



भारत हैवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
पारेषण व्यापार समूह, नोएडा (उ.प्र.) / TBG, Noida (UP)

Ref: TBMS/2019/EOI/STATCOM
Date: 03.10.2019

EXPRESSION OF INTEREST (EOI)

Bharat Heavy Electricals Limited (BHEL), a leading Indian Engineering and Manufacturing Enterprise engaged in Engineering, Manufacturing of products and execution of turnkey projects in the field of Power Generation and Transmission invites EOI for formation of Appropriate Business Association to jointly address forthcoming STATCOM projects Turnkey Business Opportunities in India.

for further details please visit: www.bhel.com



DISCLAIMER

All information contained in this EOI provided / clarified are in good interest and faith. The information contained in this Expression of Interest document or subsequently provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of BHEL, is provided on the terms and conditions set out in this EOI and such other terms and conditions subject to which such information is provided.

The purpose of this EOI is to provide interested parties with information that may be useful to them in the formulation of their application for qualification and subsequent selection pursuant to this EOI. This EOI is not an offer by BHEL to the prospective Applicant(s) or any other person. This EOI is neither intended nor shall it be construed as creating or requiring any on-going or continuing relationship or commitment with any party or person.

Though adequate care has been taken in the preparation of this EOI document, the interested firms shall satisfy itself that the document is complete in all respects. The information is not intended to be exhaustive. Interested Agencies are required to make their own enquiries and assumptions wherever required. Intimation of discrepancy, if any, should be given to the specified office immediately. If no intimation is received by this office by the date mentioned in the document, it shall be deemed that the EOI document is complete in all respects and firms submitting their interest are satisfied with the EOI Document in all respects.

BHEL also reserves the right to withhold or withdraw the process at any stage. Neither BHEL nor its employees and associates will have any liability any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this EOI document or any matter deemed to form part of this EOI document, the information and any other information supplied by or on behalf of BHEL. BHEL accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance/use of any statements/information contained in this EOI by the Applicant. BHEL is not making any representation or warranty, express or implied, as to the accuracy or completeness of any information/statements made in this EOI.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Application including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by BHEL or any other costs incurred in connection with or relating to its Application. All such costs and expenses will remain with the Applicant and BHEL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Application, regardless of the conduct or outcome of the EOI.



Ref: TBMS/2019/EOI/STATCOM
Date: 03.10.2019

Invitation for Expression of Interest for formation of appropriate association to jointly address forthcoming turnkey STATCOM Business opportunities India.

This Expression of Interest (EOI), BHEL seeks response from Qualified OEMs, who are willing to be associated with BHEL through a business sharing or any other collaboration agreement basis, to execute forthcoming STATCOM Projects in India.

About Bharat Heavy Electricals Limited (BHEL)

BHEL is a leading state owned company, wherein Government of India is holding 63.17% of its equity. BHEL is an integrated power plant equipment manufacturer and one of the largest engineering and manufacturing organization in India, catering to the core infrastructure sectors of Indian economy viz. energy, transportation, heavy engineering industry, defense, renewable and non-conventional energy.

The energy sector covers generation, transmission and distribution equipment for thermal, gas, hydro, nuclear and solar photo voltaic. BHEL has been in this business for more than 50 years and BHEL supplied equipment's account for more than 59% (approx. 190 GW) of the total thermal generating capacity in India. BHEL is also listed in both major Indian stock exchanges.

BHEL has 16 manufacturing units, 4 power sector regions, 8 service centers, 3 overseas offices and 15 regional offices besides host of project sites spread all over India and abroad. The annual turnover of BHEL for the year 2018-19 was around USD 4.12 billion.

BHEL's highly skilled and committed manpower of approx. 35000; state-of-the-art manufacturing facilities and latest technologies helped BHEL to deliver a consistent track record of performance since long. To position leading state owned companies as Global Industrial giant and as a recognition for their exemplary performance, Government of India categorized BHEL as "Maharatna Company" in 2013.

