

ELECTRICITY GENERATING AUTHORITY OF THAILAND

SUPPLEMENTAL NOTICE NO. 2

INVITATION TO BID NO. TIWS-S-04(R)

SUPPLY AND CONSTRUCTION OF 230 kV STATIC VAR COMPENSATOR AT
KHLONG NGAE SUBSTATION

TRANSMISSION SYSTEM IMPROVEMENT PROJECT IN WESTERN AND
SOUTHERN REGIONS TO ENHANCE SYSTEM SECURITY

(TWO-ENVELOPE)

The attached Supplemental Notice shall be considered as part of the bidding documents No. TIWS-S-04(R).

As acknowledgement of receipt that all additions, deletions and revisions contained in this Supplemental Notice are incorporated into the above bidding documents, Bidder is requested to sign and return this acknowledgement via email address : Somsit.s@egat.co.th within three (3) days from the date of the announcement of this Supplemental Notice on <http://www4.egat.co.th/fprocurement/biddingeng/>.

The original acknowledgement which is manually signed in ink by a person or persons duly authorized shall be included in the proposal to be submitted on the bid opening date.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

November 1, 2019

ACKNOWLEDGEMENT

This undersigned Bidder hereby certifies that the additions, deletions and revisions set forth in this Supplemental Notice to Invitation to Bid No. TIWS-S-04(R) are incorporated as part of the above bidding documents and will be fully included in any bid which he may submit.

Signed _____

Title _____

Company _____

Date _____

ELECTRICITY GENERATING AUTHORITY OF THAILAND

SUPPLEMENTAL NOTICE NO. 2

INVITATION TO BID NO. TIWS-S-04(R)

SUPPLY AND CONSTRUCTION OF 230 kV STATIC VAR COMPENSATOR
AT KHLONG NGAE SUBSTATIONTRANSMISSION SYSTEM IMPROVEMENT PROJECT IN WESTERN
AND SOUTHERN REGIONS TO ENHANCE SYSTEM SECURITY

The following supplemental information is hereby given for the above described Invitation:

Volume I of IV

1. Section A : Invitation to Bid

Postpone the price and technical proposals submission date from November 21, 2019 to **January 22, 2020.**

2. Section H : Scope of Work

Replace pages H6 and H22 (Rev.1) of Scope of Work with the revised pages with H6 (Rev.1) and H22 (Rev.2) attached.

Volume II of IV

3. Section I : Ratings and Features

Replace pages I2-I4 of Ratings and Features with the revised pages with (Rev.1) attached.

Bid submitted must be in accordance with this Notice. Receipt of this Notice shall be acknowledged by the Bidder on the proposal included in the Bidding Documents in the space provided on page Part 3-C19, Article C-5 Supplemental Notices.

ELECTRICITY GENERATING
AUTHORITY OF THAILAND

..... November 1 , 2019

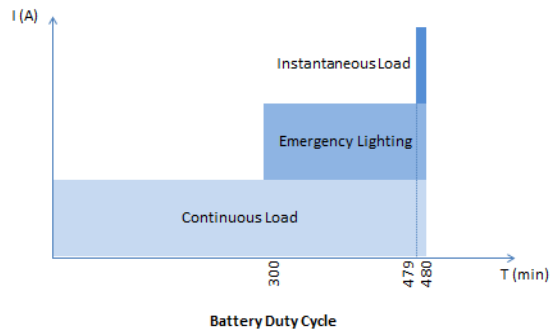
The other parameters used in the design shall be practical, reasonable, operational and conform to IEC or IEEE standards. The calculated continuous current rating shall be shown in the single-line diagram.

The Contractor shall design and select the type of metallic screen bonding. The induced voltage measured in every point of the metallic screen of the 33 kV XLPE cables shall be less than 60 V or shall conform to the IEC or IEEE standards.

If the single-point bonding is used, the Contractor shall design, supply and install the parallel grounding cable (PGCC). The type, insulation level and cross-sectional area of the PGCC shall be determined by the Contractor.

If the single-point bonding is used, Sheath voltage limiter (SVL) should be used to limit the voltage of the cable shields/sheaths during transient overvoltage conditions such as Lightning, Fault and Switching. The selection of the SVL rating shall be studied and submitted to EGAT for approval. The contractor shall supply and install related hardware such as link box, cable required for the SVL installation.

