

## Transformer and Related Accessories



ISO 9001:2008



**KEMA**



ISO 14001:2004



## Contents

► Chairman's Greeting	Page-1
► Vice Chairman's Comment & Managing Director's Message	Page-2
► Philosophy, Vision, Mission of HIES and HISEM	Page-3
► HISEM Company Profile	Page-4
► Key Personnel & Profile	Page-5
► Transformer Related Accessories and Raw Material Photo	Page-6
► Design, Testing & IT	Page-7
► Magnetic Core	Page-8
► Coil Winding	Page-9
► Core & Coil Assembly	Page-10
► Tank Fabrication	Page-11~12
► Painting Process	Page-13
► Cubicle Fabrication	Page-14
► Switchgear and Panel	Page-15
► MV/LV Package Substation	Page-16
► Significant Product Distribution Transformer	Page-17
► Significant Product Power Transformer	Page-18
► Testing Facility	Page-19
► Certificates & Awards	Page-20
► Substation & Installation Photo	Page-21~23
► Specification of Transformers	Page-24~28
► Photo Gallery	Page-29

## Chairman's Greeting

**Dear Valued Customers,**

Hitachi Soe Electric & Machinery Co., Ltd (HISEM) formed by merging Hitachi technological innovation and 23 years of electrical transformer manufacturing experience of SEM, will together take responsibility meeting the requirement of ISO 9001:2008 & ISO 14001:2004 in two activities: First activity is specified for the scope of Head Office as " Sales and Marketing of Electrical Transformers". Second activity is specified for the scope

of Factory's activity as" Manufacture Maintenance and Repair Services of Electrical Transformers". Manufacturing of electrical transformers will be in comprehensive range . As for distribution capacity will be 5000 pcs/yr and that for power Transformers capacity will be 500,000 kVA/yr with different system voltages. And also repair and maintenance ratings will be (50~100,000 kVA)with maximun voltage up to 230 kV utilizing raw material from Germany, Sweden, Italy , Japan, Korea, China, India.

Hitachi Soe Electric & Machinery Co., Ltd ( HISEM ) design will keep on basing not only upon reliability and convenience of electrical power system, but also emphasizing following facts.

1. Producing eco-friendly distribution Amorphous Alloy Core Transformer ( AMT ) which can reduce 70~75% of its no load loss of transformer in comparison with Silicon Core Transformer ( SiT). Thus electrical energy will be saved by using of AMTs.
2. Possessing ability to withstand short circuit HISEM will undergo Research and Development regarding Designs and Testing.

So, Dear Valued Customer we would like to warmly invite you to purchase and install HISEM's products as you have dealing with previous SEM with satisfaction.



Yours Faithfully,

A handwritten signature in black ink, appearing to read "Soe Tint".

**Soe Tint**  
Chairman

## VICE CHAIRMAN'S COMMENT FROM JV SIGNING CEREMONY



**U KYAW MIN HTUN**

VICE CHAIRMAN

" Myanmar is currently in the midst of rapid economic growth, and the implementation of power system infrastructures, which will serve as a base for that growth, has become an urgent issue. By incorporating Hitachi's technologies and extensive experience into SEM's strong business base in Myanmar, we will accelerate contributions to Myanmar Power system infrastructures and industrial development. Furthermore, this joint venture company will contribute to fostering human resources in Myanmar, by providing promising Myanmar Manpower, who in the past has tended to leave for other countries, with opportunities to become involved in cutting-edge technologies and management within Myanmar."

## MANAGING DIRECTOR'S MESSAGE

### MINGALARPAR AND WELCOME TO HISEM

Joint Venture Business between SEM and HIES combining the strengths of both companies is in order to support the implementation of power systems infrastructures in Myanmar as well as neighbouring countries, where demand is expected to increase rapidly in the future. We ensure that all employees do their very best to improve product quality utilization premium quality of raw material, workmanshift, lead time consideration for the benefit of customers and aims to be a company deserving of customer confidence. We look forward to being your most trust and reliable electrical company and providing you with our best efforts to meet your expectations & requests. Please feel free to contact us with any inquiries or needs you may have, and we are standing by to provide you with our best quality products and seamless service offerings.



Yours Faithfully,  
**Mr Katsutoshi Inagaki.**

Managing Director

# PHILOSOPHY, VISION, MISSION OF HIES AND HISEM

## **Hitachi Industrial Equipment Systems Co., Ltd. 's Corporate Philosophy**

"Based on the founding concepts of 'harmony,' 'sincerity,' and 'pioneering spirit,' Hitachi Industrial Equipment Systems Co., Ltd. has made it the basic principle to operate business directly linked to our customers with integrated services, sales, and manufacturing, and is determined to contribute to the progress and development of our society through high-quality products and services.

In being deeply aware that a corporation is a member of society, we have a strong commitment to fair and transparent corporate behavior and shall contribute to a truly affluent society by continuing and developing our business through environmental harmony and proactive social contribution."

With this corporate philosophy, we will do our best through our business operations to advance forward in leaps and bounds.

## **Hitachi Industrial Equipment Systmes Co., Ltd. 's Management Vision**

In April 2002, Hitachi Industrial Equipment Systems Co., Ltd. was divided and established as a company inheriting the motor business from Hitachi, Ltd., the original business of the parent company. From that time Hitachi Industrial Equipment Systems Co., Ltd. has been in charge of industrial electric equipment amongst the Hitachi Group, a group covering diversified areas. Since that time, in taking advantage of being a member of the Hitachi Group, Hitachi Industrial Equipment Systems Co., Ltd. has operated as the only company in Japan that can provide all equipment, services and solutions for various applications including those for industrial and social infrastructures. Our vision is to become foundation for the affluent life of people by supporting both industrial and social infrastructures.