Our ongoing major technology tie-ups include agreements with GE Technology GmbH, Switzerland (for Once through Boilers and Coal Pulverisers); Siemens, Germany (for Steam Turbines, Generators and Condensers); Metso Automation Inc., Finland (for Control & Instrumentation); MHI, Japan (for Pumps); MHPS, Japan (for Flue Gas Desulfurization Systems); Vogt Power International, USA (for HRSG); OTO Melara, Italy (for SRGM); GENP, Italy (for Compressors); TLT Turbo GmbH, Germany (for Fans), Sheffield Forge Masters International, UK (for Forgings); ISRO, India (for space grade li Ion cells); BPE, USA (for SCR System), NANA O, Korea (for SCR Catalyst); HLB Power Co. Ltd., Korea (for Gates and Dampers) and Kawasaki Heavy Industries Ltd., Japan (for Stainless Steel Metro Coaches & Bogies).

More details about the entire range of BHEL's products and operations can be had by visiting our web site www.bhel.com.



About Transmission Business Group

Transmission Business Group (TBG) of BHEL is a well-established player in the field of Power Transmission with some major products and systems in its range of manufacture and supply. The Group undertakes projects on turnkey basis covering the complete Engineering, Procurement, Supply, Construction, Commissioning and after sales service for AC switchyards/substations (AIS/GIS) up to 765kV, HVDC Converter Stations, Reactive Power Compensation Schemes. The Group has capability to conduct System studies as required for above business.

Background of EOI

In the recently concluded 5th Meeting of Northern Region Standing Committee on Transmission (NRSCT), CEA, which was held on 13th September-2019 (MOM available on CEA website), to evacuate 8.1GW RE Power from Bhadla (Rajasthan), Transmission projects (AIS, GIS) in multiple substation packages are planned to be executed in the next 2 years.

Apart from the above transmission projects, to take care of the dynamic reactive power requirement, provision of EHV rated STATCOMs are also envisaged in the evacuation network. Accordingly, technical approval has been accorded by CEA for installations of STATCOM at the following identified sites/locations:

Sl. No.	Site / Locations	Project Rating
A	Fatehgarh – II	± 600 MVar, 4x125 MVAR MSC , 2x125 MVar MSR
B	Bhadla – II	± 600 MVar, 4x125 MVAR MSC , 2x125 MVar MSR
C	Bikaner – II	± 300 MVar, 2x125 MVAR MSC , 1x125 MVar MSR

It is understood that in the most likely scenario, in line with GOI's Public Procurement (Preference to Make in India) policy already in place, there is most likely to stipulate a minimum quantum of indigenous supplies from India for the major equipment like Interconnecting Transformers, IGBT modules, Controls, etc. for the STATCOM projects.

Considering above, and on the basis of BHEL's Design, Engineering & manufacturing capabilities in the EHV Transmission domain, like EHV Transformers, Instrument Transformers, Control Protection & SCADA, Valves (Thyristor & IGBT based) and associated system (eg: valve cooling system, etc), Power Capacitors, insulators (Porcelain, Composite), LV & MV Switchgear backed with BHEL's vast EPC experience in the AIS/GIS/HVDC/FACTS domain, BHEL intends to have association (on EPC basis) with a leading company having requisite experience (in technology domain) in STATCOM projects, thereby generating synergy through domestic manufacturing and sourcing by BHEL for the purpose of increasing the value addition in India. Thus the association will also have increased chances of success in the forthcoming STATCOM opportunities.

The Selection Process:

Final selection of the interested party/organisation for pre-bid tie up will be based on the following:



1. Meeting the minimum QR (Technical & Financial) as laid down in subsequent paras of this EOI document. AND
2. Party offering Maximum scope (against Annexure-A) out of the total responses received will be given highest weightage during evaluation. The Annexure-A should be filled with the offer for initial-best scopes offered to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding with the qualified/selected party. To fill-up Annexure-A please refer relevant NOTES and other remarks as contained therein.

