

company profile

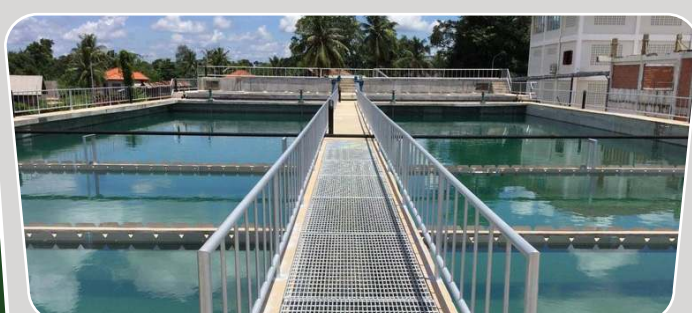


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Welcome Speech



After Vientiane Automation and Solution Engineering or VASE has been established in year 2007, we work hard to reach our goal and to be success in every projects we do.

VASE is committed to maintaining the highest standards of quality, safety, leadership and performance to our clients across the nation by way of our continuous development and commitments in the areas of culture, integrity, craft training and safety with our merit shop team member employees. We will always uphold our company's commitment as a "Leader in Electrical Construction and Maintenance Sector"

I would like to tell you that no one in our industry is doing more to improve working conditions than us. We are constantly audition facilities, going deep into the supply chain, looking for problems and fixing problems. And we report everything because we believe that transparency is so very important in our projects.

VASE's professional staff has the knowledge, skill and proficiency to have designed, programmed and commissioned state of the control systems for a large number of Major Hydropower Electric Project in Laos.

VASE has a longstanding relationship with Electricite du Laos – Generation Public Company or EDL-GEN more 10 years and we have plan to build our own Hydropower Electric. This project is in progress.

I assure that our company will grow up every year base on the Highest Standard as well as our experience and our professional to serve you best in every of your project.

Mr. Senglaty SAVANKHAM

President

Vientiane Automation and Solution Engineering

Why VASE?

Quality is Standard.
Safety is Our Culture.
Committed to Clients.
Innovative Solutions.

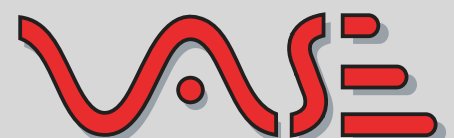
ABOUT VASE

Vientiane Automation and Solution Engineering (VASE) is a National Leader in providing superior engineering services in electrical, mechanical, instrumentation, controls and systems integration. Our reputation is one of excellence in customer service, quality of systems performance, and provision of superior products from worldwide leader suppliers. We stress the importance of short-term needs supporting long term objectives in equipment, software and personnel.

VASE is established in May 2007 with registered capital less than USD 100,000. We have now grown to be a multi-million dollars business. Our Head Quarter is in Vientiane Capital, Lao PDR.

VASE is a family-owned and operated company with an excellent record of success.

Since 2008, We have consistently demonstrated a level of integrity and stability that has led to many continuing relationships with clients who appreciated our reliable and timely completion of projects and our leadership.



**Vientiane Automation
and Solution Engineering**





OUR CORPORATE VALUES

We respect the individual, and believe that individuals who are treated with respect and given responsibility respond by giving their best.

We are frugal. We guard and conserve the company's resources with the same vigilance which we would use to guard and conserve our own personal resources.

We are believers in the Golden Rule. In all our dealings we will strive to be friendly and courteous, as well as fair and compassionate.

Quality is a Standard. Our goal is simply to be the best and to continually improve. This is accomplished through focused teamwork, pride in our work, quality controlled systems, and by hiring and educating the best people we can possibly find. Our team members are quality focused.

Safety is our Culture. Keeping our employees and our client project safe are the most important matter to us, and safety will always come first as we strive for accident-free projects. We are committed to safety.

Committed to Clients. We feel a sense of urgency on any matters related to our clients. We own problems and we are always responsive. We are client driven.

Innovative Solutions. Our team members are focused, developed, and proficient on the most advanced technologies, methods, and processes in the industrial engineering, construction, & maintenance sector. We are experts in our field.

Our company leaders, management, & employees make our values visible.



MAIN ACTIVITIES

VASE outstanding reputation for the design and supply of state-of-the-art technology through to commissioning and training has been built over many successful systems. Whatever the project or product requirements, VASE has the solution to keep you in control.

VASE brings a fresh and innovative approach to engineering solution services, acting as liaison between the end-users, software providers, and equipment suppliers. Our goal is to exceed the expectations of every client by offering outstanding customer service, increased flexibility, and greater value, thus optimizing system functionality and improving operation efficiency. Our associates are distinguished by their functional and technical expertise combined with their hands-on experience, thereby ensuring that our clients receive the most effective and professional service.

As experts in electrical, instrumentation, controls and systems integration, VASE is involved in every stage upon client selection of Detail Design, Project Management, Factory Acceptance Testing (FAT) Start-up and commissioning, Turnkey delivery.

VASE specializes in delivering project solutions that focus on customer's specific need and requirement. We provide a complete turn-key approach that not only incorporate well-known international products and services but also incorporate the best domestic products and services required for our customer's specific application.

VASE supplies Systems software from implementation to completion offering continual functional and technical support. Our extensive skills encompass all aspects of implementation and operation, including project requirements, development of functional specifications for client approval, system design, and overseeing engineering teams customizing software to fit specific client's needs.

Typically, we are on-site at the customer's locations handling installation replacement, repair, maintenance, testing, and commissioning electrical equipment's instrumentation, mechanical and control systems, providing functional and technical training and support, and resolving any and all troubleshooting issues that arise when the customer initiates software usage in a live setting. We pride ourselves on our proven track record for effectively delivering many turnkey projects for Electricity Du Laos (EDL) and EDL-Gen



OUR SERVICES

- Instrumentation and controls troubleshooting, maintenance, upgrades, and calibrations.
- PLC and SCADA installation, troubleshooting, maintenance, and support.
- Start-up and Commissioning.
- On-site field service as required including, but not limited to, engine exhaust temperature monitoring equipment and existing control panel maintenance.
- Custom machine designed and fabricated
- Solution proposals for a given task.
- Control system configuration design.
- Electrical design for control system and related equipment.
- Delivery of control system equipment
- Supply of electrical equipment
- Electrical cabinets assembly, wiring and testing
- Software design and programming for given application
- Software debugging and optimization
- Assistance for trial run
- Service and support for machine shut-down
- Operation and maintenance training
- Consulting for technical and maintenance support
- Construction of substations and power transmission lines
- Transmission System Equipment
- High Voltage Transmission Line 22kV, 115 kV
- Communication System
- VASE SCADA System
- Relay Protection System
- Construction of Hydropower Dams, Roads and Bridges
- Preventive Maintenance Programs
- Predictive Maintenance
- Duty & Task Analysis
- Shutdown Planning & Coordination
- Maintainability & Operability Coordination
- Material Warehousing & Management
- Facility Maintenance





WE CAN PROVIDE THE SUPPORT THAT YOU NEED

POWER PLANT

- Plant start-up
- Generator Inspection
- Instrument Calibration
- Excitation System Inspection
- Protection Relay Testing

SUBSTATION

- Substation Design and Drawing
- Installation
- Testing and Commissioning
- Electrical Maintenance Work

TELECOMMUNICATION

- Public Radio System
- Microwave System
- Design, Installation and Commissioning

AUTOMATION

- Computer-Base Substation Control System (CSCS)
- SCADA and HIMI Real-Time Monitoring
- Programmable Logic Controller (PLC)

ELECTRICAL EQUIPMENT TESTING

- Protection Relay, Capacitor Bank.
- Power Transformer, Reactor, Distribution Transformer, Motor.
- Power Cable, Circuit Breaker
- Switchgear, CT and PT

OTHER

- Customer Training
- Fault Investigation
- Protective Relay Coordination
- Ground System Testing
- Battery and Battery Charger Testing
- Online Monitoring System for Electrical and Mechanical Equipments



SAFETY INFORMATION

At VASE, Safety is our primary concern. That's why we have a company wide goal of Zero injuries and accidents on every job we perform. Through constant reiteration of our safety procedures, immediate response to all unsafe acts, and positive reinforcement of safe behavior, we have been highly successful in reduction of higher-risk activities.

