

Material Price Variation application Guide for SAP ERP users

This comprehensive document aims to provide you with thorough understanding of Material Price variation application within SAP ERP.

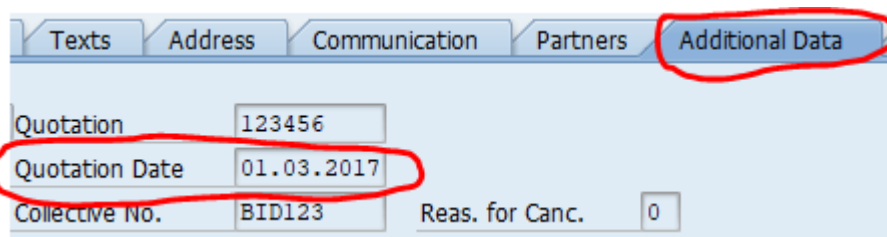
This application provides Price variation calculations for the following Equipment/Materials.

1. Power Transformer
2. Reactor
3. CT, PT & CVT
4. Breaker
5. Isolator (Metallic Portion Only)
6. Lightning Arrestor
7. Cables (Copper & Aluminum)
8. Insulators
9. MS Rod
10. Earth Flat (MS & GI of sizes: 50X8, 75X8 & 100X16)
11. Conductor
12. Earth Wire
13. Composite Insulators (SRC)
14. Transmission Towers
15. Bolts & Nuts For Tr. Towers.
16. Substation Structures

Before proceeding with the application, the user has to ensure that following important dates are updated in the purchase order in SAP.

Note:- All the screenshots shown in this document are for understanding purposes only. Please refer to your physical agreement for the actual dates.

- 1. Bid opening date / Bid closing date :** This date is considered as the base date for the calculation of PV (Price Variation) and will be mentioned in the price variation clause in the Physical agreement. Please check whether the date is updated in the 'Quotation Date' field under the 'Additional Data' tab in the Purchase Order header in SAP, as shown in the example case below



Texts	Address	Communication	Partners	Additional Data
Quotation	123456			
Quotation Date	01.03.2017			
Collective No.	BID123	Reas. for Canc.	0	

2. **Work Completion Date (Work End Date/Date of Contractual Delivery):** This date is the date by which work has to be completed as per the agreement conditions. This date plays vital roles in calculation of PV. This date is available in the 'Work End Date' field under the 'External PO/Work commencement Tab' in SAP PO header as shown below.

The screenshot shows the 'External PO/ Work Commencement' tab in SAP PO. The fields and their values are as follows:

Field	Value
BG Percentage	0.00
Work Commencement Date	12.02.2020
Work Completion Period	0009
Work End Date	11.11.2020
Reschedule Date/EOT(APT Delay)	16.02.2021
EOT(Vendor Delay)	17.03.2021
LS Agreement No	

In the above tab Following dates are available.

1. Work End Date : This is original work end date
2. Rescheduled Date/ EOT(APT Delay) : This is the date when work is rescheduled or extension of time is granted duly attributing the delay to APTRANSCO
3. EOT(Vendor Delay): This is the extension of time granted duly attributing the Delay to vendor.

The system will primarily consider the 'Work End Date.' However, if there is a 'Rescheduled Date/EOT (APT Delay)' available, this date will be considered as the revised work end date. The calculation of PV will be carried out in accordance with the agreement conditions. Specifically, the Inspection Offer Date will be compared with this date. If the Inspection Offer Date falls within this date range, a single calculation will be performed based on the 'Inspection Offer Date.' If the Inspection Offer Date is beyond this date range, two calculations will be conducted, taking into account the 'Date of Actual Delivery' and the 'Work End Date.' The calculation that is most advantageous to the Purchase Order placing authority will be considered

Note: For Purchase orders placed by P&MM wing 'Deliv. Date' available against each item will be considered as work end date.

