

Hydel Bullet

A Monthly Publication of the Kerala State Electricity Board Engineers' Association

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REDEEMING FROM AN IMPENDING DISASTER

A new tariff regulation for next period of four or five years is now due. The State Regulator approves utility expenses, revenue and tariff, based on this regulation. The prevailing regulation was issued in 2014 which had brought in certain important changes. Utility expenses were divided into controllable and not-controllable expenses. Power purchase expense, for example, depends on the cost of fuel and other things, which are not controllable by the utility. Such expenses are treated as pass-through in the regulation. Power purchase cost constitutes 65-70% of the KSEBL expenses. But expenses such as operation and maintenance cost, are considered controllable.



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General Body and Benevolent Fund meeting held at Ernakulam.



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Such expenses are approved as per norms based on certain physical parameters, trend of expenses in previous years and inflation. Before this regulation, the costs were approved based solely on past trend of each category of expense. The State regulator, in fixing norms, are guided by the Central Government Tariff Policy and the approaches taken by the central regulator. However, the norms fixed in the 2014 regulation were not at all realistic. The said regulation did not allow even 50% of KSEBL expenses. This was challenged before the Hon. High Court. An order has not yet been pronounced by the Court. The entire process of filing ARR&ERC and Tariff Petition is disrupted. The period of validity of present regulation ends by March 2018.

Apart from the regulation, the approaches and policies adopted by the commission and the Government is also disputable. A large section of the consumers, especially in residential sector, enjoy the benefit of cross-subsidy. The present cross-subsidy level is well beyond the 20% band envisaged in the Central Tariff Policy. The subsidised consumers are also shielded from electricity price fluctuations and impact of monsoon failure, to a larger extent, in the tariff determination process. In fact, the real price of electricity, is unknown to most of the customers in the State. The quantum of subsidy, by our quick and dirty estimate, is also very large, say around Rs. 1800 to 2000 Cr, a year. This much of cross subsidy cannot be recovered from the subsidising group of customers. They have the option and financial muscle to generate own power or bring in power through open

access. The utility, thus is wedged between conflicting environmental factors. Further, there is a huge approved, but unrecovered revenue gap of around Rs. 4500 Cr. This gap is accrued because of the populist political policies adopted by the Governments in the past and the reluctance of the commission to appropriately address the issue. From Year 2002 to 2012, there was no tariff hike at all, despite the high inflation and cost of operation that prevailed during the period. This was followed by unusually dry years. Because of the monsoon failure, huge sum had to be spent in power purchase to avoid power cut and load shedding. Though there were revisions in the tariff in that period, it was not sufficient to close the wide gap. Thus it is imperative that the tariff be rationalised in time. Successive Governments and the commission were reluctant to revise tariffs in time. This has resulted in a situation that the recovery of past approved expenses is almost impossible at present. The accruing revenue arrear from Government utilities and departments are another serious concern. Arrears payable by Kerala Water Authority alone has piled up to a whopping Rs. 1600 Cr. No effective mechanism to address this issue could be devised by any of the Governments in power except write-offs, payment promises and gimmicks. We suggest the Government in power to devise an escrow mechanism for clearing dues from the defaulters, be it public or private.

Thus, there is an impending disaster of financial collapse of the organization looming large, but it is not that hopeless as of now. We feel that it is still possible to salvage and revive the



SAFETY IN KSEBL: HR ISSUES - A CRITICAL ANALYSIS



Er. C. P. George

INTRODUCTION

Everybody knows, electricity, a good friend of human when handled with care can be the worst enemy of his life & property, when allowed to be handled wrongly or handled carelessly by an individual. As such, electricity requires a specific system, environment and competent individual to get it handled safely for the purposes of the human requirements. Otherwise, electricity can be dangerous and can adversely affects the life and property of the citizens. Thus, we have **Section 53 and Section 73 (c) of Electricity Act read with Section 177 (2)** specify a mandatory mechanism to ensure safety and authorised Central Electricity Authority to specify suitable measures for:

- a. *the safety requirements for construction, operation and maintenance of electrical plants and electric lines*
- b. *protecting the public (including the persons engaged in the generation, transmission or distribution or trading) from dangers arising from the generation, transmission or distribution or trading of electricity, or use of electricity supplied or installation,*

maintenance or use of any electric line or electrical plant;

- c. *eliminating or reducing the risks of personal injury to any person, or damage to property of any person or interference with use of such property;*
- d. *prohibiting the supply or transmission of electricity except by means of a system which conforms to the specification as may be specified; and others*

Accordingly, we have two mandatory regulations made by the Authority to cover all aspect of safety as specified in the Electricity Act. They are

1. **CEA (Measures relating to Safety and Electric Supply) Regulations, 2010.**
2. **CEA (Safety requirement for construction, operation and maintenance of electrical plants and electrical lines) Regulations, 2011.**

Through these regulations, CEA specifies the mandatory safety measures and minimum requirements to create an environment of safety in the generation, transmission, distribution or utilisation of electricity.

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sector through co-ordinated efforts of the Government, the regulator, the utility and other stakeholders. The new tariff regulation, we hope, would set an equitable platform for the utility and the stakeholders. We also hope that the

Government would consider and respond positively to tariff revision, clearance of the arrears of public utilities and would formulate policies and programs for sustaining the growth of this organization in future.





Of these two regulations, CEA (*Safety requirement for construction, operation and maintenance of electrical plants and electrical lines*) Regulations, 2011 deals with the safety hierarchy and infrastructural requirement in an organization to create a safe environment and ensure safety in its activities that include construction, operation and maintenance of electrical plants and electrical lines. The owner of the organization is responsible for the compliance of this regulation.

CEA (*Measures relating to Safety and Electric Supply*) Regulations, 2010 deals with the minimum safety requirement in handling electricity and the Electrical Inspector is empowered with the authority to ensure that the relevant regulation is complied by the stake holders.

As such, we shall deal with the minimum safety requirement first. The minimum safety requirement in a system may be classified into three aspects, namely: -

1. Human Resource related
 - Designating the individual for the works
 - Competency of the designated individuals
 - Requirement of competency at different levels and for different works
2. Electrical System/ Network/ Environment related
 - Construction Standards
 - Safety Standards
 - Operational Standards
3. Method of work execution related
 - Work practices & Work procedures
 - Permit system
 - Protocols

Human Resource (HR) Related

The most important aspect in ensuring safety during the construction, operation, maintenance and utilisation of electricity is the “electrical competency” of the individuals involved in the activities.

Except in case of domestic consumer equipment, the HR involved in the operation and maintenance of the electrical device is advised to undergo appropriate training to ensure safe operation of the equipment. In case of construction, operation and maintenance of the electrical network or electrical installation, it is important to ensure that the HR engaged for the work have the competency to do the job safely. Accordingly, the individuals need to be designated based on the competency requirement for safe execution of various types of works and the works at different voltage levels.

We have *Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010*; which specify the minimum mandatory requirement for operation and maintenance of transmission, distribution systems, and the electrical plants.

We have **regulation 3** of CEA Safety, 2010; which specifies that

- (1) a supplier or a consumer, or the owner or a contractor who has entered into a contract with a supplier or a consumer shall designate persons for the purpose to operate and carry out the work on electrical lines and apparatus.
- (2) shall maintain a register wherein the names of the designated persons and the purpose for which they are engaged, shall be entered. →



(3) No person shall be designated under, unless: -

- (i) he possesses a certificate of competency or electrical work permit, issued by the Appropriate Government.
- (ii) his name is entered in the register referred in sub-regulation (2)

We have **regulation 6 & 7** of CEA Safety, 2010; which specify the minimum qualification & training requirement for Engineers, Supervisors and “the Technicians to assist engineers or supervisors” for operation and maintenance of transmission, distribution systems, and the electrical plants. Accordingly;

- (1) Engineers and supervisors appointed shall hold diploma in Engineering from a recognized institute, or a degree in Engineering from a university
- (2) The Technicians to assist engineers or supervisors shall possess a certificate in appropriate trade, preferably with a two years course from an Industrial Training Institute recognized by the Central Government or the State Government
- (3) Engineers, Supervisors and Technicians engaged for operation and maintenance of transmission, distribution systems and electric plants should have successfully undergone the appropriate training as specified in the Schedule and it is mandated that the existing employees shall have to undergo the training mentioned in sub-regulation, within three years from the date of coming into force of these regulations.

We have **regulation 29** which deals with the Precautions to be adopted by consumers, owners, occupiers, electrical contractors, electrical workmen and suppliers. Accordingly;

- (1) No electrical installation work, including additions, alterations, repairs and adjustments to existing installations, except such replacement of lamps, fans, fuses, switches, domestic appliances of voltage not exceeding 250V and fittings as in no way alters its capacity or character, shall be carried out upon the premises of or on behalf of any consumer, supplier, owner or occupier for the purpose of supply to such consumer, supplier, owner or occupier except by an electrical contractor licensed in this behalf by the State Government and under the direct supervision of a person holding a certificate of competency and by a person holding a permit issued or recognised by the State Government.

In the case of works executed for or on behalf of the Central Government and in the case of installations in mines, oil fields and railways, the Central Government, by notification in the Official Gazette, may exempt. In other cases, the State Government may, by notification in the Official Gazette, exempt on such conditions as it may impose, any such work described therein either generally or in the case of any specified class of consumers, suppliers, owners or occupiers. (Vide G. O. MS No. 34 PW dated 10/01/1959, the provision of IE rule 45 (1), which was equivalent to this regulation, was relaxed for CPWD, PWD & KSEB.

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Now it is to be made clear that same relaxation is applicable to KSEBL now).

- (2) No electrical installation work which has been carried out in contravention of subregulation (1) shall either be energised or connected to the works of any supplier.

As such, the minimum mandatory requirement laid down by the Central Electricity Authority for designating persons to operate and carry out work on electrical lines and apparatus is the basic requirement to create an environment of safety in the sector and to reduce the number of electrical accidents in the state which still rides at alarmingly higher level. Even the training mechanism mandated under regulation 6 & 7 of CEA safety, 2010 was supposed to be enforced within the year 2013.

But it is observed that KSEBL is lagging far behind in complying these mandatory HR requirements on safety. Due to various apprehensions, there are concerted efforts from the trade unions to delay the implementation of the mandatory requirement specified by the Central Electricity Authority in handling the electricity. It is unfortunate that the management caved in to the pressure tactics applied by some trade unions to evade their responsibility and accountability with respect to the lack of relevant minimum qualification and skills among the work force designated to operate and carry out the work on electrical lines. Kindly note that this ignorance and lack of skills shall put unwarranted pressure and responsibility on supervisors and engineers which shall

eventually affect the quality and progress of the work along with higher level of safety risks. The trade unions are supposed to create an environment to encourage and ensure the specified skills in their members to ensure safety and hence they may be educated appropriately to ensure speedy implementation of the mandatory HR competency. KSEBL as an organisation is equipped with underqualified, untrained, and incompetent work force and consequently the electrical system is being operated at an unacceptable level of safety risks.

In the prevailing circumstances, a road map for implementing the mandatory requirements specified as per regulation 3, 6, 7 & 29 of CEA Safety, 2010 for Engineers, Supervisors, Technicians, and contractors engaged for operation and maintenance of transmission, distribution systems and electric plants must be the first milestone towards creating a better organisational environment for safety and less electrical accidents. Engaging HR without the mandatory minimum competency as specified shall lead to the creation of a working environment with unacceptable level of safety risks and the employees including the engineers cannot be made accountable for the accidents that happens from an electrical installation owned by KSEBL. Instead the HR management must be made accountable for the lack of appropriate competency and skill among the HR engaged for handling electricity and the consequence there of. The present practise of finding some scapegoats from field staff and field engineers in an accident do not provide any good to the organisation in long run.

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The Safety Management System and Organizational Hierarchy.

In addition to the competency requirement of human resources (HR) employed for the operation and maintenance of the electrical installations, the safety issues during construction of the transmission, distribution systems and electric plants need to be addressed appropriately. Again, an organisational hierarchy is required to ensure the enforcement of the mandatory safety requirements and the organisational safety standards during the construction, operation and maintenance of the transmission, distribution systems and the electric plants.