VASE recognizes that safety is the most important aspect of our business. We owe it to both our customers and our employees to maintain the highest of standards when it comes to safe working conditions and methods.

Our Safety Committee is comprised of top-level management from all divisions, who work closely with VASE and consultants to review and update current policies and procedures, to guarantee the highest possible level of safety performance.

As our company has grown, we have stepped up our efforts to ensure safety on each and every project, including a Safety Orientation for new personnel, and company wide Awareness and Incentive programs to promote a safe working environment ; and finally yearly safety orientation of ALL field and management personnel. "If a job cannot be performed in a safe manner, then we will not perform it until a safe approach is arrived to.", Mr. Senglaty SAVANKHAM, Managing Director of VASE.

SAFETY PROGRAMS

- Full-time Safety Director
- Safety Manual for Industry
- Daily Safety Meetings
- Weekly Safety Audits
- Pre-job Meetings
- Progressive Disciplinary Policy
- Drug Testing
- Test for Cause
- Accident/Near Miss Investigation
- Safety Training (includes new hire orientation)
- Yearly Supervision Appraisals tied to Safety Performance
- P.S.A. A pre-job assessment of known or predictable hazards
- Job Safety Analysis - JSA





OUR MAJOR CUSTOMERS



Electricité Du Laos (EDL) is a state-owned corporation under the Ministry of Energy and Mines which owns and operates the country's main electricity generation, transmission and distribution assets in Lao PDR.



EDL-Generation Public Company (EDL-GEN) comprises of the following seven hydropower plants: Nam Ngum 1, Nam Mang 3, Nam Leuk, Xeset 1, Xeset 2, Selabam and Nam Song. The total installing power is 387MW and each year they can generate electricity in average of 2060.64 GWH to EDL-GEN. On 15th December 2010, EDL-GEN was established. It is the first public company in Lao PDR and it has all foundations to deal with business activities in accordance with laws, rules and regulations of Lao PDR.



OUR PARTNERS



Pushing Performance



ensuring the flow



Power on



ANDRITZ
Hydro

ALSTOM

AREVA

FE

Fuji Electric

VIBROSYSTEM



Mitutoyo

CEWE
INSTRUMENT

GE imagination at work

FLUKE

Alta Solutions
Innovative Signal Processing Solutions



IDEC
EATON



EGAT

Power for Thai Happiness

Powering Business Worldwide

GRUNDFOS

MITSUBISHI
ELECTRIC

FLOWSERVE

FESTO

Rexroth
Bosch Group

BCC
BANGKOK CABLE CO., LTD.

PONOVO



OMRON



PHOENIX
CONTACT

THAI MAXWELL
ELECTRIC



HUBBELL
Control Solutions

MS MORGAN
SCHAFFER
Accuracy is Everything.

Merlin Gerin



Ferraz
Shawmut **IRIS**
POWER

SEL

SQUARE D

Telemecanique

YOKOGAWA



doble

Doble Lemke



tyco / Electronics

MOELLER

phelps
dodge

BURNDY



ENERPAC
POWERFUL SOLUTIONS. GLOBAL FORCE.



HIGH VOLTAGE TRANSMISSION LINE

Compare to a blood vessel, High Voltage Transmission line transmit electricity to consumers. Being responsible for the maintenance of transmission line network, VASE is capable to render services for high voltage transmission line up to 500kV.

SCOPE OF SERVICES:

I. Preventive Maintenance

- Thermovision Check: Check for loose connection of equipment and transmission line by detecting the heat radiating from bad contact point either occurred by corrosion or loosening of nuts or bolts.
- Tower Grounding Resistance Check: Check for grounding resistance of towers to prevent damages from lightning as well as analyzing and improving grounding system.
- Puncture Test: Check insulator puncture arising from lightning or pollution including analyzing the cause of damage.

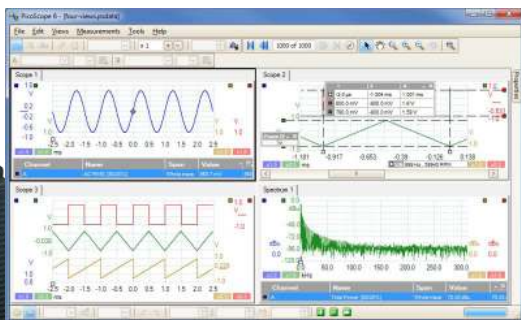
II. Corrective Maintenance

- Repair transmission lines and towers
- Transmission line stringing.
- Replace insulator and hardware.

III. Commissioning Transmission Lines



ON-LINE TESTING EQUIPMENT



SPECIALLY TESTING EQUIPMENT & TOOLS



- Fully automatic measurement of the dielectric strength of liquid insulations up to 100 kV
- Excellent design for high efficiency and usability
- Extraordinarily powerful for continuous use in the laboratory
- Clear and reliable results through the latest measurement technology
- Repeatable breakdown measurement in mineral oil, silicone and ester fluids

baur oil tester DPA 100 C

The Doble M4100 unit is the foundation of the M4000 Diagnostic Test System for Condition Assessment of Power Apparatus. The M4100 Instrument evaluates the integrity of high-voltage substation apparatus by measuring the power factor/tangent delta and a number of other values. It also measures capacitance, to evaluate physical changes to the apparatus. The M4100 was engineered from the ground up to overcome the common problems that plague other test instruments. The result is nothing less than an entirely new approach to testing.



Doble M4100



Winding Ohmmeters RMO-M series are designed for winding resistance measurement of electrical motors and generators. RMO-M instruments are based on state of the art technology, using the most advanced switch mode technique available today. RMO-M generates true DC ripple free current with automatically regulated measurement and discharge circuit. The RMO100M has a very high ability to cancel electrostatic and electromagnetic interferences that exist in HV electric fields.

Winding Ohmmeter RMO100M

Fluke 810 helps identify and prioritize mechanical problems. Check out how this hand held vibration tester can help make informed maintenance decisions.



Fluke 810 Vibration Tester



Powerful and Versatile for Advanced Infrared Troubleshooting

Fluke Ti32 Infrared Camera



The 800PL Series DC hipot testers are an economical solution to DC field testing of cables, terminations, motors, generators and other electrical apparatus. This series comes in a single unit design that ranges from 15kV to 80 kV and two unit design that ranges from 120kV to 170 kV. Accurate voltage and current measurements are assured via voltage readings that are taken directly at the output of the high voltage transformer and current measurements are taken in the return leg.

800 SERIES: DC HIPOTS

The most precise. 30x telescopic magnification. Meets the highest standards in construction, engineering and topographic surveys.