In a context of changing life styles, values and social and industrial structures, we will keep advancing with our aim of always predicting future trends and responding to customers' expectations and requests "steadily" and "sincerely." To this end, we will continue to better ourselves and do our best efforts so that we can play a central role in leading and innovating the industrial electric equipment segment.

## **Hitachi Soe Electric & Machinery Co., Ltd 's Policy**

Pursue excellence with quality and standard corresponding to customer needs.

Provide sincere service and conduct business in compliance with laws and relevant environment, emphasize conservation of energy and efficient use of natural resources on behalf of our customer.

## **Hitachi Soe Electric & Machinery Co., Ltd 's Vision**

HISEM keeps the vision of endeavoring to be the leading joint venture transformer manufacturing private company for electrical transformers and other transformer related accessories for the best of our customers. We continuously improve innovative techniques to meet demand and satisfaction of the customer with respect to time frame.

## **Hitachi Soe Electric & Machinery Co., Ltd 's Mission**

Conformity with said national and international quality and standards.

Manufacturing environmental friendly transformer with bare minimum loss.

Performing to meet customer demand and satisfaction in full and fast manner.

## HISEM COMPANY PROFILE

Company Name	Hitachi Soe Electric & Machinery Co. Ltd ( HISEM )
Paid Up Capital	USD 45 Millions [ Hitachi Group 51%, SEM 49% ]
Chairman	U Soe Tint
Vice Chairman	U Kyaw Min Htun
Managing Director	Mr Katsutoshi Inagaki
Work Force	450 Staffs
Plant Area	Plant Area Site.....40,000m2
Bank Reference	SMBC Bank, BTMU Bank, KBZ Bank, CB Bank
Production Capacity & Range	Distribution Transformer Over....5000 Pcs/yr Power Transformer.....500,000 KVA/yr
Rated Power	from 50 KVA to 30,000 KVA
Rated Voltage Class	6.6 KV, 11 KV, 33 KV, 66 KV
Maintenance & Repair Service	Repair & maintenance of electrical transformers 50~100,000 KVA with different system voltages Mobile Unit and service teams headed by know-how experienced staffs around the clock.
Award & Certificates	Received a Gold Medal for successful achievement in producing distribution transformers in Industrial Fair 1996, Yangon, Myanmar. Received Certificate of Honour from Ministry of Electric Power for successful major repair achievement of 47 MVA 33/11 KV power transformer in 2000. Received a Gold Medal for outstanding product of 10 MVA 33/11 KV Power Transformer in Myanmar Industrial Exhibition 2003, Mandalay, Myanmar. Received Certificate of ISO 9001:2000 for QMS in 2005. Received Certificate of ISO 9001:2008 for QMS in 2010. Received KEMA Certificate for short circuit withstand test and complete type test in 2013. Received Certificate of ISO14001:2004 for EMS in 2014. ASEAN Outstanding Engineering Achievement Award for year 2015 on the role in the local design and manufacturing of appropriate technology products in Myanmar.
Outline of Business	Manufacturing, Installation, Leasing, Maintenance, Repair & Sales of Electrical Transformers switchgear and transformer related accessories.
Mainly Supply to	Government Tender Project, System Improvement Project, Industrial Zone, Construction

## KEY PERSONNEL & PROFILE



U Soe Tint  
Chairman



U Kyaw Min Htun  
Vice Chairman



Mr. Katsutoshi Inagaki  
Managing Director



U Saw Khine Htun  
Chief Engineer



Daw Mary Htwe  
General Manager



Daw Htwe Htwe Khaing  
Chief Accountant



Mr. Atsumi Kenichi  
Head Office Manager



Daw Pa Pa Win  
Factory Manager



U Aung Myo Htun  
Production Manager ( Mechanical )



Daw Su Myat Aung  
Production Manager ( Electrical )



U Aye Chan Maung  
Head of Sales & Marketing Manager



Daw Win Win Myaing  
Sr. Sales Manager ( Private Sect.)



Daw Kay Zin Tin San  
Sr. Marketing Manager  
( Government Sect.)



Daw Thet Mon Aung  
Purchasing Manager



U Naing Lin Tun  
Installation Manager



U Ye Maung  
Asst. Manager (MDY)



U Myint Swe  
Asst. Factory Manager



U Mya Thaw  
Asst. Factory Manager



Daw Khin Hnin Phyu  
Asst. Manager (NPT)

# TRANSFORMER RELATED ACCESSORIES AND RAW MATERIAL



# DESIGN, TESTING & IT

A successive infusion to latest technical innovation in the design and technical process provides the customer with a distinctive advantage .

Information Technology Department facilitated is beneficial in up-to dating Admin/HR activities, manufacturing process and data documentation.

## **State-Of-The-Art Testing Facilities**

The State-of-the-art machines in production line, Hitachi technological innovation, high technological facilities, instruments and machines has added to HISEM's asset value.

CNC system with CCTV camera for inspection and testing of distribution and power transformers is also beneficial in HISEM's major scope of work.

