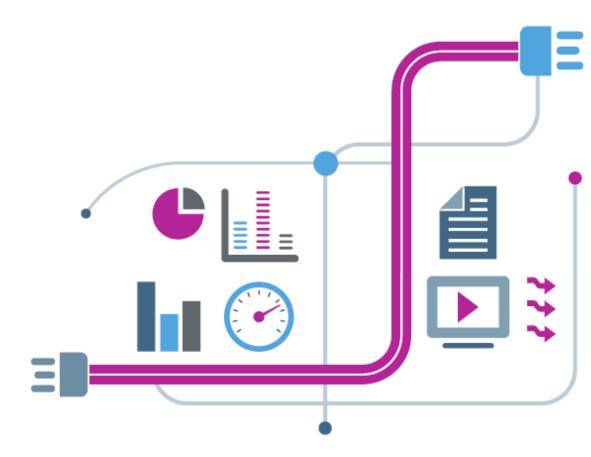# Contract Price Adjustment Formula

ELECTRICAL MACHINERY

Home & Exports

1 Electrical Machinery Formula

If the cost to the Contractor of performing his obligations under the Contract shall be increased or reduced by reason of any rise or fall in labour costs or in the cost of material the amount of such increase or reduction shall be added to or deducted from the Contract Price as the case may be. Provided that no account shall be taken of any amount by which any cost incurred by the Contractor has been increased by the default or negligence of the Contractor.

Variations in the cost of materials and labour shall be calculated in accordance with the following Formula

$$P_1 = \frac{P_0}{100} \left(5 + 47.5 \times \frac{M_1}{M_0} + 47.5 \times \frac{L_1}{L_0} \right) \tag{1}$$

$P_1 =$ Final Contract Price (*FOB price for Export Contracts*)

$P_0 =$ Contract Price at Date of Tender (*FOB price for Export Contracts*)

$M_1 =$ Average of Producer Price Index figures of Materials and Fuel purchased for Basic Electrical Equipment as provided by the Office for National Statistics commencing with the Index last provided before the *two-fifths* point of the Contract Period and ending with the Index last provided before the *four-fifths* point of the Contract Period.

$M_0 =$ Producer Price Index figure of Materials and Fuel purchased for Basic Electrical Equipment last provided by the Office for National Statistics before the date of tender.

$L_1 =$ Average of the BEAMA Labour Cost Index figures for Electrical Engineering published for the last *two-thirds* of the Contract Period.

$L_0 =$ The BEAMA Labour Cost Index figure for Electrical Engineering published for the month in which the tender date falls.

2 Explanatory Notes

2.1 Interim CPA Procedures

1. Payments on account of CPA shall apply where the Contract is subject to progress or interim terms of payment. All such claims will be calculated in an identical manner to the final CPA claim except that the contract completion date for this purpose will be the date to which the progress and/or interim payment is calculated and the contract value will be the cumulative total of progress and/or interim payments claimable to that date. Each CPA claim will have deducted from it the cumulative value of all previous CPA claims

2. Where any index figure is stated to be provisional or is subsequently amended, the figure shall apply as ultimately confirmed, or amended.

3. The Producer Price Index of Materials used in the Basic Electrical Equipment Industry shall be deemed to be published on the date of the Government publication Producer Price Indices

(reference MM22) in which price index figures in general appear for the month concerned.

The following footnotes must be added as appropriate according to whether the Contract excludes or includes erection.

2.2   For Contracts Excluding Erection

For the purpose of this formula:

1. Where separate portions of the Plant are ready for despatch at different times and are invoiced separately, the Contract Price shall, in relation to each such portion, be an appropriate proportion of the total Contract Price.

2. The Contract Period in respect of the Plant or any portion thereof shall be that period between the date of order and the date (the completion date) when the Plant or such portion is ready for despatch, or such shorter period (*ending at the completion date*) corresponding to the manufacturing cycle of the Plant or such portion as may be agreed in the Contract.

2.3   For Contracts Including Erection

For the purpose of this formula:-

1. The Contract Period shall be that period between the date of order and the date (*the completion date*) when the Plant or any portion thereof is taken over, or is ready for commercial use, whichever is the earlier, or such shorter period (*ending with the completion date*) corresponding to the manufacturing cycle of the Plant or such portion and the time required for erection thereof as may be agreed in the Contract.

2. The Plant shall be deemed to be ready for commercial use even though certain minor matters which do not affect the use for which the plant is intended remain to be completed.