We have *Central Electricity Authority (Safety requirement for construction, operation and maintenance of electrical plants and electrical lines) Regulations, 2011* which mandates the minimum Organizational Hierarchy requirement to take care of this aspect.

The *regulation 4 of CEA safety 2011* specifies the responsibilities of the owner in creating and ensuring the safety environment in the organisation.

1. The Owner shall make safety an integral part of work processes to ensure safety for employees including employees of contractor, sub-contractor as well as visitors
2. The Owner shall obtain accreditation of electric plants and electric lines with IS-18001 certification.
3. The Owner shall obtain above mentioned certification for all the existing electrical plants and electric lines and those under construction within two years from the date of

coming into force of these regulations and for new installations within two years from the date of commencement of construction

4. The Owner shall set up a sound and **scientific safety management system** which shall include: -
 - a) formulation of a written statement of policy in respect of safety and health of employees
 - b) defining and documenting responsibilities for all levels of functionaries to carry out safety related activities including responsibilities of the contractors;
 - c) preparing detailed safety manual complying with the statutory requirements and manufacturers' recommendations;
 - d) establishing procedures to identify hazards that could give rise to the potential of injury, health impairment or death and measures to control impact of such hazards;
 - e) providing adequate human, physical and financial resources to implement the safety management system;
 - f) providing safe working environment and evolving framework for occupational safety and health
 - g) providing and maintaining medical facilities;
 - h) providing adequate training to all employees to keep them aware of safety related issues;
 - i) establishing system for accident-reporting, analysis, investigation and implementation of recommendations;

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- j) establishing system for proper communication, documentation and record management in relation to occupational safety and health;
- k) formulating emergency management plan for quickly and effectively dealing with probable emergencies that may arise on site as well as off-site;
- l) establishing methodology for internal and external audit of safety management system;
- m) establishing system for periodic monitoring and review of the safety system by the management;
- n) overseeing the safety performance of contractors.

We have **regulation 5 of CEA Safety, 2011** that specify the content of the Safety manual.

Safety manual: Safety manual referred to in clause (c) of sub-regulation (4) of regulation 4 shall be site specific but for similar installations, common safety manual may be prepared and made applicable to such installations and these safety manuals shall cover the matters identified in Schedule-1 and Schedule-II annexed to these regulations.

We have **regulation 6 of CEA Safety, 2011**; which specify the safety management system required for an organization involved in construction, operation and maintenance of electrical plants and electrical lines.

1. **Safety officer and Safety Committee:**

- a. The Owner shall appoint one qualified safety officer where the number of employees, including contract workers, exceeds five hundred and where the number of employees is less than five hundred, a suitable officer shall be designated as safety officer. When the number of employees exceeds one thousand, one more safety officer shall be appointed for every additional one thousand employees
- b. A person shall not be eligible for appointment as a safety officer unless he is qualified
 - i. under section 40-B of the Factories Act, 1948 (63 of 1948) and rules made thereunder; or
 - ii. under sub-section (2) of section 38 of the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 (27 of 1996) and rules made thereunder
- c. Where number of safety officers appointed, exceeds one
 - i. one of them shall be designated as **Chief Safety Officer** who shall have higher ranking than the others and he shall be in-charge of the safety functions and the other safety officers shall work under his control.
 - ii. The chief safety officer or the safety officer, as the case may be, shall be given the status of a senior executive and he shall work directly under the control of the Chief Executive. →



- d. The safety officer shall be appointed before start of construction, activities and the safety set-up chart shall be prepared and properly displayed at a conspicuous place.
 - e. The safety officer shall advise and assist the Owner in fulfillment of his responsibilities concerning prevention of personal injuries and maintaining a safe working environment.
 - f. The safety officer shall be authorized to stop the execution of any work which in his judgment is unsafe and may result in injury to any person and he shall also have the power to remove the employees or contract workers from the site, if they are found not using personal protection equipment or in unsafe practice or procedure.
 - g. The safety officer shall develop and organize safety training programs at regular intervals in order to impart proper safety training and shall also create safety awareness among the employees.
2. **Where the number of employees, including contract workers exceeds two hundred and fifty,**
- a. the Owner shall constitute a safety committee comprising of equal number of representatives of the management and the employees and during construction, the safety committee shall also include representatives of contractors and their employees with equal representation and the representatives of the management shall include the safety officer and medical officer. Provided that where number of employees, including contract workers, is two hundred and fifty or less, the safety committee shall be constituted by the Owner for a group of electrical plants or electric lines, as the case may be: -
 - b. The safety committee shall promote co-operation between the workers and the management for maintaining proper safety and health at work place.
 - c. The safety committee shall meet at least once in a month during construction stage and once in three months, during operation and maintenance of electrical plants and electric lines and the decisions and recommendations of the safety committee shall be complied with by the Owner within the time limit as decided by the safety committee.
- We have regulation 7 of CEA Safety 2011; which specify the safety provision relating to Contractor.
- 1. The Owner shall incorporate the safety provisions in the contract document which are required to be complied by the contractor's employees during execution of the contract to facilitate safe working during execution of the work.
 - 2. The contractor shall observe the safety requirements as laid down in the contract and in case of sub-contract, it shall be the responsibility of main contractor that all safety requirements are followed by the employees and staff of the sub-contractor.

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3. The contractor employing two hundred employees or more, including contract workers, shall have a safety coordinator in order to ensure the implementation of safety requirements of the contract and a contractor with lesser number of employees, including contract workers, shall nominate one of his employees to act as safety coordinator who shall liaise with the safety officer on matters relating to safety and his name shall be displayed on the notice board at a prominent place at the work site.
4. The contractor shall be responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidents.
5. In case of any accident, the contractor shall immediately submit a statement of the same to the Owner and the safety officer, containing the details of the accident, any injury or

casualties, extent of property damage and remedial action taken to prevent recurrence and in addition, the contractor shall submit a monthly statement of the accidents to the Owner at the end of each month.

As such, it is observed that KSEBL is yet to take any serious efforts to put in place, a scientific safety management system and an appropriate organizational hierarchy. The absence of a scientific safety management system along with incompetency of the designated HR involved in construction, operation and maintenance of distribution, transmission systems and electrical plants are heavily contributing in increasing the risk levels of every activities in handling electricity. It is time for the KSEBL management, the government and KSERC to acknowledge the seriousness and ensure the compliance of the mandatory minimum requirements specified by the Central Electricity Authority at least with a specific road map.

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Letters to the Editor

കത്തുകൾ അയക്കേണ്ട വിലാസം

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Advanced Generator Ground Fault Protections

Er. Anoop Vijayan

Ground faults in field / rotor and generator stator circuits are serious events that can lead to damage, costly repair, extended outages, and loss of revenue. Let us explore the advances in field/rotor circuit ground fault and stator ground fault protection. These advanced protection strategies employ ac injection, ground differential protection, and the use of hybrid grounding to reduce both internal generator ground fault levels and facility ground levels in utility-paralleled operating modes.

I. INTRODUCTION

A. Field/Rotor Ground Fault

TRADITIONAL field/rotor circuit ground fault protection schemes employ dc voltage detection. Schemes based on dc principles are subject to security issues during field forcing and other sudden shifts in field current.

To mitigate the security issues of traditional dc-based rotor ground fault protection schemes, ac injection-based protection may be used. AC injection-based protection ignores the effects of sudden dc current changes in the field/rotor circuits and re-sulting dc scheme security issues.

B. Stator Ground Fault

Direct (bus) connected generators are often applied in pulp and paper mill facilities. The bus connection is made at the medium-voltage level, typically at 5 and 15 kV. These gen-erators are typically

low-impedance grounded. The traditional stator ground fault protection scheme is time-delayed ground overcurrent (51G). The 51G application for internal generator ground faults can:

- 1) exhibit selectivity issues with multiple generators con-nected to the same bus;
- 2) cause slow coordination issues with the protection for feeders supplied from the facility bus that may subject the generator to prolonged fault levels of several hundreds of amps – causing severe damage.

In addition, operating a bus-connected generator when the bus is connected to a grounded utility source could cause elevated levels of fault current for a ground fault within the facility.

To mitigate the selectivity and slow clearing times of the traditional 51G element for internal generator ground faults, several protection implementations may be used.

- 1) The use of ground differential protection (87G) for highly selective, high-speed clearing.
- 2) The use of hybrid grounding to decrease internal fault current levels.
- 3) The use of hybrid grounding to decrease system ground fault current levels when operating the bus from a grounded utility source and high-resistance-grounded generator. →



II. FIELD/ROTOR GROUND FAULT PROTECTION

A. Description and Damage Mechanism

The field/rotor circuit of a generator is an ungrounded dc system. The effect of one ground in the field/rotor circuit establishes a reference to ground on the normally ungrounded system. The voltage gradient to other parts of the field/rotor circuit increases as you move away from the ground reference point in the circuit. If weakened insulation exists, it is more likely to break down where the voltage gradient is now greater.

While an initial field/rotor circuit ground establishes a ground reference, the generator remains operational. In the event of a second ground fault, however, part of the field/rotor circuit is shorted out, and the resultant shorted portion of the rotor causes unequal flux in the air gap between the rotor and the stator with the rotor at rated speed. The unequal flux in the air gap causes torsional stress and vibration, and can lead to considerable damage in the rotor and the bearings. In extreme cases, rotor contact with the stator is possible. A second rotor ground fault also produces rotor iron heating from the unbalanced currents, which results in unbalanced temperatures causing rotor distortion and vibration. Field/rotor ground faults should be detected and the affected generators alarmed for decreasing resistance levels (20 k Ω) and tripped for low resistance levels (5 k Ω).

This protection may be employed on brushed excitation systems and brushless

excitation systems. The terms brushed and brushless refer to the use or nonuse of power commutation brushes to provide field current to the rotor.

- 1) In the case of a brushed exciter, the ground fault protection system is coupled to the field/rotor circuit through power commutation brushes and the grounding brush as seen in Fig. 1.

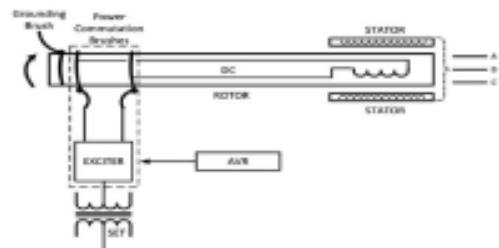


Fig. 1. "Brushless" exciter.

- 2) In the case of brushless exciter, the ground fault protection system is coupled to the field/rotor circuit through a measurement brush that is connected to the field/rotor circuit and the grounding brush as seen in Fig. 2.

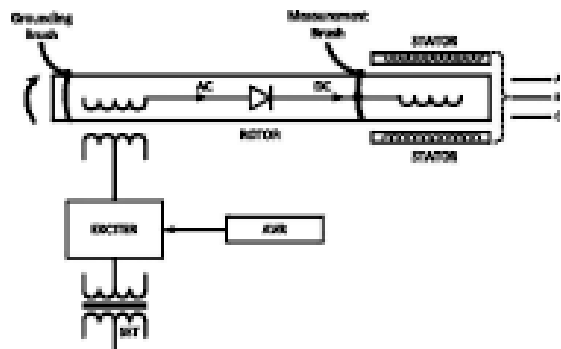


Fig. 2. "Brushless" exciter.

B. Traditional Protection

Traditional field/rotor ground protection systems employ dc voltage injection and monitoring. The intent of the protection is to alarm or trip for ground faults in the field/rotor circuit.

The scheme shown in Fig. 3 employs a dc source in series with an overvoltage relay coil connected between the negative side of the generator field/rotor circuit and ground. A ground anywhere in the field causes current through the relay.

The scheme shown in Fig. 4 employs a voltage divider connected across the field and a sensitive voltage relay between the divider midpoint and ground. The voltage divider is composed of two standard resistors (R_1 and R_2) and one nonlinear resistor (R_{variable}). Maximum voltage is impressed on the relay by a ground on either the positive or negative side of the field circuit. In order for a fault at the midpoint to be detected, the nonlinear resistor is applied. The nonlinear resistor's value changes with voltage, varying the nullpoint from the midpoint of the field/rotor circuit.