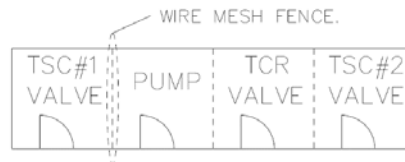
9. The calculation of sag and tension of the phase conductors and overhead ground wires (OHGW) shall conform to IEC standards or other internationally accepted standards and be submitted to EGAT for approval. The ambient temperature of 45°C shall be used for the calculation.
10. The Distribution Transformer Structure (DTS) shall be modified for installation of Distribution transformer and safety switch. The bottom part of safety switch shall be installed at least 1.00 meter above ground level.
11. The Contractor shall modify BS203 to suitable for operating fuse and disconnecting switch. (gang operate)
12. ***The AC power supply for SVC provided by EGAT normally fluctuates within the range +/-10%.***
13. Design, supply, and installation of the operating platform for safety during operating the grounding switch and during the manual operation and maintenance of the main disconnecting switch. The platform shall also be connected to the main switch, motor operating mechanism housing and the main blade operating pipe.
14. Design, supply, and installation of weatherproof instrument transformer junction boxes with terminal blocks, circuit breaker, and other equipment required for the termination of cables from CT's and VT's.
15. Design, supply, and installation of marshalling cubicle for the SVC transformers.
16. Design, supply, and installation of suspension insulator, post insulator and all miscellaneous hardware for insulator assembly.
17. Design, supply, and installation of miscellaneous hardware and conductor required for the complete installation.
18. The spare part of hardware for reactor in TCR shall be supplied by the Contractor.



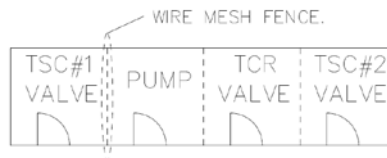
62. Design, supply, and installation of the UPS for backup power. The size of the UPS shall be designed by the Contractor to be capable of supplying power to the SVC cooling system and other essential load ***depending on the Contractor design*** for the SVC operation for at least 3 minutes. The UPS shall be located in the electrical room. If the battery of the UPS cannot be contained in the same enclosure, the battery of UPS shall be installed in the battery room.

Facility system

63. The SVC control building shall consist of control room, electrical room, meeting room (minimum size of meeting room is 3.0 m. x 5.0 m.), battery room, valve and pump room, storage room, inert gas room, toilet room, and other room if necessary. Access for maintenance shall be considered for room sizing design.
64. The minimum 1x1 m² observe window shall be designed by the contractor and provided for each TSC valve, TCR valve and pump room. For example in the figure below the contractor shall provide 4 window glasses.



65. Both of valve & pump room of the SVC building are in the same room and they are separated by wire mesh fence. The entrance of valve room and pump room shall be isolated. As figure below (for information only);



66. Design, supply, and installation of electrical system, air ventilation system, air conditioning system, lighting system, and fire alarm system for the SVC Control Building. Recommendations for the aforesaid systems are as follows:
- 66.1 All cable wiring systems shall conform to NEC and IEC standards or other internationally accepted standards.
- 66.2 The lamps for the lighting system of the SVC control building shall be LED type with all integral accessories, e.g. lamp holders, fixtures, reflectors, and etc. The Contractor shall provide drawings that show details for installation. The required intensity of the lighting installation shall be as Table 17;

**Power Transformer
Specification No. 101**



**Substation Electrical
Equipment Engineering Department**

Ratings and Features	Designed : 28/11/2011	Validated : [Signature]	Revision 1	Page 1/3
RF No. TX85SV3	Verified : 21/11/12	Approved : [Signature]	Dated : 21/11/12	

a. Type	Power-Transformer, 3 Phases, Outdoor, Oil Immersed	
b. Rated Frequency	50	Hz
c. Nominal System Voltage		
-HV Side	230	kV
-LV Side	xx	kV
-TV Side	-	kV
d. Max. Continuous System Voltage		
-HV Side	xx	kV
-LV Side	xx	kV
-TV Side	-	kV
e. Cooling Class	ONAN / ONAF / ONAF	
f. Rated Capacity		
-HV Side	150 / 200 / 250	MVA
-LV Side	150 / 200 / 250	MVA
-TV Side	-	MVA
g. Rated Voltage		
-HV Side	230	kV
-LV Side	xx	kV
-TV Side	-	kV
h. Insulation Level (BIL) of Winding		
-HV Side	1050	kV
-LV Side	xx	kV
-TV Side	-	kV
-Neutral	150	kV
i. Insulation Level (BIL) of Bushing		
-HV Side	1050	kV
-LV Side	xx	kV
-TV Side	-	kV
-Neutral	150	kV
j. Creepage Distance of Bushing		
-HV Side	≥ xx*	mm
-LV Side	≥ xx*	mm
-TV Side	≥ -	mm
-Neutral	≥ 280	mm
k. Connection of Windings		
-HV Side	Ground Wye	
-LV Side	Delta	
-TV Side	-	
l. Voltage Vector Group of Winding		
-HV Side and LV Side	Yd1	
-LV Side and TV Side	-	
-HV Side and TV Side	-	

