

S.T.E. Strumenti Trasformatori Elettrici S.r.l.

Quality. Customization. Value.

S.T.E. Company Presentation

[S.T.E. Strumenti Trasformatori Elettrici S.r.l.](http://www.stesrl.it)

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The company

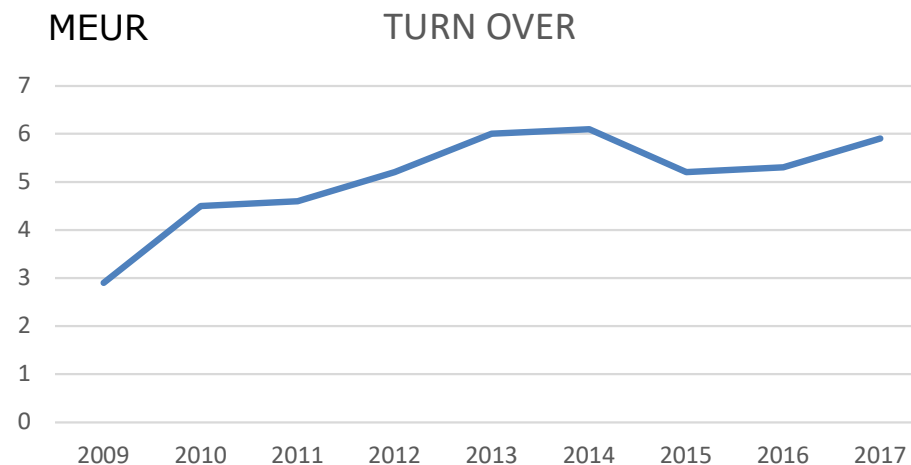
S.T.E. - with offices and manufacturing site located in an area of 3,000 sqm, near Milan, in the most productive region in Italy - is a dynamic company, that constantly invests a meaningful part of its income and its energy in the research of **high-tech products** and operates with processes which associate the Customer satisfaction to the value and the competitiveness of its supply.



History

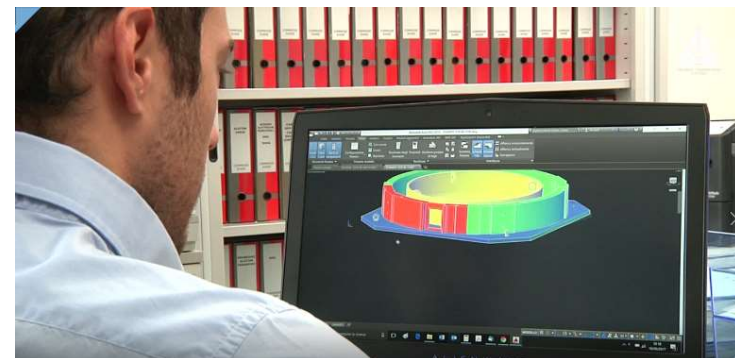
S.T.E. was established in **1981** on the base of the technical competences, the passion and the entrepreneurial spirit of Mr. Adelio Romanenghi, the current General Manager. Over the time, thanks also to the precious contribution of a qualified and motivated staff of collaborators, the company has grown, finding its specialization in the design and manufacture of LV and MV Instrument Transformers and Transducers for indoor and outdoor installation, which have their appropriate application in the **Electric Power Generation, Transmission and Distribution and in the Railway sector.**

The turnover of the last five years confirms the trend of **steady growth** which has characterized STE since its foundation.



Research and development

One of the strengths of S.T.E. is the constant and direct dialogue between its **R&D** department and the **customer**, to ensure always the **best solution** in the **quickest time**. R&D is located in the same plant of the production department, so every modification and customization becomes **instantly effective**.