1. Facilities for Routine Test
  - 1-1 Induction Voltage Regulators
  - 1-2 High Voltage Capacitor Bank
  - 1-3 Intermediate Transformer
  - 1-4 High Voltage Transformer
  - 1-5 Column Type Voltage Regulator
  - 1-6 Synchronous Motor Generators
2. Facilities for Type Test
  - 2-1 Voltage Lightning Impulses Tester
  - 2-2 Temperature Sensor Instrument for Temperature Rise Test
  - 2-3 Sound Level Meter
3. Facilities for Special Test
  - 3-1 Semi-automatic capacitance & Tan delta Test Set
  - 3-2 Multi-channel Digital Partial Discharge Analyzer
  - 3-3 Power Analyzer.

Moreover, customer's optional type and/or special test are to be carried on supplementary payment basis in accordance with relevant IEC standards.



- *A successive infusion to latest technical innovation in the design and technical process provides the customer with a distinctive advantage*



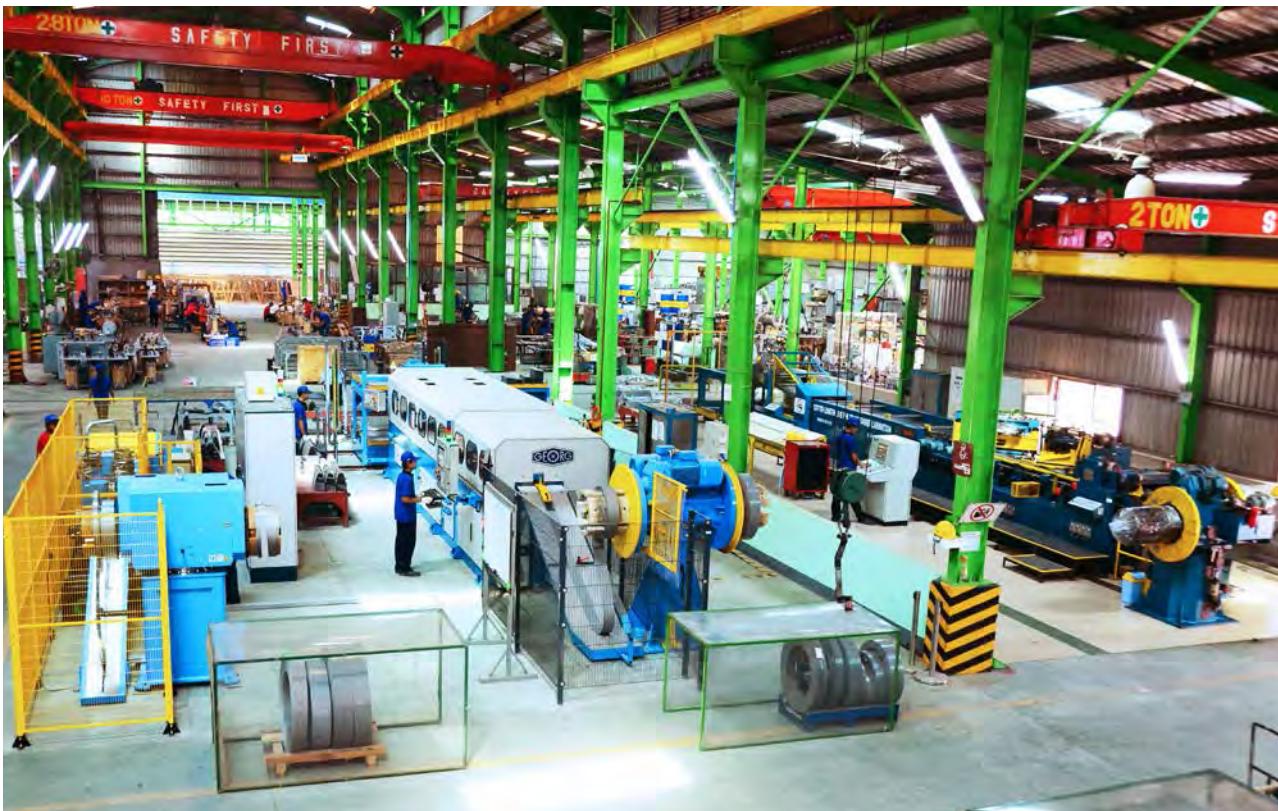
- Information Technology Department facilitated is beneficial in up-to dating Admin/HR activities manufacturing process and data documentation.

# FUNDAMENTAL COMPONENT PARTS AND PROCESS OF TRANSFORMER



## MAGNETIC CORE

Magnetic Core is said to be heart of the transformer in order to transform electric power from one system of voltage to another systems of voltage by induction. Magnetic cores are imported from global esteemed and renowned steel manufacturers. With step lap lamination line and stacking machine, multi step laps cores offer the greater and faster performance over conventional stacked core.





## COIL WINDING

We import 99.96% pure bare copper rod & copper foil from the most reliable manufacturers. HISEM has produced of her own rectangular copper conductors wrapping with high quality insulation papers in order to withstand dynamic forces due to short circuit and abnormal voltage surges due to switching and lighting impulses so as to make satisfying our customer's option.

High Voltage Winding : made from high quality enamel

Low Voltage Winding : made from copper foil and rectangular copper wire.



## CORE & COIL ASSEMBLY

Much attention is being made for the active parts of each transformer in its different types of wire and cable connections from the winding to the tap changer and bushing. All these connections in coil ( phase to phase ( or ) single phase to neutral ) is of vital importance to transform electrical power from one system to another system of voltage. Because loose cable connections will lead to effect hot spot temperature in the transformer.



## OIL FOR TRANSFORMER

Oil is considered to be the most vital raw material affecting the performance of a transformer. Mineral oil, which acts as a dielectric and coolant media in transformers, should meet the long time uninterrupted services. For the benefit of customers, all good specified types of transformer oil are imported from famous oil producers.