Qualification Requirements (QR)

Organisation, desirous of submitting their response against this EOI should meet the following criteria(s):

A. Technical Criteria

1.0 TECHNICAL EXPERIENCE

- 1.1 The bidder must have executed a STATCOM Project in network of power utility, controlling 132 kV or above system voltage (as point of common coupling) having rating of STATCOM portion, excluding fixed, mechanical switched or power-device switched inductors and capacitors, of at least ± 50 MVAR ('-' indicates inductive and '+' indicates capacitive capacities) as a Prime Contractor*, wherein the scope involves engineering, supply, erection, testing and commissioning of STATCOM, and the above project must be in # **satisfactory** operation for at least 2 (two) years as on the originally scheduled date of bid opening.

Note (*): In case of works executed under a contract that had been awarded on a Joint Venture, the experience of individual Joint Venture Partner shall be considered limited to the scope of that partner under the contract.

Note (#): Satisfactory operation means Certificate issued by the employer certifying the operation without any adverse remark.

In case, Bidder is a holding company, the technical experience referred to in Clause 1.1 above shall be of that holding company only (i.e. excluding its subsidiary / group companies). In case Bidder is a subsidiary of a holding company, the technical experience referred to in Clause 1.1 above shall be of that subsidiary company only (i.e. excluding its holding company).

- 1.2.1 In case the Bidder is a foreign entity, Bidder must have registered either a Subsidiary / Group Company or a Joint Venture Company (JVC) in India as per Companies Act 1956 of India within six months from the date of Notification of Award (NOA).
- 1.2.2 The above Subsidiary/ Group Company or Joint Venture Company (JVC) shall establish manufacturing facilities/works and would supply at least one STATCOM.
- 1.2.3 For the offered STATCOM as indicated above, the Semiconductor based Power Modules must be manufactured/assembled and tested at the Indian manufacturing facilities/works.



1.2.4 Bidder shall furnish an undertaking toward the clause 1.2.1, 1.2.2 & 1.2.3 as mentioned above (as per enclosed format at sl. no. 19 or 20 of Section-VI, Vol.-I of the bidding document) along with the bid, to guarantee quality, timely supply, performance and warranty obligations for five (5) years for the STATCOM component to be supplied from the works in India.

1.3 Further, in case of foreign bidder, if bid is submitted as an Individual Firm or in a Joint Venture without any Indian Entity as a Partner, the Bidder should propose, in its Bid, an Indian Associate for executing the On-Shore Supply and On-Shore Services Contract, as per the provisions of bidding documents. The proposed Indian Associate must have erected, tested and commissioned at least one (1) AIS substation having minimum four (4) Circuit Breaker equipped bays of 345kV or above voltage level during the last seven (7) years and these bays must be in # **satisfactory** operation as on the date of bid opening as mentioned above.

Note (#): Satisfactory operation means Certificate issued by the employer certifying the operation without any adverse remark.

B. Financial Criteria

1. Net Worth for last 3 financial year should be positive.
2. Minimum Average Annual Turnover# (MAAT) for last three (3) years should be US\$ 91.6 Million or INR 6533.828 Million or equivalent. (#Note: Annual total income as incorporated in the profit & loss accounts except non-recurring income e.g. sale of fixed assets.)
3. Shall have liquid assets (L.A.) or/and evidence of access to or availability of credit facilities of not less than US\$ 15.27 Million or INR 1089.2 Million or equivalent.

In case bidder is a holding company, the Financial Position criteria referred to in clause 2.0 above shall be that of holding company only (i.e. excluding its subsidiary / group companies). In case bidder is a subsidiary of a holding company, the Financial Position criteria referred to in clause 2.0 above shall be that of subsidiary company only (i.e. excluding its holding company).