S.. Itm	A	I	Material	Short Text	PO Quantity	O...	Deliv. Date	Net Price	Curr...	Per	O...	Matl Group	Plnt
1			6000000278	LDAT190*90*61084	1,000	TO	20.02.2021	1,000.00	INR	1	TO	M440	5105
2			6000000278	LDAT190*90*61084	1,000	TO	16.04.2021	1,000.00	INR	1	TO	M440	5105

In case of P&MM POs all items may not have same Work end date, as they place the Purchase order items in a phased manner. Hence Work end date is considered at item level.

- Base Date for Steel (Transmission Towers, SS Structures & Earth Flat):** This date is utilized in the calculation of Price Variation for transmission towers, following the APTRANSCO formula, as well as for SS structures and earth flats. This date is also accessible in the 'Mat.PV Base Date for Str./Steel' field under the 'External PO/Work Commencement Tab' in the SAP PO header, as illustrated below.

Partners		Additional Data		BG Data		External PO/ Work Commencement		Org. D...	
Work End Date		11.11.2020							
Reschedule Date/EOT(APT Delay)		16.02.2021		EOT(Vendor Delay)		17.03.2021			
LS Agreement No									
Srv. PV Base Date for Cement				Cement rate		0.00			
Srv. PV Base Date for Steel				Steel rate		0.00			
Mat. PV Base Date for Str./Steel		10.07.2020		Str.steel rate		0.00			

4. Inspection offer date:

This date is considered as the Date of Delivery (DOD) if it falls within the Contractual Delivery Date (DOCD). If it extends beyond the DOCD, both DOCD and DOAD (Date of Actual Delivery) are taken into account as potential DODs, and two Price Variation (PV) calculations will be performed. The DOD selected will be the one that is advantageous to the purchaser placing the order.

To input this date, it must be entered when creating an inspection lot (T-code: ZQM_INSP), as part of the process for providing dispatch instructions for materials, as illustrated in the screenshot below.

Purchasing Doc. 3000000825
Item 2
Schedule Line 1
Inspection Type
Short Text MS Rod 40mm
Inspection Lot 1000001128

MATERIAL CODE	MATERIAL DESCRIPTION	Quantity	Total Schedule Qty	U...	SUPPLIER NAME	LOCATION	Sub Vendor	Sub vendor Location	Inspection offer date
000000000070000793	MS ROD 40MM	800.000	1,000.000	KG	0000100067	HYD			11.11.2021

This date can be modified by the individual who created the lot using T-code: ZQM_SIDT. First, enter the inspection lot in the provided field and then press the execute button. The existing inspection offer date will be displayed. Enter the new date in the "To be updated with" field and then press the save button. After verification of dates proceed for PV calculation. Once the dates have been verified, proceed with PV calculation.

There are two T-codes for PV calculation: one for regular users and one for approving authorities.

ZMM_MATERIALPV:

This T-code is designated for end-users and is used for calculation and confirm of Price variation

ZMM_PR_VAR:

This T-code is employed for calculate, confirm, approval & posting. Authorization will be granted for the relevant authorities.

Price variation calculation Procedure for end users/Field users:

1. Access T-code 'ZMM_MATERIALPV'
2. You can check material/Equipment wise indices required to calculate PV and their availability in the system following these steps.
 - a. On the main screen, locate the 'Check Indices' button. This button allows you to verify the various indices required for calculating Price Variation concerning a material or equipment. It also provides information about their availability in the ERP system and their corresponding numbers.
 - b. To review the data available for each condition type (indices), click on the respective condition type. As an example refer to the screen shot below, which illustrates the PTR condition types and the data available for the condition type ZIM1 (Insulated material 10mm -IM). The screen shot indicates that rates have been maintained in the ERP system until August-2019.