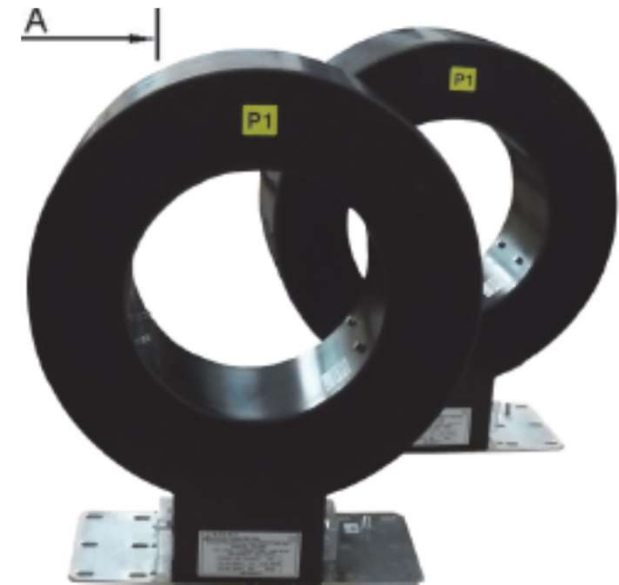


Products overview: range for power plants

**MV insulated ring current transformers
for IPB and GCB**

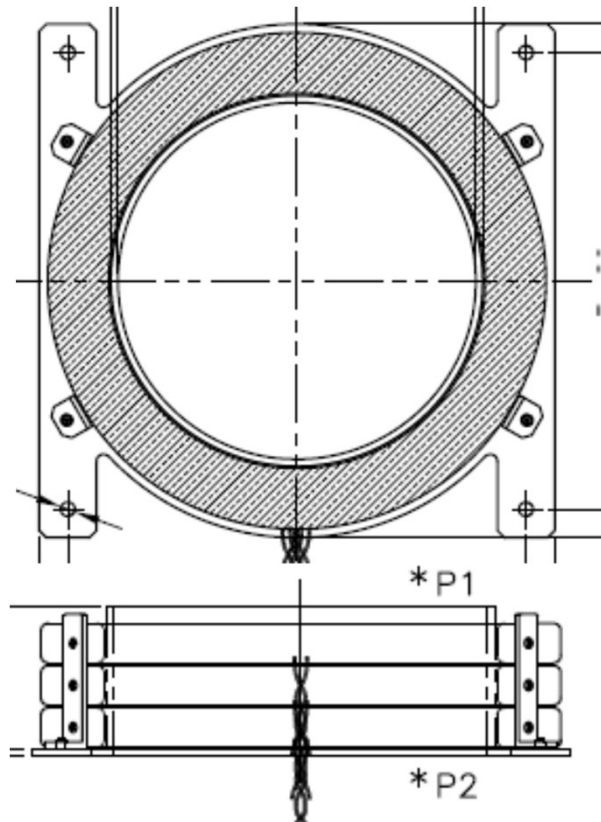


**MV insulated, free standing,
ring current transformers
for cubicles**



Products overview: range for power plants

**Taped ring current transformers,
upon request mounting aluminum chassis or pipe,
for GCB or IPB**



Products overview: range for substations

Outdoor ring current transformers for HV bushings and cables



Outdoor split-core ring current transformers for HV bushings and cable



Products overview: range for substations

Indoor ring current transformers for bushings and cables



Indoor split-core ring current transformers for bushings and cables

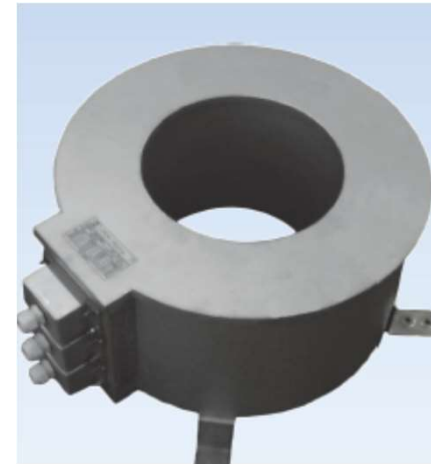


Products overview: range for HV power transformers

**Taped ring current transformers
for oil immersion**



**Outdoor ring
current transformers
for HV bushings**



Products overview: range for MV switchgears

Ring current transformers for single MV cable



Rectangular current transformers for MV cables



Ring current transformers for earth fault protection



Products overview: range for MV switchgears

Split-core ring current transformers for single MV cable



Split-core rectangular current transformers for MV cables



Split-core ring current transformers for earth fault protection (3 cables)