Leica NA700 Series Automatic Levels



Circuit Breaker Analyzer (One Break Per Phase)
Suitable for testing timing and travel on all circuit breakers with single interrupter per phase

Megger (Programma) EGIL Circuit Breaker Timer

The Megger BITE3 Battery Impedance Test Equipment determines the health of lead-acid cells up to 2000 Ah by taking measurements of the most important battery parameters. The BITE3 measures cell impedance, an internal ohmic test, cell voltage, intercell connection resistance and ripple current. And, for the first time in a battery instrument, the BITE3 measures float current and the harmonic content of the ripple current. There is even a built-in spectrum analyzer to show the harmonic content of the ripple current.



BITE3 Battery Impedance Tester



Megger MIT520/2 5 kV diagnostic insulation resistance tester

The MOM200A is designed to check and measure contact resistances in highvoltage circuit breakers, disconnecting switches (isolators) and busbar joints. This unit is an excellent choice when 200 amperes or less are needed for measurement.



MOM200A 200A Micro-ohmmeter



**SVERKER650
Single Phase Relay Tester**

- Designed for rugged field use
- 0 to 100 Amp output current
- Suitable for testing many different types of relays such as power, voltage and current
- Easy to operate

The Sverker 760 Relay Test unit is the engineer's toolbox. The Sverker 760 features many functions that make relay testing more efficient, for example, its powerful measurement section can display (in addition to time, voltage and current) Z, R, X, S, P, Q, phase and angle cos. The Voltmeter can also be used as a second ammeter. You can also test directional protective equipment efficiently by means of the built-in variable voltage source. The Sverker 760 also has a continuous phase shift function as well. The Sverker 760 is designed to comply with EU Standards and other personal and operational Safety Standards and it is also equipped with a serial port for communication with personal computers and PC software.



**Programma Sverker 760
Relay Test Unit**



**Megger (Programma) TM1600
Circuit Breaker Analyser**

The Megger (Programma) TM1600 Circuit Breaker Analyser is used to measure a circuit breaker's timing cycle. The timing channels record closings and openings of main contacts, resistor contacts and auxiliary contacts. The TM1600 Circuit Breaker Analyser supports communication with the CABA Win Breaker Analysis Software. Fully equipped.

Ideal for use on equipment in high-voltage substations & industrial environments Suitable for battery systems ranging from 12 to 250 V Batteries can be tested in service, results can be saved to PC with Torkel Win software



**TOR KEL 840/860
Battery Load Tester**



**TTR300 Series
Three-Phase Transformer Turns Ratio Tester**

- Stand-alone or remote-control operation
- Accurately measures ratio, phase deviation and exciting current
- Field upgradeable without compromise to calibration
- Built-in capability for storing and downloading test results in an XML format, via RS-232, Ethernet or USB ports (depending on model)
- Highest ratio measurement (45,000:1); highest accuracy (0.1%)



- Tests the integrity of vacuum interrupters quickly, safely and easily
- User defined voltage selection
 - Extensive voltage range
 - Easy to operate. Follows ANSI/IEEE standardized DC test methods.
 - Lightweight and portable

VIDAR
Vacuum Interrupter Tester

Key features

- Protection test set and universal calibrator in one device
- Testing of all relay generations - electromechanical, static, numerical, IEC 61850
- Highly accurate test signals. For meter testing: The sources are the reference - no additional reference meters are required
- Integrated network for testing IEC 61850 IEDs
- 10-channel analog measurement and transient recording functionality (option)



OMICRON CMC 256plus
High precision relay test set and universal calibrator

Key features

- Powerful current sources for testing even high-burden electro-mechanical relays
- High current amplitudes for 5 A relay testing
- High accuracy and versatility for testing static and numerical relays of all types
- Integrated network for testing IEC 61850 IEDs
- 10-channel analog measurement and transient recording functionality (option)



OMICRON CMC 356
Universal relay test set and commissioning tool

Key features

- Up to 800 A or 2000 V with up to 5 kVA over a frequency range of 15 Hz - 400 Hz or 400 A DC
- Excellent interference suppression facilitates measurement of small signals
- Easy to transport (just 29 kg) - Ideal for on-site testing
- Testing templates, automatically generated testing procedures and test reports
- Up to 2000 A or 12 kV through use of current or voltage amplifiers



OMICRON CPC 100
Universal testing device for electrical diagnostics



PONOVO L336i
portable protection relay tester.

L336i is a portable protection relay tester. It is a great innovative breakthrough of PONOVO for its incomparable lightest solution (8.8kg) with 6 currents and 4 voltages. This Laptop size relay test set can test all types of modern multi-function relays. It is the first choice for relay test engineers who travel a lot.



PCT200i is specially designed for current transformer characteristic test. Compared with PCT200Li, PCT200i owns more test items and higher technical parameters. This CT analyzer can finish the measurement class CT and TYP class CT. The additional functions include ratio and angle differential tests (the measurement points in the GB standard), FS and inductance, steady-state parameters, peak error and transient parameters, etc.

**PONOVO PCT200i
current transformer characteristic test**

Features

- High power current source for high burden relay test
- Capable of testing differential relay with two independent current sources
- Capable of testing directional relay with adjustable phase angle
- In-built Ammeter and Voltmeter
- 120s output time at 250A
- Rotating mouse control and quick control buttons
- large LCD display
- Many ready test modules for automatic test applications



**PONOVO T200A
relay test kit based on PWM technology**



The CVT-765 determines the transformer turns-ratio using the IEEE C57.12.90 measuring method. It uses a 7500Vac excitation voltage source to accurately measure the turns-ratio of Capacitor Voltage Transformers with a rating of up to 765KV. The transformer turns-ratio is determined by precisely measuring the voltages across the unloaded transformer windings.

**Vanguard-instruments CVT-765
Capacitor Voltage Transformer Tester**

Features

- Auto Current Ranging from 10 MA to 40 Amps
- Digital Resistance Reading from 1 micro-ohm to 500 ohms
- Auto discharge circuit for operator safety
- Built-in 2.5" Thermal Printer, computer interface
- Stores 48 records of 63 readings
- Weighs less than 30 lbs.



**Vanguard-instruments WRM-40
Winding Resistance Ohmmeter**



Fluke DSX2-8000 CableAnalyzer

The DSX CableAnalyzer™ Series is the copper certification solution of the Versiv™ cabling certification product family. The DSX Series includes the DSX-8000, which can certify cabling up to Cat 8 / 2 GHz. Versiv reduces overall certification costs by up to 2/3, adding up to 10% to the bottom line of every job. While the fastest test time (8 seconds for Cat 6A) plays a part, the system is designed from the ground up to reduce errors and streamline certification. Full integration with the LinkWare Live cloud service lets the Project Manager remotely set up the testers, monitor job progress and even locate tester from any smart device.



IRIS POWER EL CID EVOLUTION

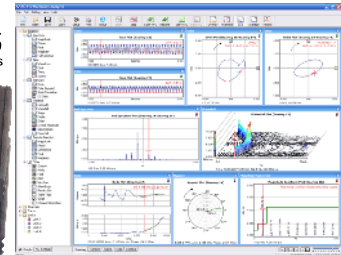
The next generation in EL CID technology for detecting stator core problems

EL CID TESTING VS. RING FLUX TESTING

The only alternative to the Iris Power EL CID Evolution test is the Ring Flux (full flux) test. The Ring Flux test requires large power supplies, considerable manpower, and expensive infrared viewing cameras. The EL CID test has the following advantages compared to the Ring Flux test:

- EL CID test provides rapid testing of the machine, often less than one work shift for turbogenerators and motors. The Ring Flux test typically takes 3 work shifts.
- Only one technician is needed to perform the test.
- Typical labor is reduced from 144 to 360 man-hours for a major turbogenerator Ring Flux test* to just 8 to 10 man-hours for EL CID test.
- Rapid setup to retest after any repair ensures quick turn-around.
- Minimize intrusive repairs by instantly verifying the results.
- Safe for core and operator, unlike Ring Flux test which is potentially damaging to the uncooled core.

