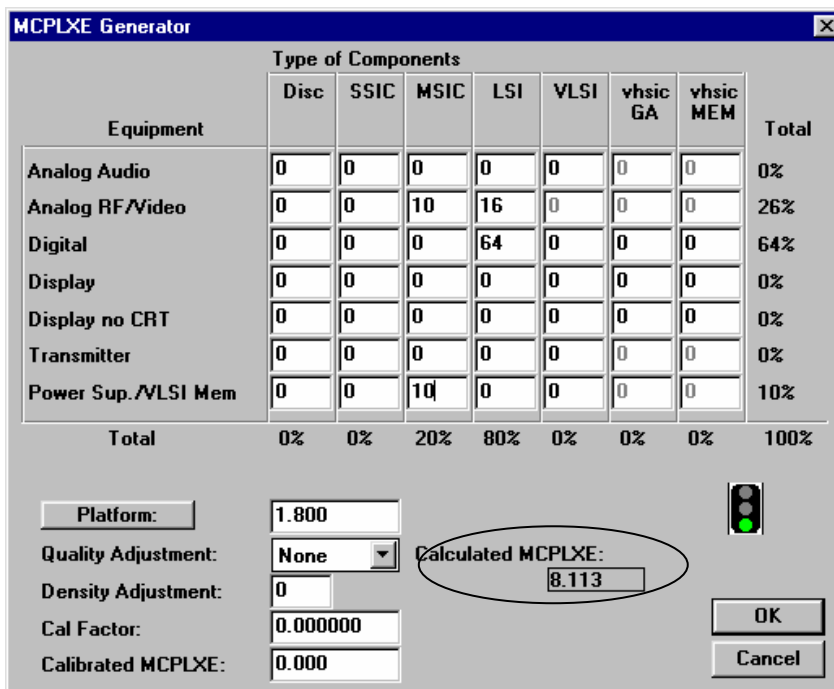


Figure 3

MCPLXS/E Generators are calibrated when historical data is available. First, the analyst should use the Generators to describe the historically produced item, and allow the complexities to be calculated. Then, by entering the complexities previously obtained through calibration into the last input box, the Calibration Factor, or CALFAC is determined. CALFAC measures the difference between the Model's generated complexity (industry average) and the input calibrated complexity (the organization's production processes).

The purpose of establishing CALFAC values is to calibrate the generators for future use when entering a new and un-calibrated item for an estimate. Enter CALFAC in the Generators when estimating a new but similar structural or electronic item. Similar means that some variance in part count, material type, or precision, and electronic component mix is acceptable. The Generators become calibrated when the industry average complexities are factored up or down resulting from the CALFAC input.

The range of reasonableness for CALFAC is .75 - 1.25. Any CALFAC beyond this range indicates that the description of the new item in the generator is too dissimilar from one you have produced in the past. Comparisons with other CALFACs for similar items will help determine its validity.

To demonstrate CALFAC, let's assume Figures 2 and 3 above represent the MCPLXS and MCPLXE Generators for a computer processor in a PRICE H estimate for Company X. Company X has already produced similar processors and calibrated their costs. The following calibrated complexities resulted: MCPLXS = 5.946 and MCPLXE = 8.395. Enter these calibrated complexities into the Generators and observe the CALFACs. See Figures 4 and 5 below.

Figure 4

Equipment	Type of Components							Total
	Disc	SSIC	MSIC	LSI	VLSI	vhsic GA	vhsic MEM	
Analog Audio	0	0	0	0	0	0	0	0%
Analog RF/Video	0	0	10	16	0	0	0	26%
Digital	0	0	0	64	0	0	0	64%
Display	0	0	0	0	0	0	0	0%
Display no CRT	0	0	0	0	0	0	0	0%
Transmitter	0	0	0	0	0	0	0	0%
Power Sup./VLSI Mem	0	0	10	0	0	0	0	10%
Total	0%	0%	20%	80%	0%	0%	0%	100%

Figure 5

These CALFACs can be used in the next estimate of a similar processor to calibrate the Generator. For example, an estimate is required for another processor, but the mix of electronic components is different from the previous production lot (Figure 6). The new percentage mix is entered in the MCPLXE Generator as is the CALFAC of 1.238377. This yields a calibrated complexity for the new processor (Figure 7).

The screenshot shows the MCPLXE Generator window with a table of component percentages and adjustment fields. The 'Calculated MCPLXE' field is circled and shows a value of 7.906.

Equipment	Type of Components							Total
	Disc	SSIC	MSIC	LSI	VLSI	vhsic GA	vhsic MEM	
Analog Audio	0	0	0	0	0	0	0	0%
Analog RF/Video	15	10	0	0	0	0	0	25%
Digital	0	0	65	0	0	0	0	65%
Display	0	0	0	0	0	0	0	0%
Display no CRT	0	0	0	0	0	0	0	0%
Transmitter	0	0	0	0	0	0	0	0%
Power Sup./VLSI Mem	0	10	0	0	0	0	0	10%
Total	15%	20%	65%	0%	0%	0%	0%	100%

Platform: 1.800
 Quality Adjustment: None Calculated MCPLXE: 7.906
 Density Adjustment: 0
 Cal Factor: 0.000000
 Calibrated MCPLXE: 0.000

Figure 6

The screenshot shows the MCPLXE Generator window with the same component percentages as Figure 6, but with the 'Cal Factor' field updated to 1.238377. The 'Calculated MCPLXE' field is circled and shows a new value of 8.182.

Equipment	Type of Components							Total
	Disc	SSIC	MSIC	LSI	VLSI	vhsic GA	vhsic MEM	
Analog Audio	0	0	0	0	0	0	0	0%
Analog RF/Video	15	10	0	0	0	0	0	25%
Digital	0	0	65	0	0	0	0	65%
Display	0	0	0	0	0	0	0	0%
Display no CRT	0	0	0	0	0	0	0	0%
Transmitter	0	0	0	0	0	0	0	0%
Power Sup./VLSI Mem	0	10	0	0	0	0	0	10%
Total	15%	20%	65%	0%	0%	0%	0%	100%

Platform: 1.800
 Quality Adjustment: None Calculated MCPLXE: 8.182
 Density Adjustment: 0
 Cal Factor: 1.238377
 Calibrated MCPLXE: 0.000

Figure 7

The MCPLXE Generator is now calibrated for the new estimate to reflect Company X's production process. Without CALFAC, the Model calculated 7.906 for MCPLXE which does not capture all of the technology, and therefore cost, associated with Company X's operations. Entering CALFAC of 1.238377 adjusts the complexity up to 8.182 which footprints this complexity to Company X.

CALFACs should be tracked by product, application, or technology type in a database so that they are readily available for future estimates.