CONDITION TYPES FOR SELECTED MATERIAL GROUP

Material Gr...	Cond.Type	Condition Description	No. of Mo...	No. of Mo...
M001	ZIM1	Insul.Matl 10mm - IM	2	1
M001	ZCU1	Copper Wirebar LME-C	2	1
M001	ZES1	CRGO ElecSteel Tr.ES	2	1
M001	ZTO1	Transformer Oil - TO	1	1
M001	ZWA1	CPI All india Avg- W	3	3
M001	ZIS1	Steel Plate 10mm- IS	2	1



THIS INDICATOR IS FOR ->Insul.Matl 10mm - IM

FROM DATE	TO DATE	RATE IN RS
01.08.2019	31.08.2019	536.36
01.07.2019	31.07.2019	597.00
01.06.2019	30.06.2019	537.31
01.04.2019	30.04.2019	580.00
01.03.2019	31.03.2019	510.00
01.01.2018	31.12.2018	529.00
01.07.2017	31.12.2017	510.59
01.06.2017	30.06.2017	492.59
01.05.2017	31.05.2017	480.03
01.04.2017	30.04.2017	481.33

- To proceed with the calculation of PV, enter the Purchase Order number in the designated field on the home screen. Next, select the item number from the list of options and then press the 'Execute' button as illustrated below.

Contract
 Purchase No

PO/Contract No. **Execute**
 PO ITEMS

Check Indices

Note: PV Circulars (IEEMA & CACMAI) can be downloaded from <https://www.aptransco.co.in>

Pur. Doc.	Item	Material	Short Text
3000000831	00001	70000131	7/3.15MM HTGS EARTH WIRE
3000000831	00002	70000197	GI Bolts and nuts
3000000831	00003	70000564	120kN Comp.Insulator
3000000831	00004	70000017	160 KN Disc Insulator

- After completing these steps, the screen will appear as shown below.

Price Variation For Material

Purchasing Doc. 3 Base Date Supplier AMARA RAJA POWER SYSTEMS LTD
 Material 120kN Comp.Insulator Plant Material Group

Calculate **Manual** **Confirm** **Send For App** **Reset** **Approve** **Post** **Report** **Print**

Material Doc.	Ma...	Base Date	Sch. Deliv...	Inspection...	Date of A...	Quantity	QTY in Tons(...)	PV Number	PO Price(Rs)	P&MM	CO...	40...	Price Payable(Rs.)	PV per Unit	Total PV
3000000146	1	09.02.2021	10.04.2021	05.06.2021	25.000	0.000			200.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	200.00	0.00	0.00

- The data will be displayed based on the goods receipt document. Select the necessary goods receipt document record and click the 'Calculate' button. Upon completion, the screen will appear as depicted below

Price Variation For Material


Purchasing Doc. 1 Base Date Supplier Alstom T&D India Limited
 Material MOOSE ACSR CONDUCTOR 54/7/3.53 Plant Material Group

Calculate **Manual** **Confirm** **Send For App** **Reset** **Approve** **Post** **Report** **Print**

Material Doc.	Ma...	Base Date	Sch. Deliv...	Inspection...	Date of A...	Quantity	QTY in Tons(...)	PV Number	PO Price(Rs)	P&MM	CO...	40...	Price Payable(Rs.)	PV per Unit	Total PV
3000004955	1	01.01.2018	28.10.2020	01.06.2019	24.09.2020	2.000	0.000	1000000536	10,000.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	126,925.98	5,000.00	10,000.00

6. In this context, all the necessary dates—such as the Base date, Scheduled Delivery Date (Work End Date), Inspection Offer Date (Vendor's Factory Inspection Offer Date), and Date of Actual Delivery (Consignee's Site check measurement Date)—must be cross-verified against the physical agreement and other pertinent documents, such as Dispatch Instructions. It is crucial to ensure the accurate alignment and consistency of dates across these documents to pre-empt any discrepancies or misunderstandings during the price variation calculation process. If any date discrepancy is identified, it is advisable to liaise with the relevant user responsible for furnishing the dates.