Products overview: range for low voltage switchgears

Current transformers with primary winding



Voltage transformers single or double pole



Current transformers for primary cable or bar



Products overview: range for 7,2 kV switchgears

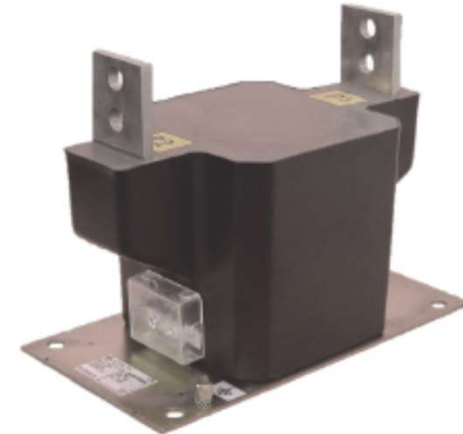
**Single pole
voltage transformers**



**Double pole
voltage transformers**



**Current
transformers**

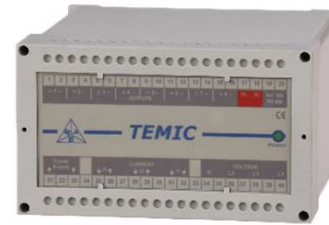


Products overview: power quality analyzer / transducers

Current and voltage transducers



4 currents + 4 voltages transducers / analyzer



Configure Term

Can	Ingresso	Val. min. Ingresso	Val. max. Ingresso	P.S. min out (mV/μA)	P.S. max out (mV/μA)	Tariff. min out (mV/μA)	Tariff. max out (mV/μA)	Tip. (mV/μA)
1	Canale 1	0	500	3	1000	1000	1000	μA Linea
2	Canale 2	0	100	1000	1000	1000	1000	μA Linea
3	Canale 3	0	1000	3	100	0	100	μA Linea
4	Canale 4	0	100	3	100	0	100	μA Linea
5	Canale 5	0	500	400	2000	100	2000	μA Linea
6	Real out1CAC	0	100	3	100	0	100	μA Linea
7	Real out2CAC	0	100	3	100	0	100	μA Linea
8	Real out3CAC	0	100	3	100	0	100	μA Linea

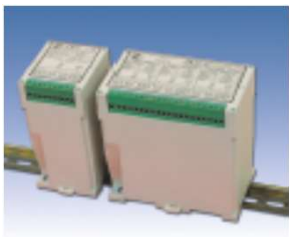
Kv: 1.0 Kt: 1.0 Iniziale: 474 Modulo: 200

Configurare Modulo

Indirizzo: Nessuno

Indirizzo	Nome	Valore	HEX	Descrizione	Aggiorna
0-0091	current	0,000	■	I L1 (Ampere)	□
0-0092	current	0,000	□	I L2 (Ampere)	□
0-0094	current	0,000	□	I L3 (Ampere)	□
0-0095	current	0,000	□	I SYS (Ampere)	□
0-0090	voltage	0,00	□	V L1-N (Volt)	□
0-0092	voltage	0,00	□	V L2-N (Volt)	□
0-0094	voltage	0,00	□	V L3-N (Volt)	□
0-0095	voltage	0,00	□	V SYS (Volt)	□

Power and frequency transducers



Products overview: range for railway / on board 3kV DC

Shunts

Customisable dimensions



Anti-inductive execution



Voltage transducer

Silicone resin insulated



PTM

Combined current and voltage transducer

Silicone resin insulated



ETROS

Products overview: range for railway / on board 25kV 50Hz or 15kV 16,7Hz

Current transformers

Silicone resin insulated



TCE,
TCE-A (SPLIT CORE)



TCM/25-EF



TCP/25-E

Voltage transformers

Silicone resin insulated



TVM/38-E

Combined current and voltage transducers developed for Secheron

Silicone resin insulated



POLIFEMO

Products overview: range for railway / substation 3 kV DC



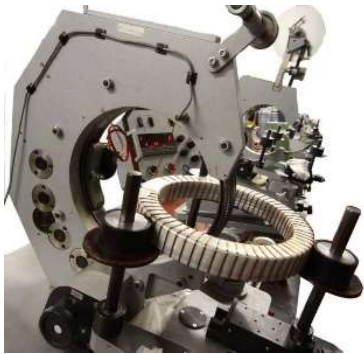
Voltmeter relay for measure and control

Silicone resin insulated

- Sensor self supplied by catenary
- Connection by optical fiber

Production

A qualified staff works efficiently in the assembly department, ensuring **compliance with quality standards** and **delivery of the supply on time**.