## TANK FABRICATION

Mechanical Fabrication department takes interest upon not only manufacturing of both distribution and power transformers but also servicing for repairing them. Transformer tanks are made by means for computer aided flame/plasma cutting machine and CNC controlled machines such as cutting machine, hydraulic press brake, hydraulic swing beam shear, power crank press.

CNC- Controlled manufacturing line for cooling fins are corrugated from continuous cold rolled mild steel sheet and then welded directly to the tank wall.

Robot welding machine are accurate and help increase throughout efficiency, save the human resources and time consuming.

We consider greatly for the benefit of the customers and we could fabricate and produce capacitor bank, 400V metering panel, LA, DS, DOF panel, ACB panel , Disconnecting Switch and other transformer related accessories according to customer's needs.

CNC Punching machine, Hydraulic Press Brake, Spot welding machine series are fundamental units for the function of cubicle fabrication both in time and motion.

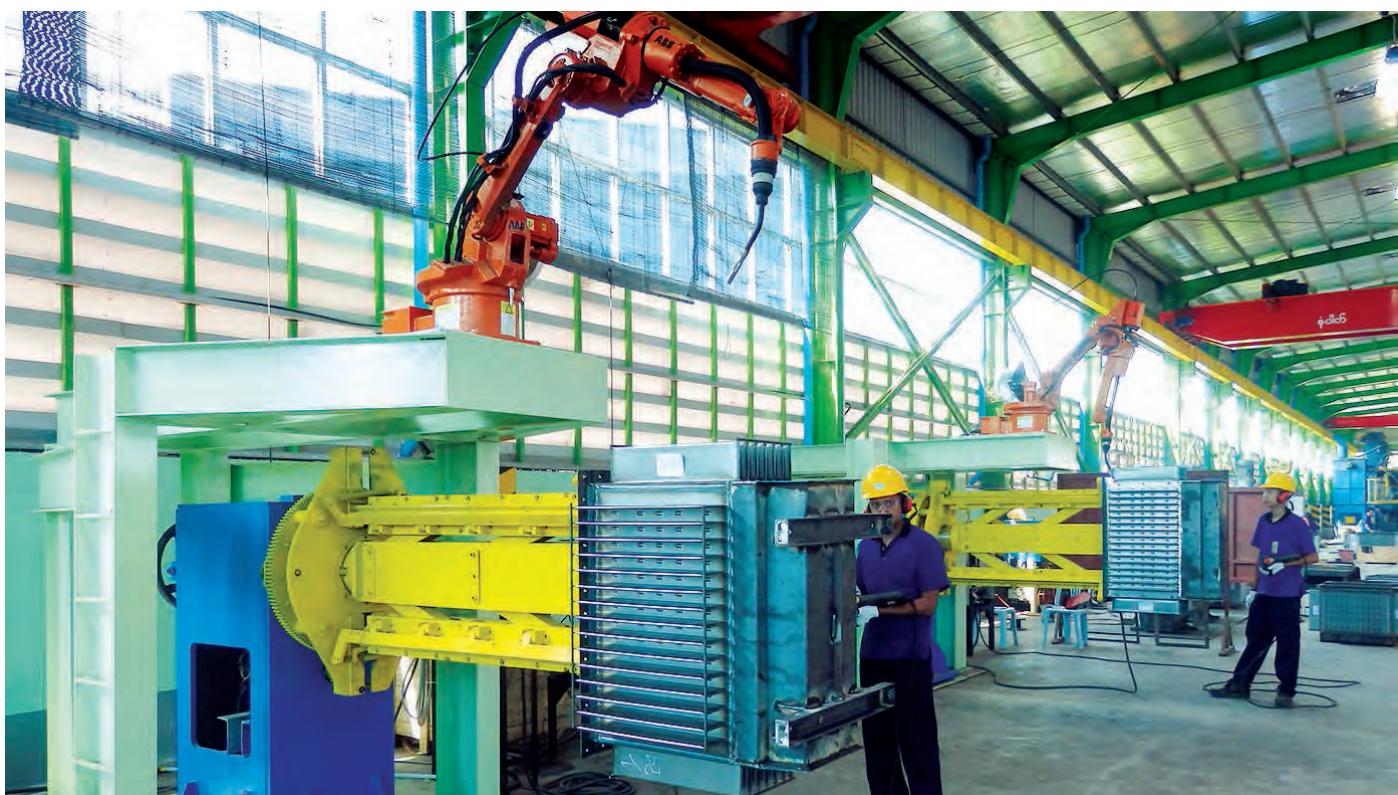


# TANK FABRICATION

## Corrugating Ribbon Shaper For Radiator

CNC - Controlled manufacturing line for cooling fins are corrugated from continuous steel sheet and then welded directly to the tank wall. The simple fin shape minimises the number and complexity of welds required and provides a large surface area for cooling and is easy to paint and clean.

Corrugated walls are formed in various sizes of length, height and pitches required by hydraulic and automatic controlled fin folding machine.



## PAINTING PROCESS

Tanks are shot with steel grits inside the Growell Shot Blasting Machine to make tank surface even and smooth. And then premium painting is applied to withstand to nature of environmental and weather borne effects.



## VACUUM DRYING OUT

Moisture presents inside of transformer can deteriorate the insulation of transformer not only in pressboard material but also in oil which is said to be blood line of that transofomer in service. So vacuum drying out of assembly unit and also oil purification under vacuum pressure is to be undergone till we get satisfactory megger information .