3   Worked Example: Electrical Machinery

The sample calculation is based on the following contract data unless otherwise stated:

- Contract Price, $P_0 =$ £20,000

- Date of Tender, $T_0 =$ 20TH JAN 2005

- Date of Order, $T_1 =$ 14TH FEB 2005

- Completion Date, $T_2 =$ 12TH AUG 2008

Formula:

$$P_1 = \frac{P_0}{100} \left(5 + 47.5 \times \frac{M_1}{M_0} + 47.5 \times \frac{L_1}{L_0} \right) \tag{2}$$

3.1 Step-By-Step Approach - (Electrical Machinery)

	Symbol	Description	Value
A	P_0	Contract Price	£20,000.00
B	T_0	Tender or Cost Basis Date	20/Jan/2005
C	T_1	Date of Order	14/Feb/2005
D	T_2	Date when ready for despatch/taking over	12/Aug/2008
E	$(T_2 - T_1)$	Contract Period between **C** and **D** days	1275
F	$T_1 + \frac{1}{3}(T_2 - T_1)$	Date at one-third of Contract Period ($1/3 \times 1275 = 425$ days)	15/Apr/06
G	$T_1 + \frac{2}{5}(T_2 - T_1)$	Date at two-fifths of Contract Period ($2/5 \times 1275 = 510$ days)	09/Jul/06
H	$T_1 + \frac{4}{5}(T_2 - T_1)$	Date at four-fifths of Contract Period ($4/5 \times 1275 = 1020$ days)	01/Dec/07
I	L_0	Electrical Labour (1980=100) cost index at **B**	640.2
J	L_1	Average of Electrical Labour (1980=100) cost indices for period **F** to **D**	702.1
K	M_0	Basic Electrical Equipment index last published before Tender or Cost Basis Date (**B**)	113.3
L	M_1	Average Basic Electrical Equipment commencing with the index last published before date at **G** and ending with the index last published at **H**	135.9
M	$0.475\frac{L_1 - L_0}{L_0}$	Labour Adjustment	4.5894%
N	$0.475\frac{M_1 - M_0}{M_0}$	Material Adjustment	9.4616%
Q		Total Contract Price Adjustment (**M**+**N**)	14.0510%
R		Adjusted Contract Price (**Q**% of **A**)	£2,810.20
S	P_1	Final Contract Price(**R**+**A**)	£22,810.20

3.2 Algebraic Approach - (Electrical Machinery)

$$P_1 = \frac{P_0}{100}\left(5 + 47.5 \times \frac{M_1}{M_0} + 47.5 \times \frac{L_1}{L_0}\right) \tag{3}$$

$$= \frac{20000}{100}\left[5 + 47.5 \times \frac{135.87}{113.30} + 47.5 \times \frac{702.06}{640.20}\right] \tag{4}$$

$$= 22,810.00 \tag{5}$$

4 Interim Procedures in CPA

Some contracts, especially large ones are made up of units of sub-contracts. Each sub-contract has its own identifiable start and completion dates. In such situations CPA claims are made at different stages and the cumulative total is deducted from the final CPA claim. The payments received after the order date (T_1) but before the completion date (T_2) are called interim payments.

Interim payments are calculated in an identical manner to the final CPA claim except that the contract completion date for this purpose is the date to which the progress and/or interim payment is calculated. At the point of each claim, the contract value is the cumulative total of progress and/or interim payments claimable to that date. Each CPA claim is deducted from the cumulative value of all previous CPA claims.

4.1 Illustration

Assume that the contract with summary shown below has 4 interim claim when contract work reach amounts £5000, £10000, £15000 and finally £20000. Without showing the detail calculation of each claim, the interim payments can be summarised as shown in Table 3.

- Contract Price, $P_0 =$ £20,000

- Date of Tender, $T_0 =$ 6TH JAN 2005

- Date of Order, $T_1 =$ 12TH FEB 2005

- Completion Date, $T_2 =$ 21ST JUN 2006

Claim	Contract Value	Increase%	Interim Claim	Less Value of Previous		Total Payable
A	£5,000	3.6532	£ £182.66			£182.66
B	£10,000	4.9257	£ £492.57	£182.66		£309.91
C	£15,000	5.7233	£ £858.50	£492.57		£365.93
D	£20,000	7.2367	£ £1447.34		£858.50	£588.84
						£1,447.34

Table 3: Interim Payments

5 BEAMA Labour & Material Indices used in calculation

5.1 Electrical Labour: Jan 1980=100

	2005	2006	2007	2008
JAN	640.2(L_0)		685.9	718.2
FEB			694.3	721.1
MAR			696.3	726.3
APR		666.7	694.6	724.3
MAY		666.7	693.2	722.0
JUN		668.1	701.0	721.3
JUL		670.8	708.1	725.7
AUG		672.8	713.2	732.3
SEP		673.5	713.8	
OCT		674.2	716.8	
NOV		676.2	717.5	
DEC		678.3	718.2	

$$L_1 = Average(L_{apr06}..L_{aug08})$$

5.2 Electrical Materials: 2000=100

	2005		2006		2007
18th Jan	113.3(M_0)	24th Jan		23rd Jan	141.3
22nd Feb		21st Feb		20th Feb	137.9
22nd Mar		21st Mar		20th Mar	136.7
19th Apr		18th Apr		24th Apr	136.5
17th May		16th May	136.1	22nd May	132.7
21st Jun		20th Jun	134.9	19th Jun	133.5
19th Jul		18th Jul	133.4	17th Jul	134.0
16th Aug		22nd Aug	136.1	21st Aug	134.4
20th Sep		19th Sep	136.0	18th Sep	134.5
18th Oct		17th Oct	132.7	16th Oct	135.7
22nd Nov		21st Nov	135.4	20th Nov	139.3
20th Dec		19th Dec	140.4	18th Dec	

$$M_1 = Average(M_{16may06}..M_{20nov07})$$