As both of these schemes use dc voltage, they are prone to insecure operation from dc transients in the excitation and field circuits.

C. Advanced AC Injection Method

The scheme in Fig. 5 employs low frequency (0.1-1.0 Hz) ± 15 V square wave injection. The square wave signal is injected into the field/rotor circuit through a coupling network. The return

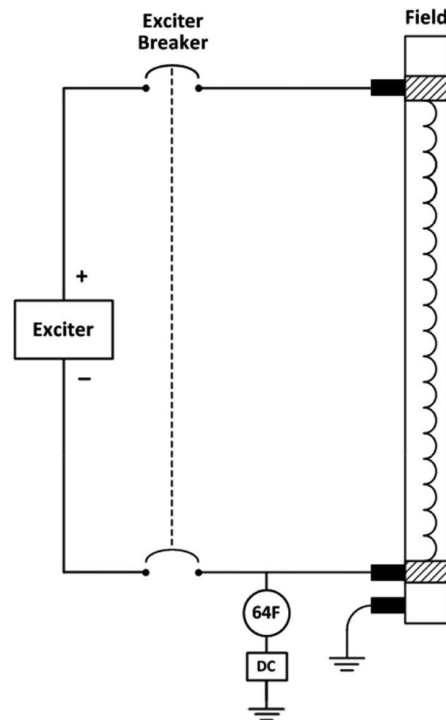


Fig. 3. DC source 64F.

signal waveform is modified because of the field winding capacitance and will further change based on either a resistive ground fault developing, or the grounding or measurement brush lifting off. The injection frequency setting is adjusted to compensate for field/rotor circuit capacitance and relay-to-coupler lead length. Using the input and return voltage signals, the relay calculates the field insulation resistance. The element setpoints are in ohms, typically with a 20-k Ω alarm and 5-k Ω trip or critical alarm.

Using ac injection, the scheme is secure against the effects of dc transients in the field/rotor circuit. DC-based field ground





fault protection is prone to false alarms and false trips, so they sometimes are ignored or rendered inoperative, placing the gen-erator at risk. The ac system offers much greater security so this important protection is trusted and not ignored or rendered inoperative.

Another benefit of the low-frequency ac injection system is that it can detect a rise in impedance which is characteristic of grounding brush lift-off. In brushless systems, the measurement brush may be periodically connected for short time intervals. If brush lift-off protection is applied, the brush lift-off function must be blocked during the time interval the measurement brush is disconnected.

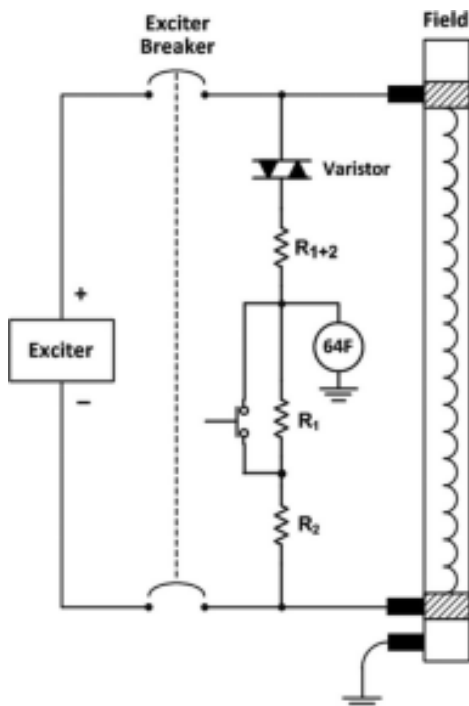


Fig. 4. Voltage divider 64F.

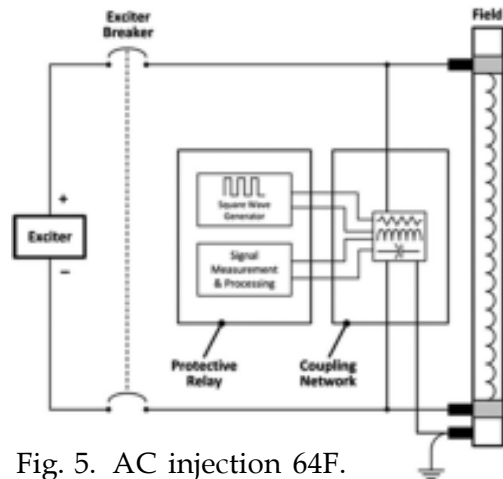


Fig. 5. AC injection 64F.



Fig. 6. Low-impedance-grounded generator.

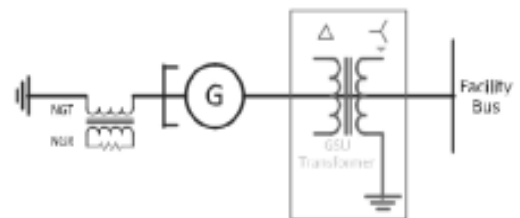


Fig. 7. High-impedance-grounded generator (GSU with delta primary winding for unit connection is optional).

III. STATOR GROUND FAULT

A. Description and Damage Mechanism

Ground faults in a generator (stator winding) can cause considerable or severe damage as the level of fault current increases. Depending on the ground fault current available, the damage may be repairable or nonrepairable. Generators are subject to prolonged exposure to stator ground fault damage due to the fact that

even if the system connection and excitation are tripped, stored flux remains and contributes to the arc as the generator coasts down. Due to the exposure to this damage, several types of generator grounding are employed. The stator circuit of a generator may be ungrounded, high-impedance grounded, hybrid-impedance grounded, low-impedance grounded, or solidly grounded. Some descriptions follow.

- 1) **Low-Impedance Grounded:** Low-impedance-grounded generators are typically applied in industrial systems, and find special application in utility systems (see Fig. 6). Typical levels are 200–400 A.

Advantages:

- 1) reduces burning and melting effects in faulted electric equipment, such as switchgear, transformers, and cables;
- 2) reduces mechanical stresses in circuits and apparatus carrying fault currents;
- 3) reduces the flash hazard to personnel who may have accidentally caused or who happen to be in close proximity to the ground fault;
- 4) reduces the momentary line-voltage dip occasioned by the occurrence and clearing of a ground fault;
- 5) controls transient overvoltages.

Disadvantage: Generator damage occurs with a ground fault in the generator (stator winding).

- 2) **High-Impedance Grounded:** High-impedance-grounded generators are typically applied in utility systems and

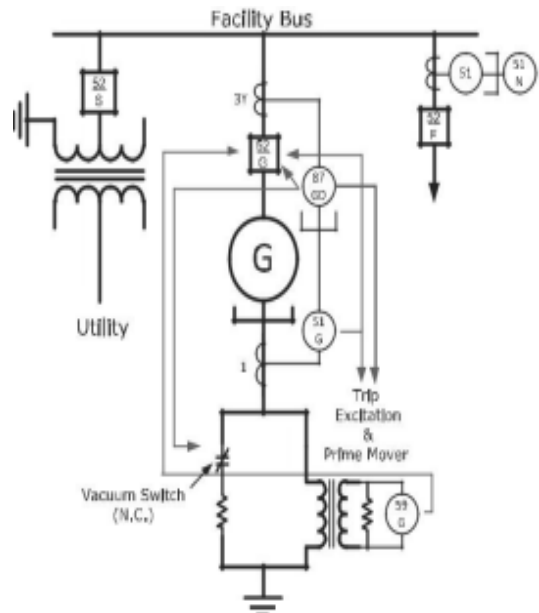


Fig. 8. Hybrid-grounded generator.

some industrial systems (see Fig. 7). With a “unit connection,” the only ground source for the generator, bus and primary winding of the GSU is the high-impedance ground formed by the ground-ing transformer and the reflected impedance of the grounding resistor. Typical levels are 5–10 A

Advantages:

- 1) reduces burning and melting effects in faulted equipment, such as switchgear, transformers, and cables;
- 2) reduces mechanical stresses in circuits and apparatus carrying fault currents;
- 3) reduces the flash hazard to personnel who may have



ac-cidentally caused or who happen to be in close proximity to the ground fault;

- 4) reduces the momentary line-voltage sag while clearing a ground fault;
- 5) controls transient overvoltages;
- 6) generator damage is minimal if ground fault is in the generator (stator winding).

Disadvantage: Full (100%) ground fault coverage may re-quire advanced protection techniques.

3) Hybrid-Impedance Grounded: Hybrid-impedance-grou-nded generators are gaining acceptance in industrial systems, as reported in, the IEEE Industrial Applications Society (IEEE-IAS) Working Group Report, "Grounding and ground systems fault protection of multiple generator installation on medium-voltage industrial and commercial power systems." Hybrid impedance grounding, or hybrid grounding as it is commonly called, offers advantages of a low-impedance-grounded system during unfaulted generator operation, and high-impedance grounding when a fault is detected within the generator to minimize damage to the stator. The grounding impedance is switched with a contactor depending on the presence of a ground fault within the generator (see Fig. 8).

Advantages:

- 1) provides a low-impedance-grounded system during nor-mal operation for reliable ground fault detection;
- 2) controls transient overvoltages;

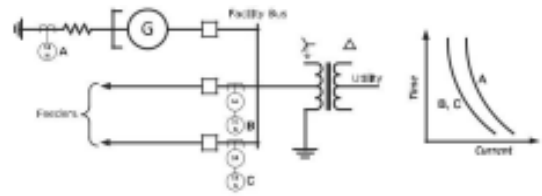


Fig. 9. 51N coordination with generator and load feeders.

- 3) minimizes generator damage with a ground fault in the generator (stator winding) due to a switched-in high-impedance ground.

Disadvantages:

- 1) in present practice, a small time interval (about 12 ms) with high-level fault current in the stator winding exists until the fault is detected and the grounding impedance switches from low to high impedance;
- 2) requires specialized grounding equipment and ground switching equipment;
- 3) requires advanced protection techniques.

B. Traditional Protection

The traditional protection has been to use low-impedance grounding. A grounding resistor is typically inserted into the ground circuit to limit ground fault current to 200-400 A primary. While this reduced current level may provide some damage mitigation for other electrical infrastructure, the level is damaging to internally faulted generators. As damage is a function of I^2t , time delays to coordinate with feeder protection sourced off the generator/facility bus may require

coordination time intervals in the tens of cycles (e.g., 30–45 cycles) as shown in Fig. 9. This time duration, combined with the currents of several hundred amps, may cause significant damage to the generator stator.

C. Advanced Protection

There has been much work done by the IEEE-IAS regarding the application of hybrid grounding. The key to the proper performance of the scheme is a secure ground differential (87GD) element. For extra security against heavy external faults phase-to-ground or phase-to-phase, the 87GD element may employ a directional quantity for determination of internal or external fault in addition to the differential calculation. These scenarios are shown in Fig. 10(a) and (b).

- 1) The pickup quantity is calculated as the difference between the corrected (for ratio differences between the phase and neutral CT) triple zero-sequence current ($R_C \cdot 3I_0$) and the neutral current (I_N). The magnitude of the difference $[(R_C \cdot 3I_0) - I_N]$ is compared to the relay pickup (PU). If $[(R_C \cdot 3I_0) - I_N] > PU$, the differential portion of the element will assert.
- 2) If either input to the element, $3I_0$ or I_N , is zero, the unchallenged current can trip with a low current value (≈ 140 mA). This situation could occur if a ground fault occurred just prior to synchronizing and connecting to the facility system. Ground current would flow up the ground to the fault point in the stator without any current contribution from the system.