7. For a comprehensive calculation report, choose the desired record and click the 'Print' button. This action will generate the calculation report in PDF format, presenting a thorough breakdown of the calculations and pertinent information associated with the selected record. A sample report form is provided below for reference.



TRANSMISSION CORPORTION OF ANDHRA PRADESH LIMITED

PRICE VARIATION CALCULATION

PO Document No : 7000000360
Name Of Work :

Name of Vendor : 100033 Alstom T&D India Limited
Work Commencement Date : 01.01.2020
Work Completion Date : 28.10.2020
Material code & Description : 70000114 MOOSE ACSR CONDUCTOR 54/7/3.53
Base Date (BDT) : 01.01.2018
PV No : 1000000536
Status : RESET
PO Base Price in Rs. (Po) : 10,000.00
Material Group : M120

Price Payable(P) $Po + AlmF (Al - Alo) + SWF (St - Sto)$

Mat.Doc.No.	GR Qty	DOCD	Insp.offer dt.	DOAD	DOD for PV	PV/unit Val
5000004955	2.000	28.10.2020	01.06.2019	24.09.2020	24.09.2020	5,000.00

* DOCD - Date of Contractual Delvierv, DOAD - Date of Actual Delivery, DOD-Date of Delievry

Indices Code	Code Description	Applicable Month Prior to BDT	Applicable Month Prior to DOD
ZAL5	Aluminium LME - AL	01	01
ZST1	HTG Steel Wire-St/ A	01	01

Indices Code	(A) BDT :01.01.2018		(B) DOD : 24.09.2020	
	Value	CACMAI Ref	Value	CACMAI Ref
ZAL5	187,825.00	02.12.2017	270,000.00	01.08.2020
ZST1	101,750.00	02.12.2017	95,000.00	01.08.2020

Calculation : Based on The Date of Delivery(Check Measurement Date).

Cond. Type	Al.Factor	Steel Facator
MOOSE	1.4670	0.5370

BDT	DOD	Value of Po (Rs.)	Value of P (Rs.)	Value of PV(Rs.) = (P- Po)	PV(%)
01.01.2018	24.09.2020	10,000.00	126,925.98	116,925.98	1,169.26

DOD	Actual Difference Amt	Actual Diff %	Max % Limit for the + Ve PV	Effective PV	Effective PV%
24.09.2020	116,925.98	1,169.26	50	5,000.00	50.00

PV.NO : 100000536

PV ABSTRACT VIEW

SAP PO NO	ITEM NO	DOC NO	GR QTY	PV/UINT VALUE	PV AMOUNT	GST%	TAX AMOUNT	TOT PV AMOUNT
1	2	3	4	5	6 4 * 5	7	8 7 applied on 6	9 6 + 8
700000360	00001	5000004955	2.000	5,000.00	10,000.00	18	1,800.00	11,800.00

NOTE :- 1) Ceiling for maximum + PV is 50% of the PO value / Base value

Within this section, you will discover comprehensive details, encompassing relevant dates, the PV formula, and the indices required for calculations. It is crucial to cross-reference the indices with the Circulars communicated by IEEMA/CACMAI. These Circulars can be accessed through downloads from the APTRANSCO website. To navigate to the website, utilize the button provided on the home screen. Upon reaching the homepage, proceed to 'Document Downloads,' and within the 'Technical Manuals' section, you will find the download button. In the event that a circular is unavailable, it is recommended to consult the ERP core team members.