Winding department



Assembling departments

Production

Casting department



casting plants



molds



ovens

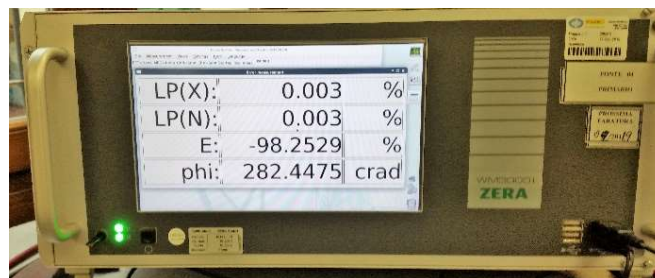


casings

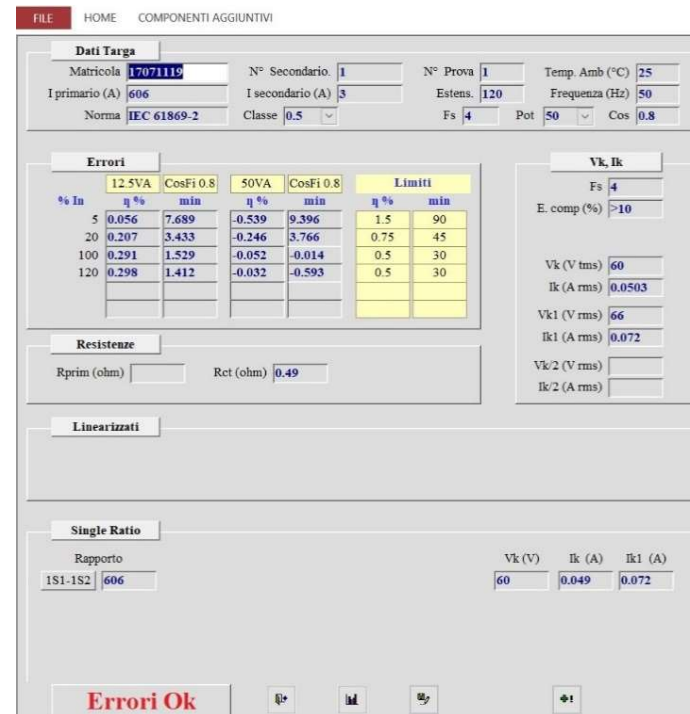
Test department

100% of our products are **tested before shipping**. A part of the testing activity is dedicated to the check of incoming materials. All the instruments used for the tests are periodically calibrated by external certified laboratories.

Automatic bridges
for error measuring



Automatic software to carry out and
issue of test report



FILE HOME COMPONENTI AGGIUNTIVI

Dati Targa

Matricola: 17071119 N° Secondario: 1 N° Prova: 1 Temp. Amb (°C): 25
 I primario (A): 606 I secondario (A): 3 Estens.: 120 Frequenza (Hz): 50
 Norma: IEC 61869-2 Classe: 0.5 Fs: 4 Pot: 50 Cos: 0.8

Errori

% In	12.5VA		CosFi 0.8		50VA		CosFi 0.8		Limiti	
	η %	min	η %	min	η %	min	η %	min	η %	min
5	0.056	7.689	-0.539	9.396	1.5	90				
20	0.207	3.433	-0.246	3.766	0.75	45				
100	0.291	1.529	-0.052	-0.014	0.5	30				
120	0.298	1.412	-0.032	-0.593	0.5	30				

Resistenze

Rprim (ohm): Rct (ohm): 0.49

Linearizzati

Single Ratio

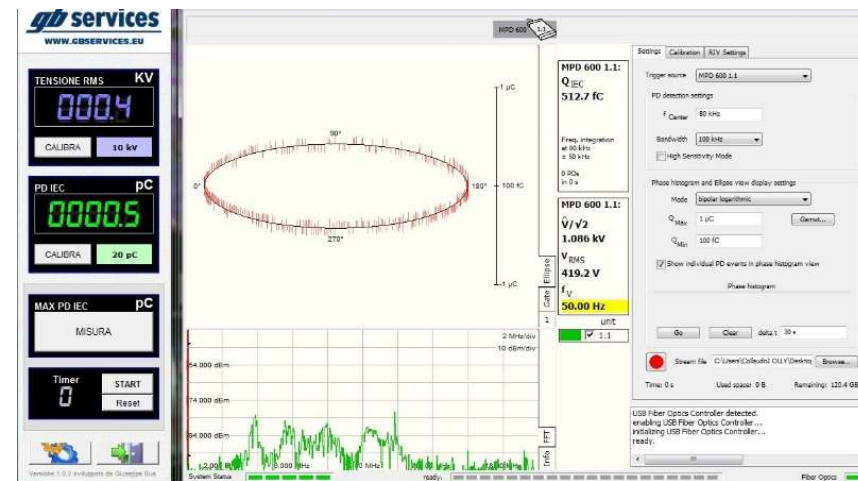
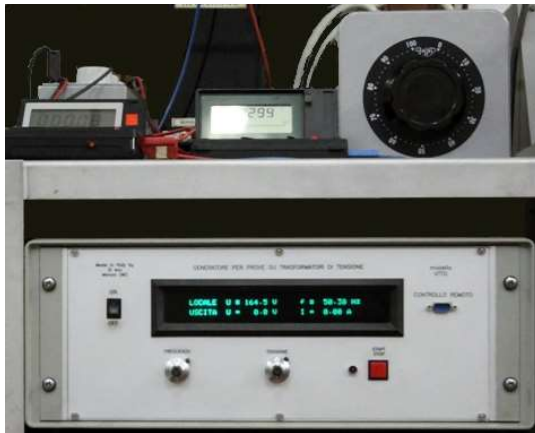
Rapporto: 1S1-1S2: 606 V_k (V): 60 I_k (A): 0.049 I_{k1} (A): 0.072