## CUBICLE FABRICATION



## SWITCHGEAR AND PANEL



Switchgear Panels are imported from NIEPE India.

## MV/LV PACKAGE SUBSTAION

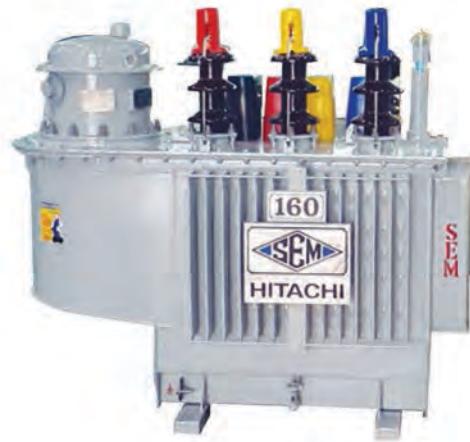


## SIGNIFICANT PRODUCT DISTRIBUTION TRANSFORMERS

HISEM 100 kVA, Hermetically Sealed Type  
Off Load tap changer



HISEM 160 kVA, Hermetically Sealed Type  
On Load tap changer



HISEM 100 kVA, Pole Mounted Transformer



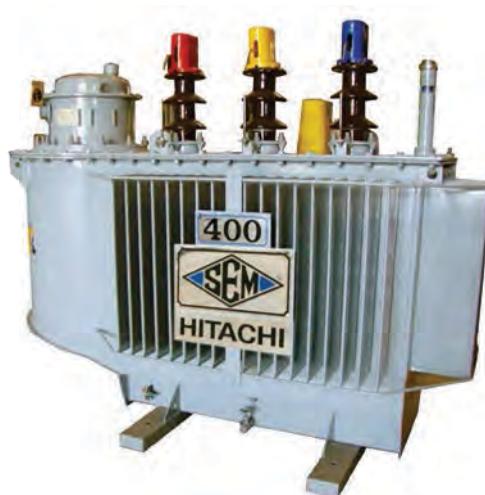
HISEM 315 kVA, Hermetically Sealed Type  
Off Load tap changer



HISEM 2000 kVA, Conservator Type  
Off Load tap changer, With bushing enclosure



HISEM 400 kVA, Hermetically Sealed Type  
With On Load tap changer



## SIGNIFICANT PRODUCT POWER TRANSFORMERS

HISEM 2000 kVA (33/11kV) Conservator Type  
Off Load tap changer



HISEM 5000 kVA (33/11kV) Conservator Type  
Off Load tap changer



HISEM 13000 kVA (33/11kV) Conservator Type  
On Load tap changer



HISEM 7500 kVA (33/11kV) Conservator Type  
On Load tap changer



HISEM 10000 kVA (66/11kV) Conservator Type  
Off Load tap changer



HISEM 15000 kVA (66/6.6kV) Conservator Type  
On Load tap changer



## TESTING FACILITY

### Vital Routine Test

For transmission and distribution of electric power, transformers of comprehensive design and range in both capacity and voltage system ratings, are vital units for utilities and industries.

Main theme of Inspection and Testing of a transformer is manufacturer's proof of quality. Technical performance in terms of specific technical data approved by experienced testing engineers is issued as a test certificate after undergoing following routine test for every each and individual transformer in accordance with IEC 60076'



- > Insulation resistance test
- > Ratio test.
- > Resistance measurement.
- > Polarity and phase relation test.
- > No-load loss & no-load current test.
- > Impedance voltage and load-loss test.
- > Separate source voltage withstand test.
- > Induced over voltage withstand test.
- > Oil chemical analysis and electrical strength test.
- > Oil leakage test.
- > Testing onload tap changer, where appropriate.

Above tests are the "must" and out of these, some type and special tests are also essential for prototype transformer before a batch of transformers are manufactured.

It is usual practice to test withstand ability of natural interferences such as lightning strike and switching surges evolved in system high voltages. This kind of test is to perform as per request of purchaser (or) customer.

## CERTIFICATES & AWARDS



First Gold Medal Reward In 1996  
Has Reinforced Significant Improvement of  
SEM's Products In Distribution Transformers



Certificate Of Honour From Ministry Of Electric Power  
For Successful Achievement Of Servicing  
47.5 MVA 33/11 KV Power Transformer in 2000.



First Gold Medal Reward In 2003  
Has Reinforced Significant Improvement of  
SEM's Products In Power Transformers



ISO 9001:2008



KEMA complete type tests  
Certificate



ISO 14001:2004



ASEAN Outstanding  
Engineering Achievement Award For Year 2015

## SUBSTATION AND INSTALLATION PHOTOS



## SUBSTATION AND INSTALLATION PHOTOS



## SUBSTATION AND INSTALLATION PHOTOS



## A WIDE DIVERSITY OF SPECIFICATIONS

Rated primary voltage	: 6.6kV/ 11kV	Frequency	: 50 Hz	Hermetically Sealed Type
Rated secondary voltage	: 400/230V	Phase	: 3 Phase	(Off Load Tap Changer) Silicon Core Transformer