The EOI Proposal Documentation

Interested companies who wish to join hands with BHEL for forming a suitable association to address forthcoming STATCOM project business in India may submit their Expression of Interest by **3.00 pm on 25th October, 2019**. Expression of Interest should be accompanied by:

- The proposal for association clearly stating nature of association or Partnership proposed. It is for information that on Partnership front, BHEL meets clause no. 1.3 under heading "A. Technical Criteria".
- Details / documents on company profile, Certificate of Registration or Incorporation.
- Products and Services offered - Technical features/ product range.
- Reference list of relevant project experience in support of QR



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- Performance certificates on STATCOM projects issued by end user matching requirements as specified under para "Technical Criteria" of this EOI Notice
- Audited annual financial reports for at least last three years along with their authenticated translations in English including proof of meeting specific conditions as specified under para "Financial Criteria".
- Duly filled up Annexure-A containing initial-best scopes offered to BHEL.

The proposal complete in all respect should be marked to:

Directly Marked to: (Hard+Soft)	Copy Marked to (Soft)
Vishal S Naidu Sr. Manager (Marketing & Proposal Engg) Tel: +91-120-6748138 Mob: 9968-99-2545 e-mail: vsnaidu@bhel.in	Parthasarathi Das Additional General Manager (Marketing & Proposal Engg) Tel: +91-120-6748138 Mob: 9810-40-1728 e-mail: pdas@bhel.in Fax No: +91-120-6748579

Please send a hardcopy of the EOI document to the following Office address:

Transmission Business Group
Bharat Heavy Electricals Limited
Tower –A, 5th Floor, Advant Navis IT Business Park,
Plot No. 7, Sector-142,
Noida – Greater Noida Expressway, Noida – 201305 (UP)

EoI Ref: TBMS/2019/EoI/STATCOM Dated: 03.10.2019

Annexure-A: Offer for initial-best scopes to BHEL

Note: Please Mark "Y" Under Heading OEM or BHEL against each of the line items with heading "Item Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.		SUPPLY		ETC		CIVIL WORKS		Remarks on scope allocation (if any)
		OEM	BHEL	OEM	BHEL	OEM	BHEL	
Sl. No.	Item Description [Tentative]		Local F&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL					Type tests - responsibility as per supply scope matrix. Training on System Engg. Project Engg, O&M - responsibility as per supply scope matrix.
Part-A	MAIN ITEMS (As per Technical Specification)							
1.0	STATCOM including Valve, valve base electronics, DC capacitor, series reactor and all accessories							
1.1	Valve complete with all accessories for STATCOM Unit							
1.2	Series reactor for STATCOM Unit							
1.3	Wall Bushings							
1.4	Prefabricated container for housing Valve, relay & control panels, valve cooling system etc. (If applicable)							
2.0	Mechanically switched Reactor bank (3-ph) including all accessories (MSR Branches)							
2.1	Air Core Reactor							
3.0	Mechanically switched Capacitor bank(3-ph) including all accessories (MSC Branches)							
3.1	Series Air core reactor							
4.0	STATCOM Valve cooling system							
4.1	Cooling system pump skid							
4.2	Water to air Heat Exchanger							
4.3	Cooling system pipes, valves etc.							

Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.		OEM	BHEL	OEM	BHEL	OEM	BHEL	Type tests - responsibility as per supply scope matrix.
Sl. No.	Item Description (Tentative)	OEM	BHEL	OEM	BHEL	OEM	BHEL	Training on System Engg. Project Engg., O&M - responsibility as per supply scope matrix.
5.0	Bus work							
5.1	MV Bus work Including Neutral Grounding Transformer (if applicable), Surge Capacitor, Surge Arrestors Switchgear, Post Insulators, Bus Bar Material, Clamps, Connectors, Earthing Material etc. including all accessories.		Local F&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL					
6.0	Special Tools and Tackles as per Technical Specification							
7.0	Mechanical station services & auxiliaries systems							
7.1	Air conditioning system							
a)	Air conditioning system for STATCOM Station Buildings							
8.0	Substation Operation & Maintenance T&P as per Technical Specifications							
Part-B	MAIN 400kV Switchyard Equipment/ systems							
1.0	Mandatory Spares for STATCOM & 400 kV Bay Equipment							
1.1	STATCOM Valve							
1.2	Module for Control, Protection, Communication, Annunciation, Alarm, SCADA & Monitoring, Disturbance Recorder including Power Supply Module							
1.3	Valve Hall Equipment							
1.4	MSR Bank							
1.5	MV AC System							
1.6	Cooling Water System							

Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.		OEM	BHEL	OEM	BHEL	OEM	BHEL	Type tests - responsibility as per supply scope matrix.
Sl. No.	Item Description (Tentative)	OEM	BHEL Local F&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL	OEM	BHEL	OEM	BHEL	Training on System Engg. Project Engg., O&M - responsibility as per supply scope matrix.
Part-A	MAIN ITEMS (As per Technical Specification)							
1.0	STATCOM including Valve, valve base electronics, DC capacitor, series reactor and all accessories							
1.1	MV Switchgear for STATCOM Unit							
1.2	Instrument Transformers for STATCOM Unit							
1.3	Bus work for STATCOM Unit							
2.0	Mechanically switched Reactor bank (3-ph) including all accessories (MSR Branches)							
2.1	MV Switchgear							
2.2	Instrument Transformers							
2.3	Bus work for MSR							
3.0	Mechanically switched Capacitor bank(3-ph) including all accessories (MSC Branches)							
3.1	Capacitor Bank							
3.2	MV Switchgear							
3.3	Instrument Transformers							
3.4	Bus work for MSC							
4.0	Coupling Transformer Bank (comprising of 3 single phase main unit and one single phase unit as spare)							
4.1	Coupling Transformer Single phase unit							
4.2	Insulating oil for above							
4.3	Online Dissolved Gas and Moisture Analyser (As per Technical Specification)							
4.4	On-line insulating oil drying system (As per Technical Specification)							
5.0	STATCOM STATION Control, Protection, Monitoring & Automation system (As per Specification)							

Description' based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.		OEM	BHEL	OEM	BHEL	OEM	BHEL	Type tests - responsibility as per supply scope matrix.
Sl. No.	Item Description (Tentative)	OEM	BHEL Local R&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL	OEM	BHEL	OEM	BHEL	Training on System Engg. Project Engg., O&M - responsibility as per supply scope matrix.
6.0	Bus work							
6.1	MV Bus work Including Neutral Grounding Transformer (if applicable), Surge Capacitor, Surge Arrestors Switchgear, Post Insulators, Bus Bar Material, Clamps, Connectors, Earthing Material etc. including all accessories.							
6.2	HV Bus work including conductor, Post Insulator, insulator hardware, hardware string, spacers, clamps, connectors, earthing material etc. including all accessories to connect STATCOM Station coupling Transformer to take off gantry of 400 kV switchyard.							
7.0	Erection hardware items & other miscellaneous item for STATCOM Station installation (if not covered under any head)							
8.0	Lattice & pipe structures for STATCOM Station installations							
8.1	Lattice Structures							
8.2	Pipe Structures							
9.0	Special Tools and Tackles as per Technical Specification							
10.0	Erection Hardware (400 kV Switchyard up to take of gantry)							
10.1	Insulator strings, Disc Insulators, Hardware, Spacers, conductor(s), bus-bar material, cable trays, Bay MB, clamps, connectors including equipment connectors, junction box, earth wire, earthing material, insulating mat, risers, auxiliary earth mat (excluding main earth mat), pipes for equipment & lighting, all accessories etc. for the following							

Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.						
Sl. No.	Item Description (Tentative)	OEM	BHEL	OEM	BHEL	OEM
			Local F&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL			
12.16	DG Set					
12.17	LT Cabling along with associated like clamps, glands, lugs and straight joints etc.					
a)	1.1kV Grade Power Cables (PVC/XLPE insulated)					
b)	1.1kV Grade Control Cable (PVC insulated)					
13.0	40 mm MS rod for Earth mat					
14.0	Mechanical station services & auxiliaries systems					
14.1	Fire protection system					
a)	Fire protection system (HVV spray & Hydrant system) for Coupling transformers					
b)	Hydrant system for MSR					
c)	Hydrant system for MSC					
d)	Hydrant system for STATCOM					
d)	Hydrant system for STATCOM Station buildings					
e)	Portable type fire extinguisher for switchyard panel room					
f)	Smoke detection system for STATCOM building and switchyard panel room					
14.2	Air conditioning system					
a)	Air conditioning system for STATCOM Station Buildings					
b)	Air Conditioning system for switchyard panel room					
14.3	Castle Key Interlock System for STATCOM Station as per Tech Spec.					
Part-B	MAIN 400KV Switchyard Equipment/ systems					
1.0	Circuit breakers (3 Phase)					
(a)	2000A, 50KA without closing resistor (3-phase)					
(a1)	Support Structure for above Circuit Breaker					
(a2)	Control Switching device for above Circuit Breaker					

Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.		OEM	BHEL	OEM	BHEL	OEM	BHEL
Sl. No.	Item Description (Tentative)	OEM	BHEL Local F&I and Other Incidental Services (including domestic port clearance etc.) - by BHEL	OEM	BHEL	OEM	BHEL
							Type tests - responsibility as per supply scope matrix.
							Training on System Engg. Project Engg., O&M - responsibility as per supply scope matrix.
2.0	Instrument Transformer (1 Phase)						
2.1	CT 3000/1; 6 cores; 50kA with 120% extended current rating (1-phase)						
2.2	400 kV PT						
3.0	Isolators with support Insulator						
(a)	2000A, 50KA, Isolator with one E/S (3-Phase)						
(b)	2000A, 50KA, Isolator with one E/S (1-Phase)						
(c)	2000A, 50KA, Isolator without E/S (1-Phase)						
4.0	Surge Arrester (Gapless-336kV) (1-phase)						
5.0	Control & Relay Panels						
5.1	Circuit Breaker Relay Panel						
a)	With out Auto Reclose						
b)	Augmentation of existing Bus bar protection scheme for complete diameter						
6.0	Substation automation system						
6.1	Augmentation of existing Substation automation system for the ST/ATCOM Station and associated 3 nos. 400kV bays under present scope, up gradation of hardware and software and updating of database etc. for completion of SAS augmentations per technical specification						
7.0	Structure						
7.1	Pipe Structure(Standard Structures for 400kV Equipment mentioned below)						
a)	CT (1 phase)						
b)	ISO (3 phase.)						
c)	ISO (1 phase.)						
d)	SA (1 phase)						
e)	PT (1-Ph)						

Description" based on your proposal for initial best scope allocation to BHEL for all the sites, which may only increase during detailed joint working, post tie-up and before bidding.						
Sl. No.	Item Description (Tentative)	OEM	BHEL	OEM	BHEL	Type tests - responsibility as per supply scope matrix.
7.2	Foundation Bolts					
a)	28mm dia					
8.0	Electrical auxiliaries supply systems (from existing ICT Tertiary)					
8.1	Auxiliary Service transformer 33 kV / 433 V; 630 kVA					
8.2	66kV Circuit breaker (3-Phase)					
8.3	66kV Isolator without earth switch (3-phase)					
8.4	66kV Current transformer (1-phase)					
8.5	66kV Potential transformer (1-phase)					
8.6	Support structures for above 66kV Switchgear equipment					
9.0	Sub-station Operation and Maintenance T&P as per Technical Specification					
11.0	Mandatory Spares for STATCOM & 400 kV Bay Equipment					
11.1	Module for Control, Protection, Communication, Annunciation, Alarm, SCADA & Monitoring, Disturbance Recorder including Power Supply Module					
11.2	STATCOM Protection system Relays.					
11.3	400 kV bay Protection system Spares.					
11.4	Coupling Transformer					
11.5	MSC Bank					
11.6	MV AC System					
11.7	Fire Protection System					
11.8	220 V Batteries					
11.9	220 V Battery Chargers					
11.10	DG Set					
11.11	LT Switchgear					
11.12	Air Conditioning and Ventilation System					
11.13	Clamps and connectors					