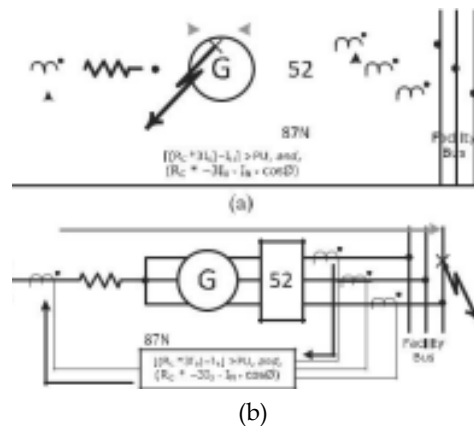


Fig 10. (a) Internal fault with 87GD.(b) External fault with 87GD

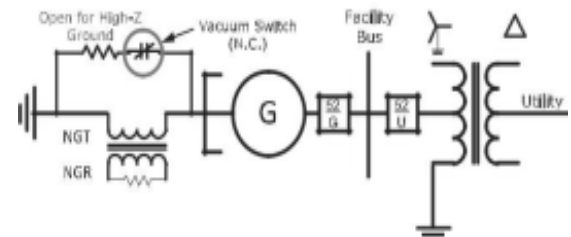


Fig 11. Operating generator with high-Z ground and utility as ground source

- 3) Should heavy faults external to the generator occur, the generator terminal side CTs may saturate unequally, causing a false differential quantity to be presented to the 87GD element. To counter this security issue, directionalization of the 87GD may be employed. The equation $(R_C \cdot -3I_0 - I_N \cdot \cos\theta)$ is used for directional indication. The directional element will assert for an internal fault only if $3I_0$ (zero sequence current derived from phase CTs) and I_N (neutral current from the neutral CT)



have the opposite polarity, which is the case for internal generator faults.

If the facility is being supplied from a grounded utility source, when the generator is operated, it can be done so with the low-impedance ground switched out, as shown in Fig. 11, using only its high-impedance ground. This will decrease ground fault current to the facility for ground faults within the facility versus having both the utility and generator as ground sources.

Operating with the generator high impedance grounded with the grounded utility providing the ground source, as shown in Fig. 12, will also minimize damaging current to the generator in the case of an internal ground fault, as the only source of substantial ground current is the grounded utility source. As the contactor in the low-impedance-ground circuit is opened, the time it would have taken to open it while providing higher fault currents has been reduced to zero. As soon as the generator breaker opens, the facility ground current contribution is eliminated and only the 5 A high-impedance ground supplies the generator ground fault as the decrement process begins.

For this operational scenario, an interlock should be made between the utility source breaker to the facility bus and the contactor in the low-impedance-ground circuit. The interlock should be that either may be closed, but not both, with the utility breaker as the master element. If the utility is providing the ground source, and the

utility trips, the generator low-impedance-ground source would be switched in to provide a ground source for the facility.

When the generator is started, it should be accomplished with only the high-impedance ground. In this manner, upon flashing the field, if the generator has an internal ground fault, the ground neutral overvoltage protection (59N) will react and trip the field. Only when the field has flashed and a ground fault has not been detected and the generator is about to synchronize to the bus should the low-impedance ground be switched in, and only in the case where the grounded utility source is disconnected. This logic is shown in Fig. 13.

IV. SUMMARY

Field/rotor ground fault: The use of ac injection offers greater security than traditional dc systems, and also affords brush lift-off protection.

Hybrid grounding for low-R direct bus-connected generators: Compared to low-impedance grounding, the use of hybrid grounding offers advantages for lowering facility ground fault levels and lowering internal generator short-circuit ground fault levels. The key to employing hybrid grounding is the application of secure ground differential (87GD) protection. Insecure protection may lead to nuisance tripping of the generation set for external faults in the facility and utility. Security for the ground differential element may be provided by using directionalization in addition to the differential element. As a refinement to



ഹൈഡൽ ബുള്ളറ്റിന്റെ ചരിത്രം

Er. കെ.പി.ഗോപാലകൃഷ്ണൻ

കെ. എസ്. ഇ. ബി. എഞ്ചിനീയേഴ്സ് അസോസിയേഷന്റെ ആരംഭകാലം മുതലേ അസോസിയേഷന്റെ മുഖപത്രമായിരുന്നു Hydel എന്ന പ്രസിദ്ധീകരണം. ഒരു വർഷത്തിൽ 4 തവണമാത്രം പ്രസിദ്ധീകരിച്ചിരുന്ന Hydel പ്രധാനമായും സാങ്കേതികമായ ലേഖനങ്ങൾ മാത്രം ഉൾക്കൊള്ളിച്ചുകൊണ്ടുള്ളതായിരുന്നു. ചീഫ് എഞ്ചിനീയറായിരുന്ന ശ്രീ. ആർ. വരദരാജൻ സാർ എഴുതിയിരുന്ന STRAY THOUGHTS ON STRAY SUBJECTS ഒഴികെ ഈ പംക്തി വളരെ രസദായകവും വിജ്ഞാനപ്രദവുമായിരുന്നു.

വിഷ്ണുനമ്പൂതിരി സാർ അസോസിയേഷൻ ജനറൽ സെക്രട്ടറിയായിരുന്ന അവസരത്തിലാണ് അസോസിയേഷന്റെ കാര്യങ്ങൾ, കേന്ദ്രത്തിന്റെയും വിവിധ യൂണിറ്റുകളുടെയും പ്രവർത്തനങ്ങൾ, ബോർഡിന്റെ ഉത്തരവുകൾ, എഞ്ചിനീയർമാരുടെ പ്രശ്നങ്ങളിൽ ബോർഡിന്റെ നിലപാടുകൾ, അറിയിപ്പുകൾ മുതലായ കാര്യങ്ങൾ അംഗങ്ങളിലെത്തിക്കാൻ ഒരു പ്രസിദ്ധീകരണം വേണമെന്നുള്ള ആവശ്യം പല അംഗങ്ങളിൽ നിന്നും ഉയർന്നുവന്നത്. വിവിധ യൂണിറ്റുകളിൽ ഇക്കാര്യം ചർച്ചചെയ്തതിനുശേഷം അസോസിയേഷൻ കേന്ദ്രഭാരവാഹികളുടെ മേൽനോട്ടത്തിൽ Hydel Bullet എന്ന പേരിൽ ഒരു മാസിക പ്രസിദ്ധീകരി

ക്കണമെന്ന് തീരുമാനിക്കുകയുണ്ടായി. അതിനായി ഒരു പ്രത്യേക പത്രാധിപസമിതിയേയും തിരഞ്ഞെടുത്തു. 1970 ൽ ശ്രീ.റ്റി.എസ്. പത്മനാഭൻ മുഖ്യപത്രാധിപരായി ആദ്യ ലക്കം പ്രസിദ്ധീകരിച്ചു. അന്നുമുതൽ ഇന്നു വരെയൊരു മുടക്കവും കൂടാതെ പ്രസിദ്ധീകരിച്ചുവരുന്നു. അസോസിയേഷൻ വാർത്തകൾ, ബോർഡിന്റെ സർക്കുലറുകൾ, ഉത്തരവുകൾ എന്നിവയ്ക്കു പുറമേ അംഗങ്ങളുടെ സാഹിത്യപരമായ അഭിരുചികൾ, കഴിവുകൾ - രചനകളിൽകൂടി പ്രകടിപ്പിക്കാൻ ഒരു മാദ്ധ്യമമായി തീരണമെന്ന് പല അംഗങ്ങളും അഭിപ്രായപ്പെടുകയുണ്ടായി. അങ്ങിനെയാണ് ബുള്ളറ്റിന്റെ ഒരു ഭാഗമായി ECHO (Extreme Care Humane Options) കൂടി ഉൾപ്പെടുത്താൻ തീരുമാനിച്ചത്. എൻജീയർമാരിൽ ആശയസമ്പുഷ്ടതയും, സർഗ്ഗ ചൈതന്യവുമുള്ള ഒട്ടേറെപേർ ECHO ൽ കൂടിയാണ് അവരുടെ ആദ്യ കലാരചനകൾ വായനക്കാർക്കിടയിലെത്തിച്ചത്. ഇത്രയും സർഗ്ഗ ചൈതന്യവും, രചനാ പാടവവുമുള്ള ധാരാളം എഞ്ചിനീയർമാർ നമ്മുടെ കൂട്ടത്തിലുണ്ടെന്ന് തെളിയിക്കാൻ അവസരമൊരുക്കിയത് ECHO പംക്തിയാണ്. ഈടുറ്റ ലേഖനങ്ങൾ, കഥകൾ, കവിതകൾ.... ഒക്കെ നമ്മുടെ എഞ്ചിനീയർമാർക്ക് അന്യമല്ല



hybrid grounding operation, with proper interlocking, the generator only need operate with the low-impedance ground when it is the only ground source to the facility.

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Er. എൻ.ടി. ജോസ്

പവർ പർച്ചേസും കുത്തുപാളയും..... പിന്നെ കുത്തിയപാളയും....

വൈദ്യുതി ബോർഡിന്റെ വരവ് ചെലവു കണക്കുനോക്കിയാൽ പവർ പർച്ചേസു കാരണം കുത്തുപാളയെടുക്കേണ്ടി വരുന്ന കാഴ്ചകളാണ് കാണുവാൻ കഴിയുന്നത്. പാപ്പരാവുമ്പോൾ കുത്തുപാളയെടുക്കേണ്ടി വരുമ്പോൾ സ്വാഭാവികമാണ്. എന്നാൽ പാളയെടുത്ത് കുത്തി കുത്തുപാളയെടുക്കുന്ന കാഴ്ച വൈദ്യുതിബോർഡിൽ മാത്രമേ കാണുവാൻ സാധിക്കുകയുള്ളൂ.

സംസ്ഥാന സർക്കാർ കറന്റ് കച്ചവടം നടത്തുന്നവരെല്ലാം ഗുണഭോഷിച്ച് നന്നാക്കുന്നതിനുവേണ്ടിയാണ് റഗുലേറ്ററി കമ്മീഷനെ ഉണ്ടാക്കിയെടുത്തിരിക്കുന്നത്. അവർ പറയുന്നതേ ചെയ്യാവൂ എന്ന് 1998 ലെ നിയമം

എന്നകാര്യം മറ്റ് ബോർഡ് ജീവനക്കാരെയും സാഹിത്യകാരന്മാരെയും ബോധ്യപ്പെടുത്താൻ ബുള്ളറ്റ് വഹിച്ച പങ്ക് ചെറുതല്ല. മാത്രമല്ല ഇങ്ങനെയൊരു പ്രസിദ്ധീകരണ മില്ലായിരുന്നെങ്കിൽ ഇന്ന് പ്രശസ്തരായ പലരുടെയും രചനകൾ വെളിച്ചം കാണുകയില്ലായിരുന്നു. ഈ ലേഖകൻതന്നെ സാഹിത്യ രംഗത്ത് ഗണപതിക്ക് കുറിച്ചത് ECHO ൽ കൂടിയാണ്. Ten Commandments to, Rummy Players, Love Makers, Loyal Workers, Lazy Workers എന്ന ആദ്യരചനകളിലൂടെ തുടർന്ന് ഇന്നോളം എഴുതിയിട്ടുള്ള 120 ൽ പരം കവിതകൾ, 15-ൽ പരം കഥകൾ, ലേഖനങ്ങൾ എല്ലാം വെളിച്ചംകണ്ടത് ബുള്ളറ്റിൽ കൂടിയാണ്. ഇതിനകം 4 കാവ്യ സമാഹാരങ്ങൾ, ഒരു ചെറുകഥാ സമാഹാരം, ഒരു ലേഖന സമാഹാരം, ഒരു നോവൽ എന്നിവ പ്രസിദ്ധീകരിച്ചിട്ടുണ്ട്. മലയാള സാഹിത്യ രംഗത്തെ അതികായന്മാരുടെ ആശീർവാദവും, അഭിനന്ദനങ്ങളുടെ ഏറ്റുവാങ്ങുവാൻ ഭാഗ്യവുമുണ്ടാ

യിട്ടുണ്ട്. ബുള്ളറ്റ് എന്നൊരു പ്രസിദ്ധീകരണ മില്ലായിരുന്നെങ്കിൽ, അതിൽകൂടി വെളിച്ചം കണ്ട രചനകൾ എഞ്ചിനീയർ സമൂഹം അംഗീകരിച്ചിരുന്നില്ലെങ്കിൽ, പ്രോത്സാഹനം നൽകിയിരുന്നില്ലെങ്കിൽ ഈ ഞാൻ വെറും കെ.പി. ഗോപാലകൃഷ്ണൻ മാത്രമായി ഒരുങ്ങി പോകുമായിരുന്നു. ഈ ഒരംഗീകാരമാണ് കെ.എസ്.ഇ.ബി. പെൻഷനേഴ്സ് ബുള്ളറ്റിന്റെ എഡിറ്ററായിട്ടും എന്നെ തിരഞ്ഞെടുക്കാൻ കാരണമായത്. എന്നോടൊപ്പവും എന്നിക്കു പിന്നാലെയും എത്രയോ പ്രതിഭാ സമ്പന്നരുടെ, സർഗ്ഗധനരുടെ രചനകൾ ബുള്ളറ്റിൽ കൂടി വെളിച്ചം കാണുന്നു. പേരുകൾ ചേർക്കാനാണെങ്കിൽ പേജുകൾ മതിയാകാതെ വരും. ഉത്തരോത്തരം എഞ്ചിനീയർമാരിലെ സർഗ്ഗ പ്രതിഭകളെ വെളിച്ചത്തു കൊണ്ടുവരാൻ, വളർത്തിയെടുക്കാൻ ബുള്ളറ്റിന് കഴിയട്ടെ എന്നാഗ്രഹിച്ചു കൊണ്ട്, ആശംസിച്ചുകൊണ്ട്, നിർത്തട്ടെ.