Errori Ok

Test department

Partial discharge measures

Generator for magnetization curve test



Test department – high voltage room

Impulse generator - up to 400 kV



High voltage transformer – up to 150 kV



Test department – type tests

Inside the plant there are also the equipments for most of the **type tests** requested by regulations. For any other test we cooperate with internationally known certified laboratories.

Climatic chamber for the accelerated ageing test through automated duty cycles

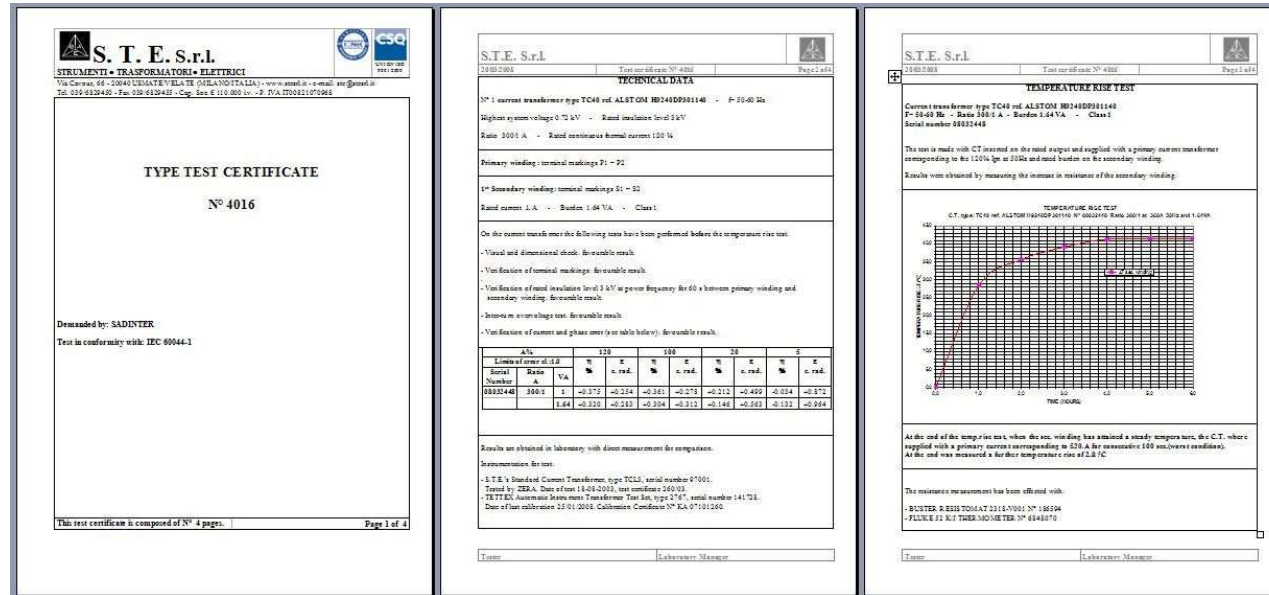


Mechanical and vibration test in external laboratory



Test reports

Test report and magnetization curve – customizable on customer needs



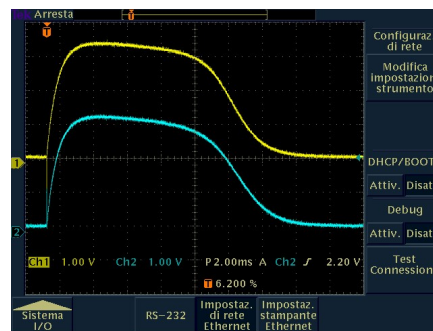
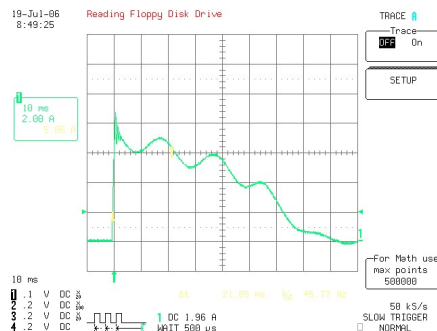
TYPE TEST CERTIFICATE
N° 4016