8. If the calculation is accurate, proceed by clicking the 'Confirm' button, and you will receive a unique PV number. Utilize this PV number in conjunction with the PO item and 103 documents when drafting correspondence for PV approval.
9. In the event that any discrepancies are identified after confirmation, you have the option to reset the calculation using the 'RESET' button.
10. When dealing with specific materials/equipment, it is necessary to choose the relevant wing (P&MM, Construction, or 400kV) to determine the source of the 'Work End Date.' In the case of the Construction or 400kV wings, this date is extracted from the header. Conversely, in the P&MM wing, it is derived from the item level. The P&MM wing adopts a phased approach for placing purchase order items, causing the 'Work End Date' to vary across items. In contrast, the Construction and 400kV wings maintain a consistent 'Work End Date' for all items, as provided in the Purchase Order header. Additionally, there is a variation in the number of months prior to the delivery date, particularly for cables, between the P&MM wing and the other wings.
11. GI steel (material group M440), is used as both substation structures and transmission towers. However, there exists a difference in formula between the Construction Wing and the 400kV Wing. Consequently, it's essential to choose the appropriate wing and formula for GI steel. The following selection options are available for this group.

400...	C-SS	C-LINE	APT	IEEMA
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

12. In the aforementioned selection, '400KV' denotes the 400kV Wing, 'C-SS' signifies the Construction Wing for substation structures, and 'C-Line' represents the Construction Wing for transmission lines. 'APT' stands for the APTRANSCO formula, while 'IEEMA' denotes the IEEMA formula.

13. For instance, if the Construction Wing opts for the IEEMA formula for transmission towers, then 'C-Line' and 'IEEMA' should be selected. For substation structures, both wings adhere to the APTRANSCO formula. However, a disparity exists in the date of delivery. The 400kV Wing adopts the Date of Inspection Offer Date, whereas the Construction Wing follows the Date of Actual Delivery. Hence for instance for calculation of PV for 400KV substation structures then '400KV' and 'APT' should select.

14. The table below illustrates the outcomes resulting from the selection of the wing and formula."

Si.NO	Selection option		System Action		
			Material	DOD	formula
1	400KV	APT	SS Structures	DOIO	APTRANSCO
2	400kV	IEEMA	Tr. Towers	DOIO	IEEMA
3	C-SS	APT	SS Structures	DOAD	APTRANSCO
4	C-LINE	APT	Tr. Towers	DOAD	APTRANSCO
5	C-LINE	IEEMA	Tr. Towers	DOIO	IEEMA

DOD: Date of delivery (Date considered by system for calculation of PV)

DOIO: Date of Inspection offer

DOAD: Date of Actual Delivery

NOTE:-

1. The 400KV wing consistently employs DOIO for calculating PV. Conversely, the Construction wing utilizes DOAD. For transmission towers, the 400KV wing adheres to the IEEMA formula, while Substation structures are assessed using the APTRANSCO formula.
2. The Construction wing employs the APTRANSCO formula for both transmission towers and SS structures. In unique circumstances such as world bank funding, they opt for the IEEMA formula with DOD set as DOIO.

15. Therefore, it is crucial to verify the physical agreement's conditions and then make the appropriate selection.

16. In most cases, there is no need select the wing or formula. In such instance, the section options are grayed out.

Price Variation calculation and approval procedure for Approving authority

- Access the T-code: ZMM_PR_VAR
- On the home screen, enter the Purchase Order number in the designated field. Next, select the item number from the provided list of options, and then click the 'Execute' button, as illustrated below.

Contract
 Purchase No

PO/Contract No.

PO ITEMS

Note : PV Circulars (IEEMA & CACMAI) can be downloaded from <https://www.aptransco.co.in>

Pur. Doc.	Item	Material	Short Text
3000000831	00001	70000131	7/3.15MM HTGS EARTH WIRE
3000000831	00002	70000197	GI Bolts and nuts
3000000831	00003	70000564	120kN Comp.Insulator
3000000831	00004	70000017	160 KN Disc Insulator

- If a Price Variation (PV) number has already been generated by an end user, the screen will appear as follows, with the status showing as "CONFIRM," as shown in the screenshots below.