വഴി എല്ലാ കച്ചവടക്കാരെയും പഠിപ്പിച്ചു വെച്ചിട്ടുണ്ട്.

ഓരോ വർഷവും ഉദ്ദേശിക്കുന്ന വരവു ചെലവുകളുടെ കണക്കുകൾ കൊടുത്താൽ കമ്മീഷൻ അച്ചട്ടായി പറഞ്ഞു തരും ഓരോ ലൈസൻസിയും എത്ര യൂണിറ്റ് ഉണ്ടാക്കണം, എത്ര യൂണിറ്റ് വിൽക്കണം, അത് എത്ര രൂപയ്ക്കാണ് വിൽക്കണമെന്നും പറഞ്ഞുതരും. അത്രയും ഉപകാരം കമ്മീഷൻ ചെയ്യുന്നുണ്ട്.

പതിനായിരം കോടി രൂപയുടെ വരുമാനമുള്ള കെ.എസ്.ഇ.ബി. വരുമാനത്തിലെ എണ്ണായിരം കോടിയുമെടുത്ത് പവർപർച്ചേസ് നടത്തിയാൽ ബാക്കിയുള്ള കാര്യങ്ങൾക്ക് പണം എവിടെനിന്നെന്ന ചിന്തയൊന്നും ആർക്കുമില്ല. ഓരോവർഷവും എത്ര രൂപ പവർ വാങ്ങുവാൻ ചെലവാക്കണമെന്ന് കമ്മീഷൻ കൃത്യമായി കണക്കെഴുതി കൊടുക്കുന്നുമുണ്ട്. എന്നാൽ ഇതൊന്നും മൈൻഡ് ചെയ്യാതെയാണ് കറന്റ് വാങ്ങിക്കൂട്ടുന്നത്. അങ്ങിനെ വാങ്ങിക്കൂട്ടുന്ന വൈദ്യുതിയ്ക്ക് കമ്മീഷൻ പണം അനുവദിക്കുവാൻ ബുദ്ധിമുട്ടാണെന്ന് എല്ലാവർക്കുമറിയാം, എന്നാലും വൈദ്യുതി വാങ്ങിക്കൂട്ടാം. അങ്ങിനെ വാങ്ങിക്കൂട്ടുന്നതിനെ കമ്മീഷൻ അംഗീകരിക്കാതെ വരുമ്പോൾ നമ്മൾ ഉപയോഗിക്കുന്ന ഭാഷയാണ് റവന്യൂ ഗ്യാപ്പ്. ഇത്തരത്തിൽ കഴിഞ്ഞ പതിനഞ്ചു വർഷത്തിനിടയ്ക്ക് വന്ന റവന്യൂ ഗ്യാപ്പ് ഇരുപതിനായിരം കോടി രൂപയുടേതാണ്.

ഈ റവന്യൂ ഗ്യാപ്പ് ഇടയ്ക്കു താരിഫ് പുനഃക്രമീകരിക്കുന്ന സമയത്ത് തിരിച്ചുകിട്ടിയെന്നുവരാം. ഇത് വളരെ തുച്ഛമായ സംഖ്യയാണ്. ബാക്കിയെല്ലാം ഗ്യാപ്പായി തന്നെ തുടരും.

ജീവനക്കാർക്ക് കൊടുക്കുന്ന ശമ്പളവും പെൻഷനും അധികമായതുകൊണ്ട് കുറവു വരുത്തണമെന്നു കമ്മീഷൻ പറയേണ്ടതാമസം; പഠിക്കാനായി മാനേജ്മെന്റ് സ്ഥാപനത്തെ തന്നെ ഏല്പിച്ചു. എന്നാൽ

വരവിന്റെ എൺപതുശതമാനവും ചെലവാക്കുന്ന പവർ പർച്ചേസ് കുറയ്ക്കണമെന്ന് കമ്മീഷൻ പറഞ്ഞതിനെപ്പറ്റി പഠിക്കുവാൻ ഒരു മാനേജ്മെന്റ് വിദഗ്ദ്ധരുടെയും ആവശ്യമില്ല; അതാണ് കാലം. അക്കാര്യത്തിൽ അത്രയ്ക്കു വിദഗ്ദ്ധരായ പവറുള്ളവരാണ് പവർ വാങ്ങിക്കൊണ്ടിരിക്കുന്നത്.

ബോർഡിനെ കുത്തു പാളയെടുപ്പിക്കുന്ന പവർ പർച്ചേസിനെക്കുറിച്ച് ആർക്കും വേവലാതിയില്ല. വർഷാവർഷം ആറായിരം മുതൽ എണ്ണായിരം കോടി രൂപവരെ ചെലവു ചെയ്യുന്നുണ്ടെങ്കിലും ഒരു കുഞ്ഞു ട്രാൻസ്ഫോർമറിന്റെ ആസ്തി പോലും ഉണ്ടാക്കപ്പെടുന്നില്ല എന്നത് വിസ്മയിച്ചുകൂട. ഏതെങ്കിലും പദ്ധതിക്കുവേണ്ടി പണം മുടക്കിയാൽ എന്തെങ്കിലും ആസ്തികൾ രൂപപ്പെടും, എന്നാൽ വാങ്ങിക്കൂട്ടുന്ന വൈദ്യുതികൊണ്ട് വൈദ്യുതി ബോർഡിനു വേണ്ടി ഒരു ആസ്തിയും രൂപപ്പെടുന്നില്ല. ജനങ്ങൾക്ക് ഇരുപത്തിനാലു മണിക്കൂറും കറന്റു കൊടുക്കുന്നത് നല്ലതാണെങ്കിലും അതിനു വേണ്ട പണം അനുവദിക്കുവാൻ റഗുലേറ്ററി കമ്മീഷനും സർക്കാരുകളും തയ്യാറല്ലാതിരിക്കുമ്പോൾ ഇത്രയും നഷ്ടം സഹിച്ച് വൈദ്യുതി വാങ്ങിക്കൂട്ടുന്നതെന്തിനാണെന്നതാണ് ചോദ്യം.

സർക്കാർ ബഡ്ജറ്റിലൊന്നും വൈദ്യുതി വാങ്ങുവാൻ പണമനുവദിക്കുന്നുമില്ല. പിന്നെ ഇതൊക്കെ വാങ്ങികൂട്ടുന്നത് ആർക്കു കമ്മീഷൻ കിട്ടാനാണെന്നതാണ് ഉത്തരമില്ലാത്ത ചോദ്യമായി ഉയരുന്നത്.

ഇതിനോടു ചേർത്തുവായിക്കേണ്ടത് ഇന്ത്യയിലെ വൈദ്യുതി ഉല്പാദനത്തിന്റെ സ്ഥിതിയും ചേർത്താണ്. സംസ്ഥാനങ്ങളിലുള്ള സർക്കാർ സ്ഥാപനങ്ങളെല്ലാം കൂടി എൺപതിനായിരം മെഗാവാട്ട് ഉല്പാദിപ്പിക്കുമ്പോൾ കേന്ദ്ര പൊതുമേഖലാ സ്ഥാപനങ്ങളെല്ലാംകൂടി ഒരു ലക്ഷം മെഗാവാട്ട് വൈദ്യുതി ഉണ്ടാക്കുന്നു. ഇന്ത്യയിലെ സ്വകാര്യസംരംഭകരെല്ലാം കൂടി ഒന്നരലക്ഷം മെഗാവാട്ടിന്റെ വൈദ്യുതി ഉല്പാദിപ്പിക്കുന്നു. →



ഇപ്പോഴത്തെ സപ്ലൈയും ഡിമാന്റും തമ്മിലുള്ള വ്യത്യാസം ഒരു ശതമാനത്തിൽ താഴെയാണ്. കേന്ദ്ര പൊതുമേഖല സ്ഥാപനങ്ങൾ ഉല്പാദിപ്പിക്കുന്ന വൈദ്യുതി വീതംവെച്ച് സംസ്ഥാനങ്ങൾക്ക് കൊടുക്കാൻ ബാധ്യസ്ഥരാണ്. എന്നാൽ സ്വകാര്യ സംരംഭകർ ഉണ്ടാക്കുന്ന വൈദ്യുതി അവർക്കുവേണ്ട മെങ്കിലും വിൽക്കുവാൻ സ്വാതന്ത്ര്യവും കൂടിയാവുമ്പോൾ കേരളം വാങ്ങിപ്പോകുന്നതാണ്.

മറ്റുള്ള സംസ്ഥാനങ്ങൾക്ക് വൈദ്യുതി വാങ്ങി പ്രശ്നങ്ങൾ പരിഹരിക്കുവാൻ അറിയാഞ്ഞിട്ടല്ല; അവരെല്ലാം വൈദ്യുതി വാങ്ങി കൂട്ടുന്നതിനു എതിരെയാണ് എന്നതാണ് വസ്തുത.

കാണം വിറ്റും ഓണം ഉണ്ണണം എന്ന പഴഞ്ചൊല്ല് കറന്റിന്റെ കാര്യത്തിൽ വേണോ എന്നതാണ് കാര്യം. പുതിയ പദ്ധതികൾ ആരംഭിച്ച് കേരളത്തിനകത്തുതന്നെ പരമാവധി വൈദ്യുതി ഉല്പാദിപ്പിക്കുന്നതിനുള്ള സംവിധാനങ്ങൾ ആണ് നമ്മൾ ഉണ്ടാക്കിയെടുക്കേണ്ടത്, അല്ലാതെ ആവശ്യമുള്ള വൈദ്യുതി പുറമേ നിന്നും വാങ്ങി കാര്യം സാധിക്കാമെന്ന ചിന്താഗതി മാറ്റിയെടുക്കേണ്ട സമയം അതിക്രമിച്ചുകഴിഞ്ഞു.

പവർ പർച്ചേസിനെപ്പറ്റി കൃത്യമായ പഠനം കാലത്തിന്റെ ആവശ്യമാണ്. ശരാശരി നാലുരൂപയെന്നു പറയാമെങ്കിലും ചില നേരങ്ങളിൽ വാങ്ങുന്നത് എട്ടു രൂപയിലേറെ ചെലവുചെയ്താണ്. സംസ്ഥാനത്തിനകത്തുള്ള പദ്ധതികൾ നടപ്പിലാക്കുവാനുള്ള ഉത്സാഹമൊന്നുമില്ലാതെ വരുമാനം മുഴുവനായും വൈദ്യുതി വാങ്ങലുമായി ബന്ധപ്പെട്ടു ചെലവിടുന്നത് വിത്തുകുത്തി കഞ്ഞിവെയ്ക്കുകയെന്ന നാടൻ ചൊല്ലിനു തുല്യമാണ്. ഇത്രയും തുക വൈദ്യുതി വാങ്ങാനായി ചെലവു വരുന്നുണ്ടെന്ന സത്യത്തിൽ നിന്നു കൊണ്ട് തന്നെ സംസ്ഥാനത്തിനകത്തുനിന്നു മുള്ള ഉല്പാദനം വർദ്ധിപ്പിക്കുവാനുള്ള

അടിയന്തിര നടപടികളെടുക്കുകയും വേണ്ട മെനുള്ളതാണ് സത്യം.