- Brings powerful acquisition capability close to machinery
- Industrial design for field mounting
- Reduced analog wiring
- Flexible channel and phase marker configurations
- Optional Fiber optic connectivity maintains signal integrity
- Real-time vibration analysis and transient data capture
- 24-bit simultaneously sampling inputs



Alta Solutions AS-1250FE
Dynamic Signal Acquisition Front-End
for Rotating Machinery Monitoring and Analysis

HYDRAULIC & AIR TOOLS



VIBRATION TOOLS



DIAMOND CORING SYSTEM, SLITTING TOOL, MAGNETIC DRILLING MACHINE & Other





POWERFUL TEAM SPECIAL TESTING TEAM



VASE
Vientiane Automation
and Solution Engineering

Transmission System Equipment plays an important role in transmitting electricity to consumers. Fulfilled with knowledge, skills and years of experience in this field as well as modern and standard equipment, VASE maintenance crew can assure you of our best services.

SCOPE OF SERVICES:

I. Engineering and Installation of Substation Equipment

- Consultation on planning, design and supervision of substation construction.
- Installation of electrical equipment such as Power Circuit Breaker, Instrument, Transformer, Disconnecting Switch as well as the analysis of substation problem for improvement.
- Equipment leasing such as Generator, Instrument Transformer, Oil Purifier, Air Dryer, Vacuum Pump and other equipment.

II. Power Transformer and Instrument Transformer

- Commissioning, inspection, installation, repair and test of Power Transformer and Instrument Transformer.
- Preventive & corrective maintenance including inspection and overhaul of On Load Tap Changer (OLTC).
- Transformer life assessment.



TRANSMISSION SYS- TEM EQUIPMENT

- Consulting service on transformer problem.
- Provision of spare parts.

III. Switchgear and other Equipment

- Preventive and corrective maintenance of Power Circuit Breaker, Disconnecting Switch, Capacitor Bank.
- Preventive maintenance of Gas Insulated Switchgear (GIS).
- Assessment of Power Circuit Breaker condition by analyzing the result from Motion Analyzer and Dynamic Resistance Measurement.
- Electrical for Power Circuit Breaker such as contact resistance and timing test, etc.,

IV. Battery and Charger

- Battery inspection and discharge test.
- Battery charger inspection

V. Testing and Commissioning Substation Equipment

Transmission System plays an important role in transmitting electricity to the citizens of Laos with quality, stability and reliability by responsibility for the maintenance of entire equipments in Transmission System.

Throughout 5+ years of experience, Transmission System has served Lao citizens and the nation with acceptable experience and skills in order to sustain adequate electricity.

Transmission System expands our Operation & Maintenance Services to both government and private sectors such as Independent Power Producers (IPPs) and Small Power Producers (SPPs) as well as Industrial Plants.



Fulfilled with responsibility, Transmission System carefully selects competent and experienced maintenance crew, modern equipment, appropriate technology and standard of working to satisfy all customers. Moreover, we have our maintenance teams nationwide to serve our customers.

Transmission System assures customers of the correct and appropriate maintenance procedures for their equipment, the decrease in unnecessary expenses arising from equipment breakdown, extension of equipment's operation life and the decrease of the total production cost.

TRANSMISSION SYSTEM OPERATION AND MAINTENANCE



VASE SCADA SYSTEM

SCADA (supervisory control and data acquisition) also known as Industrial Control System (ICS): computer systems that monitor and control industrial, infrastructure, or facility-based processes, in our case power generation. With many years of experience, VASE has installed the system in many substations around Lao PDR.

SCADA System is consisted of:

- Computerized Control System (CCS)
- Remote Terminal Unit (RTU)

CCS:

- Available for Control Center to substations
- Including basic SCADA functions: data acquisition, MMI, alarm and event log, etc.
- Including basic SCADA preparing tools: DBMS, On-line Picture Generator, etc.
- Special SCADA functions are available: Auto Voltage Control, Group Control, Shedding Scheme, etc.
- Compatible with on-shelf hardware

RTU:

- Acquisition and processing of technological data.
- Including functions: Communication functions, providing the data exchange with the control center.
- After sales warranty including periodic inspection.
- Spare parts are provided

Scope of Services

- Provide consulting service in SCADA System
- Install and inspect Remote terminal Unit



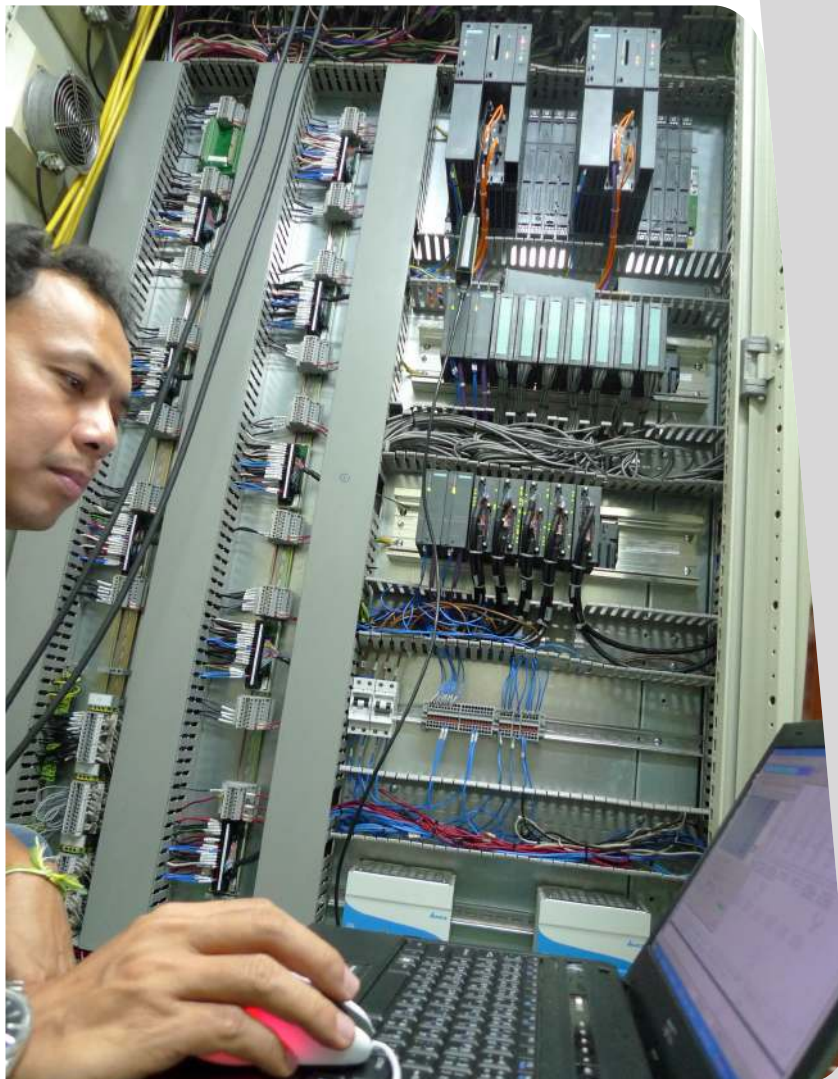
CONTROL PANEL SYSTEM

Over 10 years, VASE has been capable of meeting our customer's needs in engineering, design and fabrication. Our custom control panels and system assemblies range from small single junction box assemblies to multiple enclosure PLC and DCS systems.