TECHNICAL DATA

TEMPERATURE RISE TEST

Limitation of test	100	200	500	1000
Serial Number	1	1	1	1
Ratio	1	1	1	1
VA	1.64	1.64	1.64	1.64
Class	0.5	0.5	0.5	0.5

- IEC 61869
- IEC 60044
- EN 50463
- ANSI IEEE C57.13
- CSA CAN3-C13-M83
- NBR 06855
- AS 1675



S.T.E. S.r.l. - Usmate/Velate (MI)			
Current transformer type TCO/S			
Serial number 9712187			
Test Voltage: 0.72/3 kV/1 min - f = 50+60 Hz			
Ratio 200/5-5 A			
Ipn (P1-P2)	VA	Class	Windings
200/5	5	0.5 - F _s ≤ 5	1S1-1S2
/5	10	10P10	2S1-2S2
IEC 185			

Rating plate

Quality Management System

S.T.E. has implemented and maintains a Quality Management System which fully fulfills the standard ISO 9001:2015



Our choice of quality:
ISO 9001:2015
certificated by IMQ - CISQ,
member IQNET

International qualifications

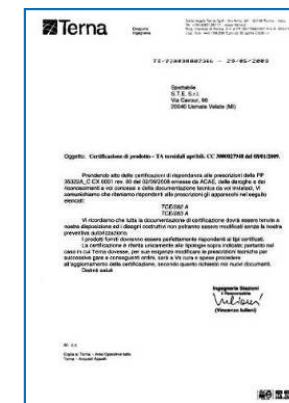
S.T.E. products are designed and manufactured in compliance with the strictest **international standards** and have been certified and/or accredited by main Institutes of Metrology, Energy and Railways Companies and Operators

Some of our qualifications and certifications:

- CAF (Spanish train manufacturer) Qualification
- BOMBARDIER ITALY (Train manufacturer) Qualification
- ELIA (Belgian Electric Company) Qualification
- MICROELETTRICA SCIENTIFICA – KNORR BREMSE (train system integrator) Qualification
- RFI (Italian Railway Company) Certification
- SAUDI ELECTRIC COMPANY Certification
- SECHERON ITALY (train system integrator) Qualification
- TERNA / ENEL (Italian Electric Company) Certification
- TENNET (Dutch Electric Company) Qualification

 DISPOSITIVI DI PROTEZIONE GENERALE PER CLIENTI MT DI ENEL DISTRIBUZIONE					
TAVOLI VERIFICATI ASSOCIABILI A TUTTE LE PROTEZIONI GENERALI DICHIARATE CONFORMI DKS (Cfr. DKM001 55.2.3. soluzioni ai)					
COSTRUTTORE	MODELLO	RAPPORTO	PRESTAZIONE [VA]	UTILIZZO	NOTE
S.T.E. Srl	TOCXXK-1	TOX1	2	TAT	

LIST OF TECHNICALLY ACCEPTABLE MANUFACTURERS AND MANUFACTURING PLANTS IN ALL THE AREAS OF SAUDI ELECTRICITY COMPANY FOR SUBSTATION, TRANSMISSION AND TELECOMMUNICATION					
SER	MATERIAL / EQUIPMENT DESCRIPTION	MANUFACTURER	FACTORY LOCATION	Pre-Qualified Manufacturers By SEC	REMARKS
1	POWER TRANSFORMERS				
1.1	33KV & 34.5 KV PRIMARY				
1.1.1	POWER TRANSFORMERS UP TO 30 MVA				Applicable Standards: S3-THSG-01
		STE	ITALY	Yes	RINGSPLIT CORE TYPE
		TRENCH ITALIA	ITALY/INA	Yes	PREVIOUSLY AS VA TECH (NOUVA MAGNORI GALLERIE); OIL TYPE
Total = 19					



Reference list:





STE

STRUMENTI TRASFORMATORI ELETTRICI



Electric measurements since 1981