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	50	175	1000	1175	4	1.5	98.33	97.70	2.06	940	620	1075	120	440
2	100	280	1650	1930	4	1.5	98.63	98.11	1.72	1075	680	1125	155	610
3	160	400	2350	2750	4	1.4	98.78	98.31	1.54	1200	700	1240	210	810
4	200	450	2800	3250	4	1.3	98.86	98.40	1.47	1125	680	1260	210	880
5	250	550	3250	3800	4	1.3	98.92	98.50	1.37	1270	790	1300	220	1090
6	315	650	4000	4650	4	1.3	98.96	98.55	1.34	1290	700	1340	270	1150
7	400	800	4800	5600	4	1.2	99.01	98.62	1.27	1530	950	1380	340	1500
8	500	900	5700	6600	4	1.0	99.08	98.70	1.21	1640	1030	1360	325	1685
9	630	1050	6900	7950	4	1.0	99.13	98.75	1.17	1675	1050	1545	404	2020
10	750	1200	8000	9200	4	1.0	99.15	98.79	1.14	1650	920	1520	490	2300
11	800	1250	8500	9750	5	1.0	99.16	98.80	1.18	1810	1110	1490	475	2330
12	1000	1450	10500	11950	6	0.8	99.19	98.82	1.22	1925	1180	1640	757	3000
13	1250	1700	13000	14700	6	0.7	99.21	98.84	1.21	2035	1260	1720	952	3600
14	1500	1900	15500	17400	6	0.5	99.24	98.85	1.21	2125	1350	1780	1025	4010
15	2000	2300	20000	22300	6	0.5	99.28	98.90	1.18	2230	1410	1935	1399	5660

Rated primary voltage	: 6.6kV/ 11kV	Frequency	: 50 Hz	Open Type With Conservator
Rated secondary voltage	: 400/230V	Phase	: 3 Phase	(Off Load Tap Changer) Silicon Core Transformer

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	2500	2600	24000	26600	6	0.4	99.32	98.95	1.14	2570	1470	2385	1650	6650
2	3000	2900	28000	30900	7	0.4	99.34	98.98	1.17	2590	1470	2540	1665	7110

## A WIDE DIVERSITY OF SPECIFICATIONS

Rated primary voltage Rated secondary voltage	: 33kV : 400/230V	Frequency Phase	: 50 Hz : 3 Phase	Hermetically Sealed Type (Off Load Tap Changer) Silicon Core Transformer
--	----------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	50	250	1000	1250	4	1.5	98.04	97.56	2.06	1150	720	1420	306	765
2	100	350	1700	2050	4	1.5	98.47	97.99	1.77	1165	690	1530	337	950
3	160	500	2500	3000	4	1.4	98.61	98.16	1.63	1295	780	1530	387	1110
4	200	590	2850	3440	4	1.3	98.71	98.31	1.49	1405	850	1630	448	1295
5	250	650	3400	4050	4	1.3	98.81	98.41	1.43	1425	860	1620	491	1500
6	315	750	4200	4950	4	1.3	98.87	98.45	1.40	1495	905	1665	549	1660
7	400	900	5000	5900	4	1.2	98.94	98.55	1.32	1535	965	1750	650	2005
8	500	1100	5700	6800	4	1.0	99.00	98.66	1.21	1625	1030	1775	765	2305
9	630	1300	6700	8000	4	1.0	99.06	98.75	1.14	1680	1030	1785	786	2570
10	750	1400	9000	10400	5	1.0	99.04	98.63	1.32	1905	1265	1800	856	2830
11	800	1450	9500	10950	5	0.7	99.05	98.65	1.31	1960	1350	1810	904	3070
12	1000	1600	11000	12600	6	0.7	99.14	98.76	1.27	2005	1300	1865	1005	3490
13	1250	2000	14000	16000	6	0.7	99.13	98.74	1.29	2140	1435	1960	1309	4135
14	1500	2100	15000	17100	6	0.6	99.23	98.87	1.18	2105	1370	2060	1258	5120
15	2000	2600	21500	24100	6	0.6	99.21	98.81	1.25	2395	1500	2220	2047	6990

Rated primary voltage Rated secondary voltage	: 33kV : 400/230V	Frequency Phase	: 50 Hz : 3 Phase	Open Type With Conservator (Off Load Tap Changer) Silicon Core Transformer
--	----------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	2500	3000	25000	28000	7	0.5	99.27	98.89	1.24	2950	1565	2810	2309	7990
2	3000	3200	29000	32200	7	0.4	99.31	98.94	1.21	3110	1675	2860	2608	9430

## A WIDE DIVERSITY OF SPECIFICATIONS

Rated primary voltage Rated secondary voltage	: 11kV : 400/230V	Frequency Phase	: 50 Hz : 3 Phase	Hermetically Sealed Type (Off Load Tap Changer) Amorphous Core Transformer
--	----------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	50	45	1000	1045	4	0.5	98.83	97.95	2.06	1170	770	980	175	590
2	100	75	1650	1725	4	0.4	99.03	98.30	1.72	1360	760	1060	250	850
3	160	100	2350	2450	4	0.4	99.15	98.49	1.54	1370	810	1060	260	1020
4	200	120	2800	2920	4	0.4	99.19	98.56	1.47	1420	840	1120	305	1170
5	250	145	3250	3395	4	0.4	99.24	98.66	1.37	1530	880	1170	350	1410
6	315	170	4000	4170	4	0.4	99.26	98.69	1.34	1680	880	1180	410	1620
7	400	210	4800	5010	4	0.4	99.30	98.76	1.27	1690	1080	1180	435	1860
8	500	240	5700	5940	4	0.3	99.34	98.83	1.21	1700	1110	1250	415	2095
9	630	280	6900	7180	5	0.3	99.37	98.87	1.21	1850	1310	1225	470	2400
10	750	320	8000	8320	5	0.3	99.39	98.90	1.19	1970	1370	1235	550	2650
11	800	330	8500	8830	5	0.3	99.39	98.91	1.18	2100	1440	1255	615	2855
12	1000	400	10500	10900	6	0.3	99.40	98.92	1.22	2320	1530	1260	765	3345
13	1250	450	13000	13450	6	0.2	99.41	98.94	1.21	2180	1310	1400	800	4000
14	1500	500	15500	16000	6	0.2	99.42	98.94	1.21	2520	1540	1500	1115	4680
15	2000	600	20000	20600	6	0.2	99.44	98.98	1.18	2380	1700	1800	1390	5770