OUR CAPABILITIES INCLUDE :

- Junction Box Assemblies
- Control Panels
- PLC Systems & DCS Systems
- Single & Multi-Loop Control System Panels
- Custom Fabrication Panels
- Designing, Fabrication, Testing, Installation & Labeling

VASE's professional staff has the knowledge, skill, and proficiency to have designed, programmed, and commissioned state of the art process control systems for a large number of major industrial and commercial clients in the Hydro Electric Project across the nation.



PROCESS SKID ELECTRICAL & INSTRUMENTATION

Complete Modular Systems assembled in accordance with customer specs. From simple pump skids to complex piping modules complete with instruments and controls. Complete Electrical system capability in accordance with the National Electric Code (NEC) Including Hazardous Locations. Exceptional pneumatic and process tubing work as well as hydrostatic and pneumatic pressure testing including complete functional testing of system controls.

The efficient design of VASE's Process Skid Systems can complement any installation or integration type. Our process modules and stainless steel process systems are easy to use and can reduce installation time because of their modular installation, allowing you to get back to what you do best production. Stay on track, be on time with turnkey Electrical & Instrumentation installations.

“ REDUCE INSTALLATION DOWNTIME ”

INTEGRATION – CONSULTATION, DESIGN, FABRICATION, INSTALLATION AND STARTUP TO ENSURE SKID PROPERLY INTEGRATES WITH EXISTING SYSTEM





POWER

At VASE, our highly experienced team members are dedicated to the creation of innovative solutions based on your specific requirements and are prepared to design, construct and troubleshoot even the most complex installations. Since our reputation is based on customer satisfaction, we are committed to your project from conception through implementation and support.

- Main Switchgear Installations
- Bus Duct & Riser Feeders
- Power & Control Wiring for Processing and Manufacturing Equipment
- Power for Commercial and Industrial Projects
- Computer Room Installations
- Emergency Services

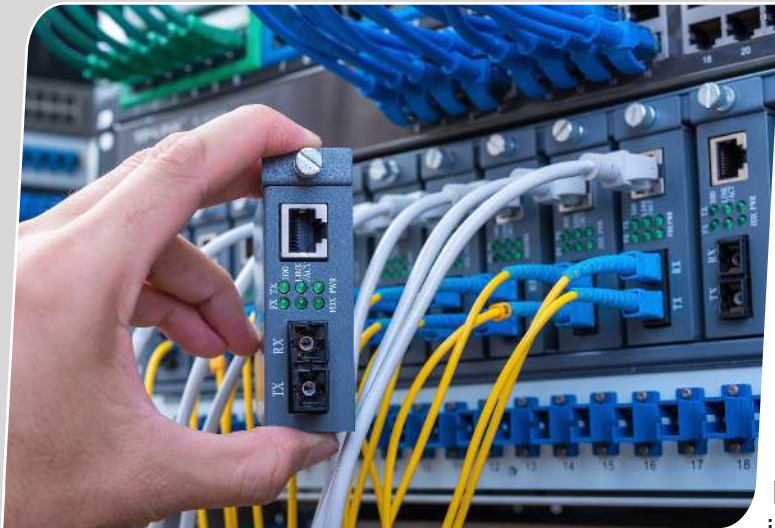
SYSTEM DISTRIBUTION (SD) :

- New Construction and Terminations
- Up to 35,000-volt Primary and Secondary Extensions
- Cable Section Replacement for Faulty Circuits
- Reconstruction & Emergency Restoration
- Uninterruptible Power Systems
- Generator System Installation
- Preventive Power Maintenance Programs
- Equipment Relocations, Additions, & Alterations

MISCELLANEOUS MAINTENANCE :

- Equipment Relocation
- Raising & Lowering of Equipment
- Cable Relocations
- Workshop
- Online Monitoring





loops than copper and there is no ongoing plant tuning. Additionally, the Fiber Optic Network has an estimated Interior/Exterior, LAN, WAN, and Plant life of more than 35 years. Even today, full-service broadband networks need to support bandwidth-intensive voice, video, and data applications. Whether for IP streaming video for residential consumers, Virtual Private Networking (VPN) for telecommuters, or point-to-point T1 services for businesses, only Fiber Optics can satisfy the wide-ranging needs of an entire community.

COMMUNICATION SYSTEM

Fiber Optic Network is regarded to be the most reliable extensive Network in Lao PDR that helps support Communication System for generation and transmission control. VASE provides service for the communication System connecting between IPPs, SPPs, and our main customers Electricité Du Laos (EDL) and EDL-Generation Public Company (EDL-GEN).

The use of a Fiber Optic Network (FON) minimizes maintenance expenses because the Fiber Optic Network (FON) is constructed only of Fiber-Optic cabling and optical splitter and couplers. Signals are not affected by electrical noise. This makes Fiber-Optics the perfect partner for electrical transmission right-of-ways.

Exempt from FCC-mandated sweeps, fiber reduces operation and maintenance costs for an outside plant. Fiber also drives much longer

Scope of Services:

1. Engineering Service

- Designing Communication System connecting between IPPs, SPPs, EDL and EDL-GEN and their direct customers.
- Engineering and consulting services.
- Specification preparation.

2. Operation and Maintenance Services

- Installation of communication equipment for communication connecting system between IPPs, SPPs, EDL and EDL-GEN and their direct customers.
- Supervising, installing, testing, and commissioning Communication System connecting to EDL and EDL-GEN.
- Testing communication equipment.
- Preventive and corrective maintenance.



RELAY PROTECTION SYSTEM

Protective Relay is the equipment that prevents damages to occur to expensive substation equipment such as Transformer, Circuit Breaker, CT, etc. Because of damages occur to such equipment it will cause high loss in the system



Scope of Services:

1. Power system study

To study and prepare the data of Power System in terms of System Parameter and Network Impedance used to calculate Short Circuit Current of each substation. This outcome is used as a setting value for Protective Relay and for analyzing High Fault Level leading to the method of correction that benefits the selection of equipment such as Circuit Breaker. In addition, Transmission System Areas provide Load Flow Study, Stability, and Transient Study to solve the problem that affects power system such as Overload, Power Swing, Under/Over Voltage, Voltage Dip, Under/Over Frequency including consulting service on solving problem of power system such as Load Shedding.

2. Preventive and Corrective Maintenance

By our experienced crew as well as modern equipment, VASE renders preventive and corrective maintenance which include Testing Service in Normal and emergency situation to help decide putting the equipment back into operation.

3. Commissioning

The processes of commissioning for Protection System comprise Design Review and installation, Inspection and Relay Setting Check for appropriate value used with Transmission Line and Transformer. Transmission System Areas also provide revision on Relay Setting used in existing system in order to decrease disoperation.

4. Fault Recorder and System Analysis, Commissioning And Maintenance

In case that there occurred problem in Protection System, VASE can provide Fault Recorder to monitor Power System as well as Protective System and collect data to analyze the cause of problem which can decrease disoperation.

5. Repair

Repair service for all types of Protective Relay including other equipment such Transducer, Meter and Testing Equipment.



TURNKEY SOLUTIONS & CONSTRUCTION

Basis for fast, reliable and cost effective new plants

Hydro Power Plant

VASE has a proven record of successful turnkey installations, implemented with a combination of deep process know-how, design expertise, qualified project management, experienced commissioning engineers and best-in-class products. VASE supplies turnkey electrical and automation system for all plant types including turnkey solutions for hydro water-to-wire plants.