എല്ലാ സംസ്ഥാനങ്ങളും അവിടെ പദ്ധതികളെല്ലാം പ്രവർത്തിപ്പിച്ച് വൈദ്യുതി ഉല്പാദിപ്പിക്കുമ്പോൾ കേരളത്തിനകത്തു ബോർഡുതന്നെ മുതൽ മുടക്കി നിർമ്മിച്ച BDPP യും KDPP യും ഒരു യൂണിറ്റുപോലും ഉല്പാദിപ്പിക്കുവാൻ ശ്രമിക്കാതെ അത്രയും യൂണിറ്റുകൂടി പുറമേ നിന്നും വാങ്ങിക്കൂട്ടുന്നത് സാമ്പത്തികശാസ്ത്രമനുസരിച്ചാണെന്നു പറഞ്ഞുകൊണ്ടുള്ള ന്യായീകരണങ്ങളൊന്നും തന്നെ ആത്മാർത്ഥത കൂടിയുള്ളതല്ല. ഇവിടെ കോടികൾ മുടക്കി ഉണ്ടാക്കിയെടുത്തിരിക്കുന്ന ഇത്തരം പദ്ധതികൾ നിലനിർത്തുന്നതിനുവരുന്ന ചെലവുകൾ കണ്ണടച്ചു കാണാത്ത തരത്തിൽ വർത്തമാനം പറയുന്നതൊക്കെ കാപട്യമാണ്. അതിനുവരുന്ന ചെലവുകൾ തിരിച്ചു ലഭിക്കുന്നതെങ്ങിനെയെന്ന് ചിന്തിക്കുന്നത് നന്നായിരിക്കും. കായംകുളത്തായാലും ഏവൂരായാലും ഫിക്സഡ് ചാർജിനത്തിൽ താരിഫ് പെറ്റീഷനിൽ ചേർത്തുവാങ്ങുന്നുണ്ടെന്നുവെയ്ക്കാം. അവർക്ക് ആ ഇനത്തിൽ നല്ലൊരു തുക നല്കുന്നുമുണ്ട്. നമ്മുടെ പദ്ധതികൾ നോക്കുകുത്തികളാക്കി നിറുത്തുകയും ചെയ്യുന്നത് ഏത് തീയറി വെച്ചാണെന്ന് എത്ര ആലോചിച്ചിട്ടും മനസ്സിലാക്കുന്നുമില്ല.

സംസ്ഥാനത്ത് ഏതു പദ്ധതിയെക്കുറിച്ച് ആലോചിച്ചാലും ഈ ദുരവസ്ഥ ഭാവിയിൽ ഉണ്ടാക്കിയെടുക്കുന്ന മാനസിക അവസ്ഥയിലുള്ളവരാണ് ഇത്തരം കാര്യങ്ങൾ കൈകാര്യം ചെയ്യുന്നത്. ഇവർ വളരെ ആലോചിച്ച് തന്ത്രപൂർവ്വമാണ് കാര്യങ്ങൾ ചെയ്യുന്നതെന്ന് വെച്ച്. അത് ശരിയാണെങ്കിൽ വർഷം വർഷം വരുത്തിവെയ്ക്കുന്ന നഷ്ടം ഉണ്ടാവില്ലായിരുന്നു. നഷ്ടം കുമിഞ്ഞുകൂടിയിട്ട് ധനകാര്യ മാനേജ്മെന്റ് ഭംഗിയായിട്ടാണ് നടക്കുന്നതെന്ന് വീമ്പിളക്കിയിട്ട് കാര്യമില്ല. നഷ്ടത്തിനു കാരണം ജീവനക്കാരുടെ



ഒരു വയനാടൻ യാത്ര

Er. പ്രദീപ് ആർ.

വയനാട്ടിലെ തോൽപെട്ടി വന്യജീവി സങ്കേതം ഒന്നുകാണുക; കാടറിയുക എന്ന ഉദ്ദേശം മാത്രമേ ഉണ്ടായിരുന്നുള്ളൂ. ഞാൻ അടങ്ങുന്ന നാൽവർ സംഘം കണ്ണൂരിൽ നിന്നും രാവിലെ 9.00 മണിയോടെ പുറപ്പെട്ടു. ഉദ്ദേശം ഒരു മണിയോടെ തോൽപെട്ടി കവലയിലെത്തി. തുടർന്ന് താമസസ്ഥലത്ത്. എസ്റ്റേറ്റിനോട് ചേർന്നുള്ള ഒരു വീടായിരുന്നു അത്. അൽപസമയം പരിസരവും കാടും വീക്ഷിച്ചു. ചുറ്റും, ഇതേവരെ കാണാത്ത വൃക്ഷലതാദികൾ. അപൂർവ്വമായ കിളികളും, മറ്റു പക്ഷികളും ഇടയ്ക്കിടെ ശബ്ദമുണ്ടാക്കുന്നുണ്ട്.

സ്വാദിഷ്ടമായ ഉച്ചഭക്ഷണം കഴിച്ചപ്പോൾ യാത്രാക്ഷീണം മയക്കത്തിലേക്കുമാറി. സുഹൃത്തും സഹായിയും, എസ്റ്റേറ്റ് മാനേജറും ഡ്രൈവറും എല്ലാമായ സന്തോഷ് അപ്പോഴേക്കും വന്നു. ജീപ്പിൽ അടുത്തുള്ള വെള്ളച്ചാട്ടം കാണാൻ പോകാം; സന്തോഷ് പറഞ്ഞു.

അധികം പ്ലാനിങ്ങും ഒന്നും ഉണ്ടായിരുന്നില്ല. എല്ലാം സന്തോഷിനെ ഏൽപ്പിക്കുകയായിരുന്നു. വണ്ടി കുറെ ഓടി. കർണ്ണാടക ബോർഡർ കടന്ന് കുടക് ജില്ലയിലെത്തി. ഇരുപ്പ് വെള്ളച്ചാട്ടം ആയിരുന്നു അത്. അടുത്തുള്ള പുഴയിലെ വെള്ളച്ചാട്ടം പ്രതീക്ഷിച്ച ഞങ്ങൾക്ക് അത് ഇരട്ടി മധുരമായി. കുറച്ചു ദൂരം കാട്ടിലൂടെ നടന്നുവേണം അവിടെയെത്താൻ. വളരെ ഉയരത്തിൽ നിന്നും പതിക്കുന്ന ജലധാര, ശക്തമായ പ്രത്യേക തരത്തിലുള്ള ഒരു ഊർജ്ജവും ഉന്മേഷവും ചുറ്റും നിറക്കുന്നതായി തോന്നി. വേഷം മാറി കുറച്ചധിക സമയം വെള്ളത്തിൽ കുളിച്ചു കയറി. അതിന്റെ ഒരു സുഖം പറഞ്ഞറിയിക്കാൻ വയ്യ. തിരിച്ചു വരുമ്പോൾ ചൂടുചായയും കരിമ്പ് ജ്യൂസും പഴങ്ങളും ഇഷ്ടാനുസരണം കഴിച്ചും ജീപ്പിൽ കയറി തിരികെ താമസസ്ഥലത്ത്.

വൈകിട്ടായപ്പോൾ ചായയെത്തി. കണ്ണൂരിൽ നിന്നും കൂടെ വന്ന ഡ്രൈവർ



ശമ്പളവും പെൻഷനും അധികമാണെന്ന ഒരു വാദഗതി ഉന്നയിച്ചുകൊണ്ട് ബാക്കിയുള്ള കാര്യങ്ങളൊന്നും ആരും ശ്രദ്ധിക്കാതിരിക്കുവാനുള്ള തന്ത്രം മാത്രമാണ് ഇന്നു നടന്നു കൊണ്ടിരിക്കുന്നത്.

ജലവൈദ്യുത പദ്ധതികളിൽ നിന്നും ഉണ്ടാക്കുന്ന വൈദ്യുതിയ്ക്ക് ഒരു രൂപമാത്രമാണ് ചെലവ് വരുന്നതെന്ന സത്യം എല്ലാവർക്കും അറിയാം എന്നിട്ടും ജലവൈദ്യുത പദ്ധതികൾ നടപ്പിലാക്കുവാൻ ഇച്ഛാശക്തി ആരും കാണിക്കുന്നില്ല. എന്നാൽ കൂടുതൽ ചെലവുവരുന്ന വാതക അധിഷ്ഠിത

പദ്ധതികൾ നടപ്പിലാക്കുന്നതിനു വാശി കാണിക്കുന്നുമുണ്ട്. ഇത്രയും വാശി ജലവൈദ്യുത പദ്ധതികൾ നടപ്പിലാക്കുന്നതിനു കാണിച്ചാൽ ബോർഡിന്റെ ഭാവി ശോഭനമാക്കുന്നതിനു സാധിക്കുകയും ചെയ്യും.

വൈദ്യുതി പുറമെ നിന്നും വാങ്ങി എല്ലാ പ്രശ്നങ്ങളും പരിഹരിക്കാമെന്ന ഒറ്റമൂലിയും കൊണ്ടുള്ള നടത്തം ഉപേക്ഷിച്ച് മറ്റു മാർഗങ്ങൾ തേടണമെന്നുള്ളതാണ് പരമ പ്രധാനം.





അടുക്കളയിൽ കയറി ചായയിടാനും സഹായിക്കാനും തുടങ്ങിയിരിക്കുന്നു.

വളരെ പെട്ടെന്ന് തന്നെ ഇരുട്ടും തണുപ്പും വീഴുന്നു. കുറെസമയം സംസാരിച്ചും മറ്റും കുറച്ചു കിടന്നുറങ്ങിയും നോക്കിയപ്പോൾ സമയം രാത്രി 7.50. കൂടെ വിശപ്പും തണുപ്പും അരിച്ചു കയറാൻ തുടങ്ങി. ലാപ്ടോപ്പിൽ അൽപസമയം സിനിമകണ്ടു സമയംപോക്കാൻ ശ്രമിച്ചെങ്കിലും സാധിച്ചില്ല. അടുക്കളയിൽ കാര്യങ്ങൾ എല്ലാം ആയിവരുന്നതേയുള്ളൂ. അൽപസമയത്തെ അക്ഷമമായ കാത്തിരിപ്പിനു ശേഷം അവിടുന്ന് വിളിവന്നു. ചപ്പാത്തി, ചോറ്, ചിക്കൻ, സാമ്പാർ, ടൊമോറ്റോ ഫ്രൈ, ഓംലെറ്റും, സാലഡും അടങ്ങിയ എല്ലാം അവിടുന്ന് തന്നെ ഉണ്ടാക്കിയ രുചികരമായ സംഭവ ബഹുലമായ അത്താഴം. സാലഡിൽ അവിടുത്തെ കാന്താരിയും 'ആപ്പിൾ വിനാഗിരി'യും ചേർത്തപ്പോൾ സുപ്പർ. അൽപം ഹെവിയായി കഴിച്ചുപോയി. നടക്കാൻ പോകണമെന്ന് ആവശ്യം വന്നു.

ഇരുട്ടിൽ മൊബൈൽ ഫോണിന്റെ വെളിച്ചത്തിൽ കാനന വഴിയിലൂടെ നന്നു വെറെയൊരു എസ്റ്റേറ്റിന്റെ ഏതോ ഭാഗത്തെത്തി. പരക്കാൻ സാധിക്കുന്ന പ്രത്യേക അണ്ണാനെ ആ ഇരുട്ടിൽ ആദ്യമായി കണ്ടു. അത്യാവശ്യം കടുവയും ആനയും ഇറങ്ങുന്ന വഴിയാണെന്ന് സന്തോഷ് പറഞ്ഞപ്പോൾ പ്രത്യേകിച്ചൊന്നും തോന്നിയില്ല.