Purchasing Doc. 4 Base Date Supplier Alstom T&D India Limited

Material 220 KV 3 Winding CVT (400KVSS) Plant Material Group

Material Doc.	Ma...	Base Date	Sch. Delv...	Inspection...	Date of A...	Quantity	QTY in Tons(...)	PV Number	PO Price(Rs)	P&MM	CO...	40...	Price Payable(Rs.)	PV per Unit
8000000605	4	15.01.2017	21.11.2019	20.11.2019	10.12.2019	5.000	0.000	1000000523	10,000.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15,934.41	5,000.00

Purchasing Doc. 700000348 4 Base Date 15.01.2017 Supplier 100033 Alstom T&D India Limited

Material 70000599 220 KV 3 Winding CVT (400KVSS) Plant 1040 Material Group M014

Calculate Manual Confirm Send For App Reset Approve Post Report Print

PO Price(Rs)	P&MM	CO...	40...	Price Payable(Rs.)	PV per Unit	Total PV value	GST%	TAX AMOUNT	TOT PV AMOUNT	Status
10,000.00	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15,934.41	5,000.00	25,000.00	18	4,500.00	29,500.00	CONFIRM

- d. In this "CONFIRM" status, review the comprehensive report in accordance with the terms and conditions of the purchase order. If you find any discrepancies in the dates and indices etc., make the necessary corrections. To recalculate the PV then reset the status using the RESET button and then press calculate button.
- e. If PV number is not generated by end user then press calculate button.
- f. If the PV report is accurate, circulate it along with PV circulars (PV circulars can be downloaded from APTRANSCO website) for approval. If system calculated PV per unit value is not acceptable then go for manual option. For this select the item and press "Manual" button and select Debit/credit form the dropdown as shown below and enter the PV per unit value in the "Manual Unit PV Value" field as shown in the following screen shot.

Purchasing Doc. 700000348 2 Base Date 15.01.2017 Supplier 100033 Alstom T&D India Limited

Material 70000597 132KV 0.25 CI CT 600-300/1-1-1 A Plant 1040 Material Group M011

Calculate Manual Confirm Send For App Reset Approve Post Report Print

40...	Price Payable(Rs.)	PV per Unit	Total PV value	GST%	TAX AMOUNT	TOT PV AMOUNT	Status	Manual Unit ...	Manual +/-	TOT MAM P...	GST %	MAN TAX A...
<input type="checkbox"/>	10,000.00	0.00	0.00	18	0.00	0.00				0.00		0.00

Debit Or Credit Indicator 2 Entries

Debit Or C	Short Descript.
DEBIT	Positive (+)
CREDIT	Negative (-)

- g. To approve the PV, whether manual or system-calculated, click "Send For Approval" and then "Approve."
- h. Since there is provision for both Debit and Credit, there's no need to provide manual PV item in the Purchase Order.
- i. Communicate the approved PV number, along with the total PV amount and other details such as PO item, quantity, and goods receipt document, to the concerned field unit for posting.

- j. After posting by filed paying units, a financial record will be appear in the purchase order history tab, as shown below.

Sh. T...	MVT	Material Docume...	It...	Posting Date	Quant...	Delivery cost quant...	O...	Amt.in loc.cur.	L.c...	Qty in OP...	DelCostQty (OPU...	Order Price U...	Amount	Crc
WE	105	4900003687	1	21.06.2023	40	0	NO	7,080,000.00	INR	40	0	NO	7,080,000.00	INR
WE	103	5000005166	1	21.06.2023	0	0	NO	0.00	INR	0	0	NO	0.00	INR
Tr./Ev. Goods receipt					40			NO = 7,080,000.00	INR	40		NO	= 7,080,000.00	INR
RE-L		5105601532	1	10.08.2023	40	0	NO	7,080,000.00	INR	40	0	NO	7,080,000.00	INR
Tr./Ev. Invoice receipt					40			NO = 7,080,000.00	INR	40		NO	= 7,080,000.00	INR
NB-L		5105601533	1	10.08.2023	40	0	NO	3,540,000.00	INR	40	0	NO	3,540,000.00	INR
Tr./Ev. Subs. deb. log. IV					40			NO = 3,540,000.00	INR	40		NO	= 3,540,000.00	INR