Rated primary voltage Rated secondary voltage	: 11kV : 400/230V	Frequency Phase	: 50 Hz : 3 Phase	Open Type With Conservator (Off Load Tap Changer) Amorphous Core Transformer
--	----------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	2500	700	24000	24700	7	0.2	99.47	99.02	1.20	3080	1720	2720	1795	7560
2	3000	800	28000	28800	7	0.2	99.48	99.05	1.17	3250	1730	2980	2250	8650

## A WIDE DIVERSITY OF SPECIFICATIONS

Rated primary voltage Rated secondary voltage	: 33kV : 6.6kV / 11kV	Frequency Phase	: 50 Hz : 3 Phase	Open Type With Conservator (Off Load Tap Changer) Silicon Core Transformer
--	--------------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	1000	1700	11000	12700	6	0.7	99.12	98.75	1.27	2335	1295	2215	1100	3750
2	1250	2000	13500	15500	6	0.6	99.15	98.78	1.25	2360	1345	2270	1200	3900
3	1500	2200	17000	19200	6	0.6	99.15	98.74	1.31	2370	1400	2390	1700	5200
4	2000	2500	17500	20000	6	0.5	99.32	99.01	1.05	2640	1550	2620	2200	6700
5	2500	3100	22000	25100	7	0.5	99.32	99.01	1.12	2690	1550	2700	2250	7100
6	3000	3200	24000	27200	7	0.4	99.39	99.10	1.04	2810	1550	2820	2300	8250
7	3500	4200	28500	32700	7	0.4	99.36	99.07	1.06	2900	1560	2920	2700	9400
8	4000	4500	30000	34500	7	0.3	99.40	99.14	0.99	3100	2800	2950	2890	9700
9	5000	4700	38000	42700	7	0.3	99.44	99.15	1.00	3085	2800	3000	3300	12500
10	7500	6500	61500	68000	8	0.3	99.42	99.10	1.14	3280	3140	3100	3700	16000
11	8000	7500	62000	69500	8	0.3	99.43	99.14	1.09	3300	3140	3100	4000	16400
12	10000	6800	70000	76800	9	0.2	99.52	99.24	1.10	3400	3020	3450	5200	18900
13	15000	9000	98000	107000	9	0.2	99.56	99.29	1.06	3650	3600	3800	7000	28500
14	20000	12000	125000	137000	10	0.2	99.57	99.32	1.12	4000	4450	3870	7520	33000
15	30000	16500	160000	176500	11	0.2	99.62	99.42	1.14	4860	4520	4050	9100	40000

Rated primary voltage Rated secondary voltage	: 66kV : 6.6kV /11kV/33kV	Frequency Phase	: 50 Hz : 3 Phase	Open Type With Conservator (Off Load Tap Changer) Silicon Core Transformer
--	------------------------------	--------------------	----------------------	--

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No load Current Io%	Efficiency P.F=1		Voltage Regulation P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	1000	1800	12800	14600	6	0.7	99.01	98.56	1.45	3360	2320	3570	2700	8000
2	3000	3800	22000	25800	7	0.5	99.38	99.15	0.98	3790	2540	3800	4540	13000
3	5000	5300	38000	43300	7.5	0.3	99.41	99.14	1.04	3870	2950	3900	5500	16500
4	7500	7800	62000	69800	8.5	0.3	99.38	99.08	1.18	3870	3365	3900	6400	20500
5	10000	8000	65000	73000	9	0.2	99.52	99.28	1.05	3700	3715	4000	6950	25500
6	15000	10000	95000	105000	9	0.2	99.55	99.30	1.04	4050	3840	4300	8500	31500
7	20000	12500	123000	135500	10	0.2	99.57	99.33	1.11	4900	4500	4300	9680	37000
8	30000	18000	180000	198000	11	0.2	99.58	99.34	1.20	5150	4850	4950	16800	59000

## A WIDE DIVERSITY OF SPECIFICATIONS

Rated primary voltage	: 6.6kV/11kV	Frequency	: 50 Hz	Hermetically Sealed Type
Rated secondary voltage	: 400/230V	Phase	: 3 Phase	(On Load Tap Changer) Silicon Core Transformer

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No laod Current Io%	Efficiency P.F=1		Voltage Regula-tion P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	100	280	1650	1930	4	1.5	98.63	98.11	1.72	1430	680	1125	235	770
2	160	400	2350	2750	4	1.5	98.78	98.31	1.54	1530	700	1240	290	1040
3	200	450	2800	3250	4	1.4	98.86	98.40	1.47	1495	680	1260	295	1050
4	250	550	3250	3800	4	1.4	98.92	98.50	1.37	1675	925	1300	345	1310
5	315	650	4000	4650	4	1.3	98.96	98.55	1.34	1650	700	1340	365	1390
6	400	800	4800	5600	4	1.2	99.01	98.62	1.27	1805	950	1380	400	1730
7	500	900	5700	6600	4	1	99.08	98.70	1.21	1890	1030	1360	410	1810
8	630	1050	6900	7950	4	1	99.13	98.75	1.17	1900	1050	1545	480	2160
9	750	1200	8000	9200	4	1	99.15	98.79	1.14	2055	1130	1520	600	2570
10	800	1250	8500	9750	5	1	99.16	98.80	1.18	2020	1110	1490	560	2510