Excavator



Crane



Backhoe Loaders



Wastewater Treatment Plant

VASE can provide you with an all-encompassing service from concept to completion including equipment supply, project management, design, consultancy services, plant operation, repair and maintenance. Our team of expert engineers have years of experience delivering complex water and wastewater treatment solutions for clients throughout the world and will ensure that the optimum solution is found to meet your exact requirements.

Building Envelope Services

Your Single Source Solution

VASE is a full-service architectural, design, engineering, and general contracting firm that integrates knowledgeable people with proficient local contractors through innovative processes to achieve clearly defined performance objectives.

Our services are based on a performance-driven philosophy and delivered using field-proven processes and a competitive selection of procurement methods. Whether you are looking for turnkey design-build construction or on-going preventive maintenance, VASE provides quality technical performance specifications, on-time delivery, and in-budget accountability from a single, reliable source for construction projects across in the world.

Successful construction projects deliver the highest level of performance in three critical areas:

- Specification
- Scheduling
- Budget



Bulldozer



Grader



Wheel Loader



Truck Water



Drum Roller Vibratory



Concrete Pump



Dumper



Concrete Mixer



Crane



HYDRO POWER PLANT IN LAOS. (EDL-GEN)



NAM SANA
Capacity : 14 MW
COD : 2014



NAM KHAN 2
Capacity : 130 MW
COD : 2015



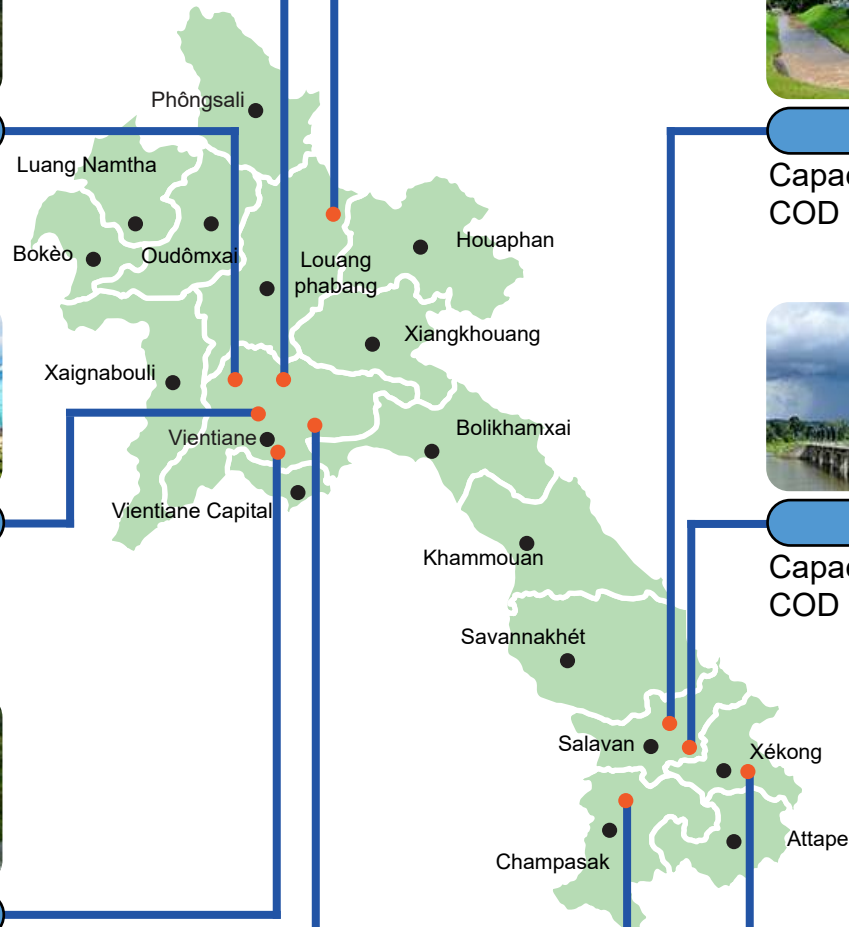
NAM SONG
Capacity : 6 MW
COD : 2012



XESET 1
Capacity : 45 MW
COD : 1991



NAM NGUM 1
Capacity : 155 MW
COD : 1971



XESET 2
Capacity : 76 MW
COD : 2009



NAM MANG 3
Capacity : 40 MW
COD : 2005



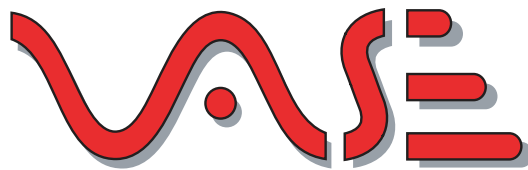
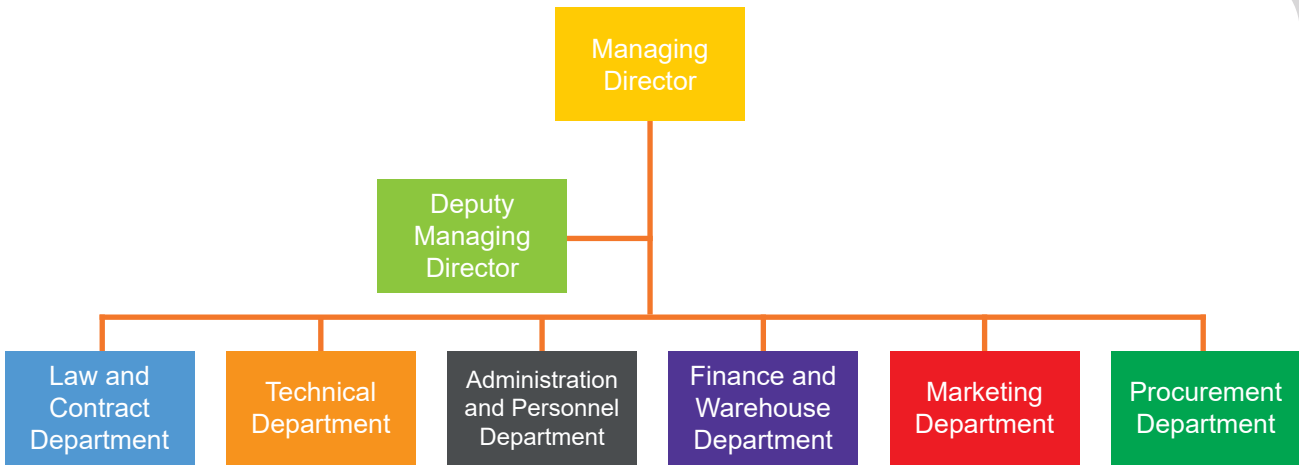
NAM LEUK
Capacity : 60 MW
COD : 2000



SELABUM
Capacity : 5 MW
COD : N/A



HOUAY LAMPHAN GNAI
Capacity : 88 MW
COD : 2015



**Vientiane Automation
and Solution Engineering**

ORGANIZATION
CHART

VASE consists 6 Departments:

1. Law and Contract Department
2. Technical Department
3. Administration and Personnel Department
4. Finance and Warehouse Department
5. Marketing Department
6. Procurement Department





PROJECT REFERENCES

Year 2021

- New insulated Stator Coil and Slot Wedge, Ripplie Spring, G10 For NamKhan2 HPP
- Overhaul Unit 1 For NamKhan2 HPP
- Replacement Spherical Valve Unit 2 For Nam Mung 3 HPP
- Civil Work Recovering Project for Selabam HPP (included repair and expansion downstream channel)