അപ്പോൾ സന്തോഷ് ഒരു നിർദ്ദേശം വച്ചു. രാത്രിയിൽ കാട്ടിനുള്ളിൽ കയറാം. ജീപ്പിൽ പതിയെ ഓടിച്ചു പോകാം. ഭാഗ്യമുണ്ടെങ്കിൽ എന്തെങ്കിലും കാണാം. എല്ലാവർക്കും സമ്മതം. ഉടനെ നിർദ്ദേശവും വന്നു. ടോർച്ച്, ഫ്ലാഷ് അടിക്കരുത്. വഴിയിൽ ഫോറസ്റ്റുകാർ ചോദിച്ചാൽ മറ്റു ആവശ്യത്തിന് തിരുനെല്ലി ഗസ്റ്റ്ഹൗസിൽ പോയതാണെന്ന് പറയണം.

ജീപ്പിൽ വർഷങ്ങൾക്ക് ശേഷമുള്ള പിൻ സീറ്റുയാത്ര അലോസരമുണ്ടാക്കിയപ്പോൾ

മുമ്പിലെ സൈഡ് സീറ്റിലേക്ക് മാറിയതായിരുന്നു ഞാൻ. ആദ്യമൊക്കെ സാധാരണ റോഡിൽ രാത്രി ഓടിച്ചു പോകുന്നത് പോലെയേ തോന്നിയുള്ളൂ. പിന്നെ, പിന്നെ, കാടിന്റെ നിഗൂഢതയും വന്യതയും, തണുപ്പിനൊപ്പം ഉള്ളിലേക്ക് തുളഞ്ഞു കയറുന്നതായി തോന്നി.

പഴയമോഡൽ, മൂന്നുഗിയർ മാത്രമുള്ള പെട്രോൾ ജീപ്പായിരുന്നു അത്. ഒരു കൊമ്പൻ റോഡിന്റെ വശത്ത് നിൽക്കുന്നതും കണ്ടു. എല്ലാവരും ബഹളം വെച്ചെങ്കിലും സന്തോഷ് മാറ്റമൊന്നുമില്ലാതെ വണ്ടി മുന്നോട്ടെടുത്തു കൊണ്ടേയിരുന്നു. അവന്റെ നിറം തവിട്ടു കലർന്ന മണ്ണിന്റേതായിരുന്നു. കൊമ്പുകൾ താഴോട്ടും വളഞ്ഞും നീണ്ടിരുന്നു. ഇരുട്ടിൽ നിന്നും ദൃഷ്ടികൾ അയച്ചുകൊണ്ടും അവനങ്ങിനെ നിൽക്കുന്നു.

അങ്ങിനെ നാലഞ്ചു ആനകൾ ഒറ്റക്കും റോഡിന്റെ വശങ്ങളിലായി പലയിടത്തും കണ്ടു. അതിലൊരുത്തൻ ചിന്നം വിളക്കുന്നുണ്ടായിരുന്നു. കുറച്ചുകൂടി കഴിഞ്ഞപ്പോൾ ഒരു കാട്ടുപോത്ത്. ആകാരവടിവും ശക്തമായ പേശികളും കൊണ്ടു സമൃദ്ധമായ രൂപം. കാലുകൾക്കും സോക്സിട്ട പോലെ വെള്ള നിറത്തിൽ അടയാളങ്ങൾ. ഇതിനെ ഞാനല്ലാതെ മറ്റാരും കണ്ടില്ല എന്ന് പിന്നീട് സംസാരിച്ചപ്പോൾ മനസ്സിലായി (ഞാനേ കണ്ടുള്ളൂ... ഞാൻ മാത്രം) ഇഷ്ടംപോലെ മാനുകളെയും കണ്ടു.

ഒടുക്കം ഒന്നും രണ്ടും മാനുകൾ ചിതറി ഓടുന്നതും കണ്ടു. ആ സ്ഥലത്ത് കടുവ ഇര പിടിച്ചിട്ടുണ്ടാവാമെന്ന് സന്തോഷ് പറഞ്ഞു. പച്ച ഇറച്ചികളുടേയും ചോരയുടേയും മണമുണ്ടായിരുന്നു പോലും. ആകാംക്ഷയും കൗതുകവും ഭയപ്പാടിന് അൽപ്പാല്പമായി വഴി മാറുന്നതായി മാത്രം മനസ്സിലായി.

തിരിച്ചു താമസസ്ഥലത്ത് വന്നു കിടക്കുമ്പോൾ വല്ലാത്തൊരവസ്ഥയിലായിരുന്നു



Latest news & updates in Indian Power Sector

(Source: www.indianpowersector.com)

☞ India records highest peak power deficit in 16 months

During the month, power generation, excluding from renewable sources, increased 4.5 per cent to 102 Billion Units (BUs). The improved thermal demand was on account of lower generation from other sources, including hydro, nuclear and wind.

Higher electricity demand coupled with supply constraints led to India recording a peak time power deficit of 2 per cent in September – highest since April 2016 when the gap between demand and supply stood at 2.1 per cent – according to research and ratings agency India Ratings. →



മനസ്സ്. ഇടയ്ക്ക് സപ്ലൈ ഓഫായി പോയിരുന്നു. രണ്ട് ടെസ്റ്റ് ചാർജ്ജ് ചെയ്യുന്നത് മനസ്സിലായി. ഇനി വരില്ലെന്ന് വിചാരിച്ചു കിടന്നതാണ്. പക്ഷേ ഇടയ്ക്ക് വെളിച്ചം വന്നു. വയനാടും പഴയ വയനാടല്ല. വൈദ്യുതിയുടെ അമരത്ത് ‘ആൺകുട്ടികൾ’ ഉണ്ടെന്ന് കാണിച്ചു കൊടുത്തുകൊണ്ട്.

അടുത്ത പ്രഭാതം. ഇാവിലെ ഫോറസ്റ്റ് ഓഫീസിൽ പണമടച്ച് അവരുടെ ജീപ്പിൽ ഗൈഡിനൊപ്പം റൈഡിനിറങ്ങി. അധികം മൃഗങ്ങളെ കാണാൻ കഴിഞ്ഞില്ല. ഹനുമാൻ കുരങ്ങ്, മാനുകൾ, കാട്ടുപന്നി എന്നിവയെ കണ്ടു. അലസ സുന്ദരമായി മേയുന്ന മാനുകൾ എന്നത്തേയും പോലെ കാടിന്റെ സൗന്ദര്യമാണ്. ആനയും കടുവയും മാനും ഒരേ കാട്ടിൽ ഒന്നിച്ചു കഴിയുന്നു. പ്രകൃതിയുടെ വമ്പവും സ്വസ്ഥവുമായ താളത്തിൽ അവർ സംതൃപ്തരാണ്. മാനിനെ കടുവ ഭക്ഷണമാക്കിയതുകൊണ്ട് മറ്റുള്ളവ പൂല്ലുതിന്നാതിരിക്കുകയോ, വെള്ളം കുടിക്കാൻ പുറത്തിറങ്ങാതിരിക്കുകയോ ചെയ്യുന്നില്ല. പരിധിവിട്ട് തിരിച്ചറിവും ആശങ്കയുടെ അങ്ങേ അറ്റത്തും തുടർന്ന്

അശാന്തിയിലേക്കും നയിക്കുന്നതിനാൽ പ്രകൃതി അനുഗ്രഹിച്ചു നൽകുന്ന മറവി.

ഇരപിടിച്ചു ഭക്ഷണം കഴിക്കുക എന്നത് കടുവയുടേയും, ഓടി രക്ഷപ്പെടുകയെന്നത് ഇരയുടേയും നിയോഗമാണ്. രണ്ടും പ്രകൃതിയിൽ ഒരേ സ്വാതന്ത്ര്യത്തോടെ സ്വാഭാവികമായി നടത്തപ്പെടുന്നു.

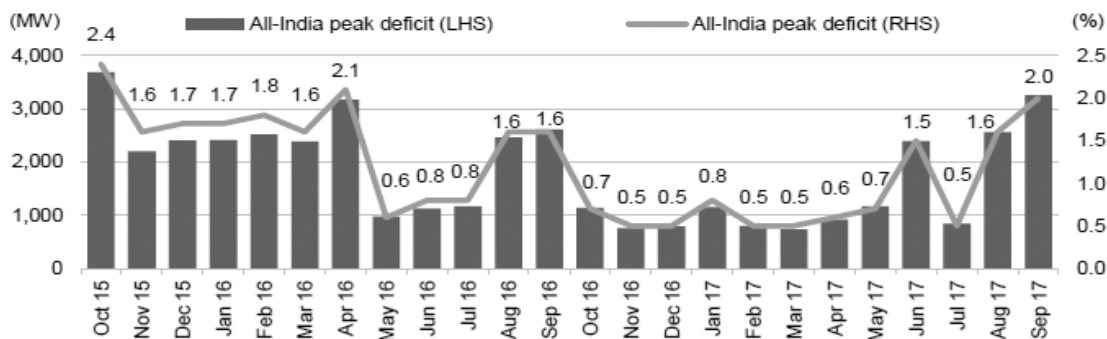
മാൻ പൂല്ലു തിന്നത്രയും പാപമേ കടുവ മാനിനെ പിടിക്കുമ്പോൾ ഉണ്ടാവുന്നുള്ളൂ എന്നു എവിടെയോ വായിച്ചതായി ഓർമ്മ വന്നു. മനുഷ്യ നിർമ്മിതവും കൃത്യമായതും കൂടുതലായി ശീലിച്ച നഗരവാസികൾ ഇടക്ക് കാടുകയറുന്നതും നല്ലതാണെന്ന് തോന്നുന്നു. അവിടെ എല്ലാം സ്വാഭാവികമാണ്. പ്രകൃതിയുടേയും പ്രപഞ്ചത്തിന്റേയും താളവും സ്വാഭാവും ഇവിടെ കൂടുതലായി തെളിഞ്ഞുകാണുന്നു. (ഇതിനെ യാത്രാവിവരണമായി കാണരുത്. യാത്രയിൽ മനസ്സിൽ തോന്നിയത് എഴുതിവെച്ചത് മാത്രം. തെറ്റുകൾ സദയം പൊറുക്കുക.)





During the month, power generation, excluding from renewable sources, increased 4.5 per cent to 102 Billion Units (BUs). The improved thermal demand was on account of lower generation from other sources, including hydro, nuclear and wind.

“Peak demand deficit increased in the Northern region due to a shortage of supply in Uttar Pradesh,” India Ratings said in a report today. The higher demand and lower supply witnessed in the non-thermal segment also pushed up short-term power prices at the power exchanges.



Source: CEA, Ind-Ra

“Short-term power prices exceeded Rs 4 per unit. In September 2017, the difference in the total buy and sell bids at Indian Energy Exchange (IEX) turned positive, indicating a higher demand for short-term power,” the report said. However, the spike in spot power prices at the exchanges are not likely to sustain in the medium term in light of a significant amount of spare capacity and the inability of generators to tie-up long-term power purchase agreements.

India Ratings also said coal inventory levels at power plants declined in September due to a sudden rise in electricity generation from thermal plants amid limited coal output and supply. “The overall level stood at 8.5 million tonnes in September 2017 from 11.9 MT in August and 16.7 MT in July. The number of plants with critical and supercritical levels also increased to 21 in September from 12 in August and 2 in July.

Coal India’s production in September rose 10 per cent year-on-year. However, the increase was lower on a month-on-month basis at 3 per cent. Coal India has increased its supplies to improve the coal situation at power plants. During the month, the growth in coal supply to power plants was 21 per cent at 35.1 MT compared with 29.1 MT in September 2016.

☛ **India must encourage hydro power projects development: R K Singh**

R K Singh was speaking at the meeting of the Consultative Committee attached to his ministries in Guwahati. The meeting reviewed the functioning of state-run NHPC Ltd and implementation of the government’s Solar Rooftop Programme and the Solar Pumps Programme.



New Delhi: Power and renewable energy minister R K Singh today said India must encourage development of hydro power projects as they help in providing inexpensive power in the long-term and are ideal for meeting peaking load demand.