Rated primary voltage	: 33kV	Frequency	: 50 Hz	Hermetically Sealed Type
Rated secondary voltage	: 400/230V	Phase	: 3 Phase	(On Load Tap Changer) Silicon Core Transformer

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No laod Current Io%	Efficiency P.F=1		Voltage Regula-tion P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	1000	1500	10000	11500	6	0.7	99.21	98.86	1.18	2430	1300	1865	1460	4230
2	1250	1750	12000	13750	6	0.7	99.25	98.91	1.14	2515	1435	1960	1634	4760
3	1500	2100	14000	16100	6	0.6	99.26	98.94	1.11	2535	1370	2060	1716	5900
4	2000	2550	19000	21550	6	0.6	99.28	98.93	1.13	2790	1500	2220	2417	7430

Rated primary voltage	: 33kV	Frequency	: 50 Hz	Open Type With Conservator
Rated secondary voltage	: 400/230V	Phase	: 3 Phase	(On Load Tap Changer) Silicon Core Transformer

Sr No	Capacity kVA	No load losses Po(W)	load losses at 75°C Pk (W)	Total losses at 75°C (W)	Impedance at 75°C Iz%	No laod Current Io%	Efficiency P.F=1		Voltage Regula-tion P.F=1	Outline Dimension Approx.(mm)			Oil Quantity (litres)	Total Weight (kgs)
							1/2 load %	Full load %		L	W	H		
1	2500	3100	24000	27100	7	0.4	99.28	98.93	1.20	3310	1565	2820	2780	8545
2	3000	3200	29000	32200	7	0.4	99.31	98.94	1.21	3440	1675	2870	3100	10000

## HISEM OPENING CEREMONY PHOTO GALLERY





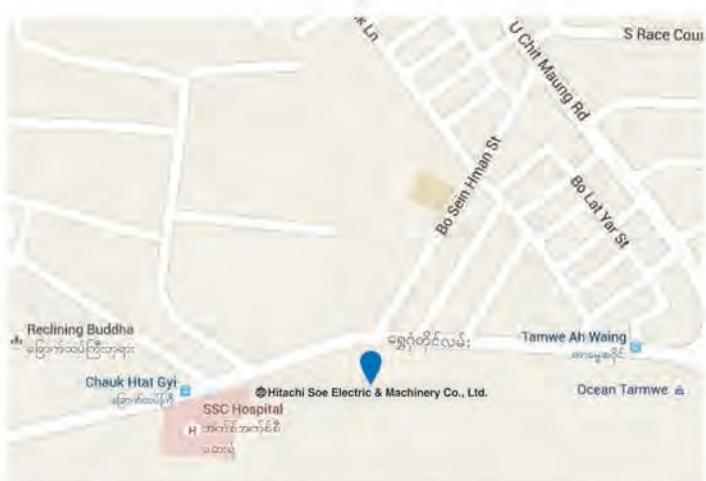
#### Mandalay Branch

No.34. Ygn-Mdy Highway Road.  
Kywesekan Quarter, Pyiggitagon Tsp.,  
Mandalay, Myanmar.  
Phone : +95-2-70627, 54925,  
+95-9-200 5924, +95-9-8601342



#### Nay Pyi Taw Branch

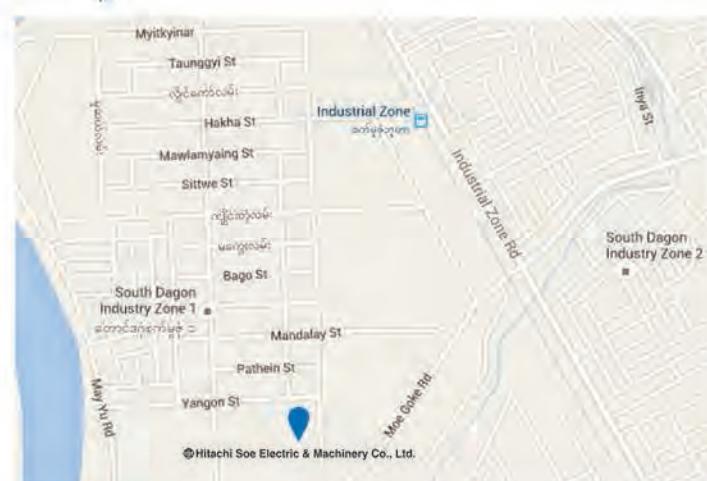
Plot No.(32), Bawgathiri High Class Car Service Compound,  
Ygn-Mdy Myoeshuang Road, Nay Pyi Taw, Myanmar  
Phone : +95-67-27002, 27003, 27004, 27005



#### Head Office



Building No.1, Aung Chan Thar Housing Estate.  
East Shwegondine Rd., Bahan Tsp., Yangon, Myanmar.  
Phone : +95-1-546100, 556576  
Sales & Marketing : +95-1-556754, 8603502,  
Fax : +95-1-546050  
Website : <http://www.hitachi-soelectirc.com>



#### Factory



Plot No.472, 23<sup>rd</sup> Quarter, No.(1) Industrial Zone,  
Dagon Myothit (South), Yangon, Myanmar.  
Phone : +95-1-590255, 591101, 2348126, 2348213, 707488  
24 Hour Service : +95-9-5128541  
Fax : +95-1-2348502