Note xx : Optimized by Manufacturer and Complied with SVC RF No. SV83T3.
 * : Special Creepage Distance base on 25 mm/kV_{maxL-L}

**Power Transformer
Specification No. 101**



**Substation Electrical
Equipment Engineering Department**

Ratings and Features	Designed : ၂၀၁၆	Validated : <i>[Signature]</i>	Revision 1	Page 2/3
RF No. TX85SV3	Verified : <i>[Signature]</i>	Approved : <i>[Signature]</i>	Dated : 21/01/12	

m. Positive Sequence Impedance at Rated Voltage			
-HV Side to LV Side	xx %		(250 MVA Base)
-LV Side to TV Side	≥ -		(MVA Base)
-HV Side to TV Side	≥ -		(MVA Base)
n. Off Load Tap Changer			
	-		
o. On Load Tap Changer (Base on Rated Voltage)			
	-		
p. Temperature Class of Winding Insulation			
	120		
q. Winding Temperature Rise when Carrying Max. Continuous Rated Capacity			
- Winding Average	≤ 60		°C
- Winding Hottest Spot	≤ 75		°C
- Top Oil	≤ 60		°C
r. Average Audible Sound Pressure Level at Rated Voltage and Frequency			
-Without Fan	≤ 74		dB(A)
-With Fan	≤ 76		dB(A)
s. Surge Arrester, Station Class, Tank Mounted; HV Side (see detail in RF SA8Y11)			
-Qty. per Phase	1		
-Voltage Rating	192		kV
LV Side (see detail in RF -)			
-Qty. per Phase	1		
-Voltage Rating	xx		kV
TV Side (see detail in RF -)			
-Qty. per Phase	-		
-Voltage Rating	-		kV
t. Bushing Current Transformer			
HV Side			
-Qty. per Phase	xxx		
-Accuracy Class	xx		
-Ratio	xx		
LV Side			
-Qty. per Phase	xx		
-Accuracy Class (Core #1)	xx		
-Accuracy Class (Core #2)	xx		
-Ratio (Core #1)	xx		
-Ratio (Core #2)	xx		
TV Side			
-Qty. per Phase	-		
-Accuracy Class	-		
-Ratio (Inside Delta)	-		
-Ratio (Outside Delta Core #1)	-		
-Ratio (Outside Delta Core #2)	-		

Note xx : Optimized by Manufacturer and Complied with SVC RF No. SV83T3.
xxx : Optimized by Manufacturer. (Qty. per Phase not less than 2)

**Power Transformer
Specification No. 101**



**Substation Electrical
Equipment Engineering Department**

Ratings and Features	Designed : 28/5/17	Validated : [Signature]	Revision 1	Page 3/3
RF No. TX85SV3	Verified : 2/6/18	Approved : [Signature]	Dated : 21/02/18	

- u. Parallel Operation Requirement (between HV and LV side) [x] Not Required
[] With Future Transformer or Each Other in the same Substation
[] With Existing Transformer in accordance with Dwg. No. _____ attached
- v. Max. Permissible Shipping Weight 150 tons (See Note1)
- w. Max. Permissible Shipping Dimension 3.5 m × 10.0 m × 4.2 m (W×L×H) (See Note1)
- x. Limitation of Transformer Foundation
 -Foundation Plan Dimension -
 -Max. Permissible Load (Total Weight of Transformer) -
 -Max. Eccentric Distance of the Center of Gravity from the Foundation Plan's Center -
- y. Max. Overall Dimension -
- z. Applicable Standards IEEE Std. C57.12

- Note : 1. Exception to the weight and dimension limitation stated in the article : Clearance and Weight Limitations.
2. The positive sequence impedance from HV side to LV side shall have a tolerance of ±5% of specified value.
3. The transformer shall be designed to withstand the following fault occurrence rates with the expected transformer life of 25 years.

<u>Current Intensity</u>	<u>Times/Year</u>
100 %	1
50 %	20
20 %	100

- Where the 100 % current intensity means the maximum value of the short circuit current.
4. The dielectric test shall be tested according to maximum system voltage at 362kV on IEEE Std. C57.12.