Year 2020

- Supply and Installation Transformer 115/22 KV, 30MVA for Thalat S/S
- Supply and Installation ANNUNCIATOR for NAM NGUM 1 HPP
- Supply and Installation Relay REC650, ABB for NAM NGUM 1 HPP
- Supply and Installation Main Pulse Ampli. Crad (FC5001) for NAM NGUM 1 HPP
- Supply and Installation Commissioning CT 500-250/5A, ABB 115kV Transfer Bus for NAM NGUM 1 HPP
- Selabam Unit 1.2.3 Overhaul Project
- Selabam Unit 4 Overhaul Project
- Supply and Installation Plate & Gasket Heat Exchanger for Nam leuk HPP
- Repair AC Generator Unit 2 for Nam Song HPP

Year 2019

- Supply and Installation DC Source Control Circuit NAM NGUM 1 HPP
- Resolving Dam Control & SCADA System Upgraded Nam Luek HPP

- Supply and Installation Tele protection, Current Transformer and Distance Relay for NAM NGUM 1 and Nam leuk HPP
- Supply and Installation AC Generator for Nam Song HPP
- Supply and Installation Spherical Valve No.1 (Unit 1) at Nam Mang 3 HPP
- Supply and Installation of Heat Exchanger for Unit 1&2 of NAMKHAN 2 HPP
- Supply and Installation Turbine Bearing Unit2 for Nam Song HPP

Year 2018

- Replacement Excitation and Turbin Governor for Unit 2 NAM NGUM 1 HPP
- Overhaul Unit 1 Selabam HPP
- Replacement GIS Relay REC-650 NAM NGUM 1 HPP
- Repairing Rotor Pole Unit 2 NAM MANG 3 HPP
- Installation Module Micronet CPU, Power PC-5200 Channel1 Nam leuk HPP
- Replacement Control (Touch Screen (HMI) LUCB Unit5) NAM NGUM 1 HPP
- Supply and Installation PLC and SCADA System Nam Mung 3 HPP
- Supply and Installation Heat Exchanger for Unit 1 & Unit 2 Xeset 2 HPP
- Supply and Installation Governor System and Excitation Control System Unit3, 4 Xeset 1-2 HPP

Year 2017

- Excitation Control System for Unit 3, Unit 4 Xeset 1 HPP
- Supply and Intalltion Upper and lower Gide Bearing Modification Unit 2 Nam leuk HPP
- Rehabilitation of Unit 3 Selabam HPP
- Supply and Intalltion On line DGA for Nam leuk HPP, NAM MANG 3 and Xeset 1 HPP
- Replacement Excitation and Turbin Governor for Unit 1 NAM NGUM 1 HPP
- Replacement of Equipment AC motor Xeset 2 HPP

Year 2016

- Extention Project Selabam HPP
- Extention Project Xeset 2 HPP
- Overhaul Unit 2 and NAM MANG 3 HPP

Year 2015

- Supply and Installation On line Dissolved GAS Analysis Project (DGA) NAM NGUM 1 HPP
- Replacement of Excitation for Unit 1 and Unit 2 NAM MANG 3 HPP
- Supply and Installation Governor System for Unit 1 and Unit 2 NAM MANG 3 HPP
- Heat Exchanger Project for Unit 1 and Unit 2 Xeset 1 HPP
- Supply and Installation SCADA Unit 1 - Unit 5 Project NAM NGUM 1 HPP
- Overhaul Spherical Valve for Unit 1 and Unit 2 NAM MANG 3 HPP
- Installation Online Air GAP Sensor and Monitoring System NAM MANG 3 HPP
- Major Overhaul Unit 1 Nam Mang 3 HPP
- Major Overhaul Unit 2 Xeset 1 HPP

Year 2014

- Supply and Intallation DC Source Control Circuit in NAM NGUM 1 HPP
- Major Overhaul Unit 1, Unit 5 Xeset 1 HPP
- Major Overhaul Unit 1 and 2 Nam Leuk HPP



Year 2013

- Namngum 1 Hydropower (Major Overhaul Unit 4), Vientiane Province
- Install and Setup Water Supply Company, Hadxayfong District, Vientiane Capital
- Xeset 1 Hydropower (Major Overhaul Unit 3), Salavan Province
- Namngum 1 Hydropower (Major Overhaul Unit 3), Vientiane Province
- Installation New Power Transformer in Sayabury Substation, Sayabury Province

Year 2011-2012

- Construction and installation new Khonesong Power Substation
- Nam Ngum 1 HPP, Vientiane Province - Supply And Installation of 115kV Disconnecting Switch (Phase II)
- Lao Tobacco Company, Vientiane Capital - Full Repair of Power Transformer 1000 KVA and Inspection of Switchgear Board
- Selabam Hydropower, Champasack Province - Renovation of The Power Plant Engine Units 1, 2, 3 and 4
- Nam Ngiep II S/S/, Xieng Khouang Province - Installation of Power Transformer and Upgrade of The Substation
- Nam Ngum 1 HPP, Vientiane Province - Supply and Installation of 123kV GIS, Type Elk-04





Year 2010

- Nam Ngum 1 HPP, Vientiane Province, Engine Unit 3 Overhaul
- Nam Ngum 1 HPP, Vientiane Province, Supply and Installation of Air Gap Monitoring System
- Nam Ngum 1 HPP, Vientiane Province, Supply and Installation of Battery Chargers and Inverters
- Selabam HPP, Champasack Province, Operation & Maintenance of Unit 4
- Nam Leuk HPP, Vientiane Province, Supply and Installation of Power Transformer. Repair and Maintenance of The Switchyard
- Nam Mang 3 HPP, Vientiane Province, Supply & Installation of Control PLC
- Xeset1 HPP, Salavane Province, Operation & Maintenance of Units 3, 4 & 5
- Xeset 1 HPP, Salavane Province, Major Overhaul of 8MVA Power Transformer, 115kV Switchyard and 22kV Switch Gear
- Nam Ngum 1 HPP Vientiane Province, Repair, Supply and Installation of Heat Exchanger For Engine Units 1 & 2
- Nam Ngay HPP, Phongsaly Province, Operation & Maintenance of Units 1 & 2
- Nam Kho HPP, Oudomxay Province, Operation & Maintenance of Units 1, 2 & 3
- Nam Ngum1 HPP, Vientiane Province, Operation & Maintenance of Units 1, 2 & 4
- Nam Dong HPP, LuangPrabang Province, Operation & Maintenance of Units 1, 2 & 3
- Nam Leuk HPP, Vientiane Province, Repair, Supply And Installation of The PLC System



Year 2009

- Nam Ngum1 HPP, Vientiane Province, Replacement of 22 kV Indoor Switchgear
- Naxaythong S/S, Vientiane Capital, Repair of 115kV Power Circuit Breaker
- Nam Ngum 1 HPP, Vientiane Province, Supply, Installation and Training of On-Line Partial Discharge Unit 1, 2, 3, 4 & 5
- Luangpabang – Xayaboury S/S, Luangpabang – Xayaboury Province, Supply and Installation of Capacitor Bank
- Khonesong S/S, Bolikhamxay Province, Construction of The New Substation and Transmission Line
- Nam Ngum1 HPP, Vientiane Province, Revamping 22kV Switchgear
- Phontong S/S, Vientiane Capital - Replacement of Transmission Line Protection System
- Thakhek S/S, Khammouane Province, Replacement of 22 kV Current Transformer
- Khoksaad S/S, Vientiane Capital Installation of New 22 kV Outgoing Feeder and AVR for Power Transformer
- Selabam HPP, Champasack Province, Rewinding Generator Unit 3
- Selabam HPP, Champasack Province, Replacement of Gas SF6 Circuit Breaker and 12 kV Indoor Current Transformer
- Nam Ngum 1 HPP, Vientiane Province, Major Overhaul of Generator Unit 5
- Nam Ngum 1 HPP, Vientiane Province, Supply of Fire Extinguishers Type NP-5HB.
- Nam Ngum 1 HPP, Vientiane Province, Supply of Electrical Equipments & Machineries for Major Overhaul of Turbine Unit 5
- Xeset1 HPP, Salavane Province, Supply of Electrical Equipments & Machineries (Control System)
- Namleuk HPP, Vientiane Province, Supply of Electrical Equipments & Machineries
- Phonsavanh S/S, Xiengkhouang Province, Supply of Cards of the Charger 48 VDC



- Xayaboury S/S, Xayaboury Province Supply of Cards of the Charger 48 VDC
- All S/S in Vientiane Capital, Supply of Electrical Equipmenst & Tools for Substation Maintenance





Year 2008

- Namleuk HPP, Vientiane Province, Supply of Battery 110 VDC
- Namleuk HPP, Vientiane Province, Supply of Transformer Bushing & Surge Arrester
- Naxaythong S/S, Vientiane Capital, Replacement of OITC Power Transformer
- Kangkok S/S, Savannakhet Province, Replacement of 22 kV Outgoing Feeder
- Nam Ngum 1 HPP, Vientiane Province, Replacement of Transmission Line Protection System
- Vangvieng S/S, Vientiane Province, Replacement of Transmission Line Protection
- Thalath S/S, Vientiane Province, Replacement of Transmission Line Protection
- Nam Leuk HPP, Vientiane Province, Replacement of The Governor System
- Nam Ngum 1 HPP, Vientiane Province, Replacement of AVR System and Excitation Transformer Units 3 & 4.
- Installation of The New SCADA System
- Bangyo S/S, Champasack Province, 22 kV Gas Circuit Breaker Overhaul
- Thalath S/S, Vientiane Province, 115 kV Gas Circuit Breaker Overhaul
- Vangvieng S/S, Vientiane Province, 115 kV Gas Circuit Breaker Overhaul
- Naxaythong S/S Vientiane Capital, Replacement of Vacuum Interrupter VCB

Year 2007

- Selabam HPP, Champasack Province, Supply, Delivery and Installation of Electrical Equipments







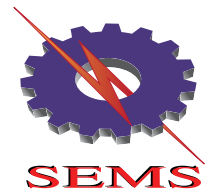
SAVANKHAM GROUP
Areas of Business
Power and Energy Business



1. VIENTIANE AUTOMATION & SOLUTION ENGINEERING COMPANY LIMITED (VASE). Established in the year 2007. The core business is contract work of mechanical systems, electrical & control systems, civil work up to EPC Turnkey contract work in power industry and other industrial projects. VASE capability in collaboration with strategic partners can get clients projects a great success. we can offer turnkey project.



2. ENERGY DEVELOPMENT AND ENGINEERING COMPANY LIMITED (EDEC). Established in the year 2009. The core business is to provide engineering services. supply and maintenance of substation components and transmission systems. we can offer turnkey project.



3. SAVANKHAM ELECTRICAL EQUIPMENT & MACHINERY SUPPLIER COMPANY LIMITED (SEMS). Established in the year 2005. The core business includes importing and supplying machinery parts, electrical products and systems. SEMS has been a representative of many leading product brands.



4. ADVANCE TELECOMMUNICATION AND DATA TECHNOLOGY COMPANY LIMITED (ATDT). Established in the year 2012. The core business is to provide of telecommunication system, IT and computer network systems.

Concrete Product



5. **SAVANKHAM CONCRETE COMPANY LIMITED (SCC).** Established in the year 2013. The company provides a variety of typical precast concrete products used for construction of houses, large buildings, industries and public works. The company is also a provider of custom-made ready mixed concrete according to customer specifications. we can offer turnkey project.



Water Technology



6. **SAVANKHAM WATER COMPANY LIMITED (SWC).** Established in the year 2017. The business is in the areas of investment and construction of water treatment plant & water transmission and distribution networks. The investment concession project such as Thadeua water treatment plant with the capacity of 20,000 cubic meters per day. The company eyes the government for next several projects.



7. **SAVANKHAM FOOD & BEVERAGE COMPANY LIMITED (SFB).** Established in the year 2011. The company is aim at producing high-end food & beverage products. At Present SFB is producing quality drinking water SONA brand.



Finance Institution



8. **SAVANKHAM NON-DEPOSIT TAKING MICROFINANCE INSTITUTION (SMF).** Established in the year 2016. The service is microfinancing the general public to help reinforce the country economic policies.





Car Rental Services



- SASA CAR RENTAL (SCR).** Established in the year 2009. The business is to provide rental cars to government sectors.



Investment Project



- HOUAY KAPHEU POWER SOLE COMPANY LIMITED (HPPC).** Established in the year 2012. The business is a very small power producer of 5 MW hydropower which under construction the commercial operation Date (COD) will be in the year 2019. The concession period is more than 50 years with the government.



The next investment projects are under way such as:

- A. NAM NGUM - NANIN HPP, 3 Units, Bulb Turbine type (36 MW)
- B. NAM PANGOU HPP, 2 Units, Francis Turbine type (33 MW)
- C. DAKCHALIOU 1 HPP, 2 Units, Francis Turbine type (11 MW)
- D. DAKCHALIOU 2 HPP, 2 Units, Francis Turbine type (13 MW)
- E. LOWER XEPIAN HPP, 2 Units, Francis Turbine type (14.8 MW)
- F. PAK NGUM HPP, 4 Units, Bulb Turbine type (84 MW)



VASE provides specialized services and support for your installed base of variable electrical equipment and control systems reducing your risk, downtime, maintenance, and operational costs.

Thank you for taking your time to go through this business profile. If there are any question or comments, please feel free to contact us. We look forward to working with you on your next Valuable projects.

“THANK YOU”



PROJECT UPDATE

Selabam Expansion Project.

EPC (Engineering, Procurement & Construction)
contract with EDL-GEN
Started work : 2016

Civil work:

- Intake
- Diversion Tunnel
- Surge tank
- Anchor block and Penstock
- Powerhouse
- Tailrace Canal
- Roads
- New Office

Hydro Mechanical Equipment

- Type Turbine : Kaplan
- Installed Capacity : 8 MW
- Number of unit : 2x4 MW



Xeset2 Expansion Project.

EPC (Engineering, Procurement & Construction)
contract with EDL-GEN
Started work : 2016

Civil work:

- Anchor block and Penstock
- Powerhouse
- Tailrace Canal
- New Office
- Switchyard

Hydro Mechanical Equipment

- Type Turbine : Pelton
- Installed Capacity : 10 MW
- Number of unit : 2x5 MW





Houay Kapheu HPP Project.

HPPC is one of the VASE owner project.
Started work : 2016

Civil work:

- Intake
- Tunnel
- Surge tank
- Penstock
- Powerhouse
- Spillway
- Earth dam
- Chanlang dam
- Chalang Tunel
- Tailrace Canal
- Roads
- New Office
- Switchyard



Hydro Mechanical Equipment

- Type Turbine : Pelton
- Installed Capacity : 5 MW
- Number of unit : 2x2.5 MW

Thaduea Water Plant Project.

The investment concession project such as Thadeua water treatment plant with the capacity of 20,000 cubic meters per day in Vientiane Capital. EPC (Engineering, Procurement & Construction) contract with Nampapa Nakhone Luang (NPNL)



Civil work:

- Intake Tower
- Pipeline alignment 32.2 KM
- Water treatment
- Floc Sedimentation
- Clean water tank and pump house
- Filter
- New Office





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and Solution Engineering**