Singh was speaking at the meeting of the Consultative Committee attached to his ministries in Guwahati. The meeting reviewed the functioning of state-run NHPC Ltd and implementation of the government's Solar Rooftop Programme and the Solar Pumps Programme.

During the meeting, NHPC Chairman and Managing Director (CMD) Balraj Joshi gave a presentation on the company's areas of operation, portfolio of projects, performance on financial parameters, diversification into thermal and renewables and the way forward.

Joshi informed the committee that NHPC is commissioning 22 projects of 6,691.2 megawatt (MW) capacity and is engaged in 25 projects of 14,000.5 MW capacity which are under various stages of development involving hydro, solar and thermal projects.

"Out of these, three hydro projects aggregating to a total installed capacity of 3,130 MW and one solar project of 50 MW in Tamil Nadu are under construction," the ministry said in a statement, adding a 1,000 Mw project of JV Company Chenab Valley Power Projects Limited (CVPPL) has been accorded Cabinet's clearance and its re-tendering is under finalisation.

Also, 14 projects of 9,167.5 MW are at various stages of clearances. "Six hydro projects of 553 MW are in the pipeline for preparation of feasibility report and another three projects of 805 MW are also on anvil. Further, NHPC is envisaging addition of 150 MW solar projects in association with Solar Energy Corporation of India (SECI)," Joshi said. He also added that NHPC has expanded its objective of developing renewable source of energy by commissioning 50 MW wind project in Jaisalmer, Rajasthan.

The committee was also informed that 2,363 megawatt peak (MWp) solar rooftop systems have been sanctioned and about 810 MWp aggregate capacity projects have been installed in the country so far. "A total 1,80,908 number of solar pumps have been sanctioned and 1,35,545 number of solar pumps have been installed under the Solar Pump Programme till 30th September 2017," the statement said.

The ministry also said it is in the process of formulating a new scheme for solar pumps to promote stand-alone solar off-grid pumps with an objective to replace existing diesel pump sets. Similarly, a new scheme for solarisation of grid-connected solar pumps is also being formulated for areas where agriculture power feed is separated.

Power sector experts raise concerns over privatization of distribution system

A large number of power sector experts and engineers from across the country have raised serious concerns about the Electricity (Amendment) Bill 2014 which seeks to extend privatization to power distribution. These experts and engineers are of a firm view that this may worsen power sector crisis.





The experts and engineers after two days deliberations held at Bengaluru demanded that the Amendment Bill be put on hold and the proposed changes in Electricity Act 2003 should be discussed with all stakeholders, including power sector engineers, employees and consumers before presenting in the Parliament.

The Amendments Bill intends to bifurcate the distribution of power into the carriage (infrastructure) and sale of power. A government company will lay down the wires that carry electricity, while private companies will compete over selling that electricity to consumers to earn profits.

Spokesperson of the All India Power Engineers Federation (AIPEF) V K Gupta, which has its head office here, said the Electricity Act 2003 had failed to yield the desired results and the power sector is facing a financial crisis and is on the verge of collapse. In such a scenario the government must also review the Electricity Act 2003 and the repercussions and reforms that followed, which have landed us in this situation.

The distribution companies (Discoms) have already accumulated losses of Rs 4.14 lakh crore while their debt has risen to 4.22 lakh crore as of 2015-16. Gupta said the losses were increasing at a rapid rate as Discoms were paying thousands of crores of rupees to private sector generators, without using even a single unit of electricity due to faulty power purchase agreements (PPAs) and these must also be reviewed.

The power engineers deliberated upon the failure of the private sector. This is evident from Odisha, where all the private power distribution companies are now back in government hands. The experience of the franchise and parallel licensing in Mumbai and privatization of power distribution in Delhi are not encouraging. Huge regulatory assets built up in Delhi and Mumbai and very large investments are required before separating wire and content and inducting new entities into the system, Gupta said.

EAS Sarna, Former Secretary (Power) raised the issue of restoration of techno-economic scrutiny and approval of Central Electricity Authority (CEA). It said the experience of power generation capacity addition in the last decade has created serious problems such as shutting down of thermal plants in the state sector and underutilization of manufacturing capacity in India.

Dr A Gopala Krishnan, Former chairman Atomic Energy Regulatory Board demanded that the nuclear power should be added only after ensuring long-term safety in a transparent manner after taking the public into confidence. There is absolutely no justification in importing nuclear power plant from firms which are either bankrupt or likely to be in near future. Shantanu Dixit and Ashwini Chitnis from Prayas Energy Group said the addition of solar energy should be taken into account not only the cost of the solar plant but also the transmission cost due to underutilization, system stability and operational concerns. The policy of large solar plants need to be reviewed and the alternative of decentralized solar power plants, rooftop solar plants and solar agriculture pumps need to be seriously considered and encouraged, the AIPEF said.



KSEB ENGINEERS' ASSOCIATION

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No. KSEBEA/Letters/2017-18/

03-11-2017

To

The Chairman & Managing Director

Kerala State Electricity Board Ltd.

Sir,

Sub:- Meeting held with association representatives- issues raised -Suggestions-
note- submitting- reg.

Ref: - Meeting held on 26-10-2017 .

We wholeheartedly thank you for giving us an opportunity to present our views in the meeting held between your good self and Association representatives. We submit the following note as a follow up to the issues that we raised in the meeting.

1. Online transfers:

KSEBEA welcomes and supports the decision of the management to initiate the on-line transfer scheme for employees. It should be continued to ensure fair and transparent transfer of employees. However, there are some serious flaws in respect of the recent on-line orders published.

1. The software is **NOT developed** based on an **approved SRS**. The specification nor the functioning **has not been disclosed** or demonstrated to the functional committees constituted for the purpose.
2. The software **has not been tested** for its accuracy and compatibility to the respective Board Order issued.
3. The published final transfer orders indicate **serious manipulations done** in the software logics.
4. Certain places and posts are seen **flagged without assigning or disclosing reasons**.

Major anomalies observed are as follows:

- Some of the **places are kept vacant** though the transfer to those posts were requested by eligible engineers.
- Undue Protection is given to some ladies by neglecting the genuine rights of male officers, which is not specified anywhere in the guidelines.
- Certain Posts are seen **flagged discriminately after publishing trial list** and exercising re-option facility by eligible candidates, totally violating the natural justice.
- Some engineers are flagged without considering their request for transfer from the place.



Corrections/Actions suggested

- **Revise transfer guide line by withdrawing flagging of posts.** Flagging of posts has been done by officers of HRM department discriminately vindicating our apprehension. HRM office shall not be given a free hand to flag posts discriminately without any valid reasons.
- There are differences and **discrepancies in incumbency details in HRIS and service book.** This has to be corrected.
- The **posts which are to be reserved** for administrative reasons **may be declared in advance** by the Board.
- Prepare and publish SRS (System Requirement Specifications) of the Software package used. Arrange **demonstration of the software** logics used to the Functional Committee and HRM. **Test the software** by certified agencies. Minimise manual intervention and provide interface for users(HRM) of the software
- Guidelines to be revisited and revised incorporating the discrepancies, especially male-female ratio and indexing

2. Pension Fund.

The master trust pension fund has not been fully made operational. Only current pension liabilities are being transferred to Pension Trust. A time frame may be fixed for this purpose. The present status and the future course of action in respect of Pension Fund may please be formally published for transparency. For operationalizing pension funds floating bonds in open market may also be resorted. Also it is the right time to choose a Pension fund manager/house to manage the fund. This is imperative since we have already entered a cycle of low interest rates and mere fixed deposit will only harness meagre revenues for the fund.

3. Revamping of Thermal Power plants.

It is understood that the conversion of thermal power plants RGCCPP and BSES to gas based power plants is being actively considered. We feel that this is not an economically beneficial for KSEBL, without very cheap long term fuel linkage agreement. There would also severe be Right of Way issues related to fuel transportation to the power plant. Laying pipe along highways or the sea shore are not economical and may face social issues. KSEBL may terminate the PPA with NTPC. The fixed Cost of this plant has already been recovered by NTPC. Therefore no balance residual cost of RGCCPP needs to be paid to NTPC. Similarly taking over the BSES power plant by KSEBL would also be economically disastrous.

Maintaining these plants for emergency purposes also does not make any sense because of the availability of cheaper power and strong grid to the state. However, KSEBL may consider the economy of gas conversion of BDPP and KDPP since GAIL pipelines pass close by.

Maintaining these plants for emergency purposes also does not make any sense because of the availability of cheaper power and strong grid to the state. However



KSEBL may consider economy of conversion of BDPP and KDPP since GAIL pipelines pass close by.

4. TRANSGRID Project

KSEBEA is against any JV to be formed with PGCIL for TransGrid project. We also do not support alternative models proposed such as EPC execution by PGCIL or Project Management Consultancy (PMC). The following arguments may be considered against the move.

- PGCIL consultancy charge would be at least a 10% of the cost. For 5000 Cr project of Phase -1 this will come to around Rs 500 Cr; but for creating a temporary places of 200 persons for KSEBL for five years will come to around Rs 200 Cr only. Hence it will be prudent to go for creation of 200 places temporarily. Moreover these places can be dissolved gradually as Engineers would get retired in next 4 years.
- PGCIL was not successful in completing in Kerala such as Kochi-Edamam line in time. Similarly they could not commence the work of the Eranadu package because of laxity. Therefore the expertise claimed by PGCIL alone cannot be deciding criteria.
- The delay in projects undertaken by KSEBL engineers is not caused by absence of technical capability, but because of the delay in getting clearances and the tardy decision making process and risk aversion prevailing in KSEBL.
- Even if PGCIL takes up the projects it will be a hell of a coordination problem for KSEBL also since most of the works are through existing RoWs and existing substations which require close coordination with KSEBL engineers.

KSEBEA feels that most of the projects are for strengthening the Transmission System. However there are some gray areas which are to be addressed in this project. Since huge investment is involved, the necessary projects shall be identified and prioritised only after conducting proper technical feasibility/ load flow studies by an expert team. We appeal that these projects should be implemented transparently and taking all stakeholders into confidence. We have apprehensions about the funding pattern also. Regulatory Commission should be taken into confidence by clearly informing them about our stand.

5. K-FONE Project

It is understood that the K-FONE project uses KSEBL distribution network facility for drawing cables. Drawing data/communication cable along the LT poles without dismantling the existing cables of CTV operators, it will badly affect the distribution network and cause safety concerns. KSEBL will lose the revenue now collected by way of rental charge. Section 51 of the Electricity Act mandates that *a portion of the revenue generated from such business shall be used for reduction of wheeling charges*. We feel it is detrimental to the interests of KSEBL. Forming SPV sharing KSEBL assets may be against the spirit of the prevailing 'transfer scheme'. However, we request, detailed discussions



shall be conducted in this regard with associations and trade unions before proceeding further.

6. Distribution Network

This is an area where immediate attention of the Board is required. The distribution network, at present, is not at all capable to deliver the quality of power with reliability. This is due to the inadequate investment in the sector in the past. To achieve the objectives like quality of power, reliability and loss reduction etc., the network requires standardisation. Therefore KSEBL need own standards for building, maintaining and operating the network. A central group for planning & optimising the 33 kV & 11 kV network may be constituted.

KSEBL may Leverage **Smart City** funds in Thiruvananthapuram and Kochi so that the whole network in these cities can be transformed into reliable cable network (LT & HT). It may be necessary to build a 33kV distribution network for meeting the increasing demand.

Sub-division / Division level separate team for building, operating and maintaining 11 & 33 KV HT network may be considered for network administration and safety.

7. Safety

KSEBL may formulate a detailed **safely policy** document. The objective and road map for accident reduction may be formulated. KSEBL's own standard for construction, operation and maintenance practice is to be formulated in this regard, following relevant regulations and BIS publications.

Only **qualified personnel prescribed in CEA regulations** may be recruited and promoted for technical works. The technical staff may be given extensive **hands on training** before deploying to stations. Present facility in KSEBL relies on class-room training only. This is very ineffective in respect of lower level staff. Therefore the institutes may be upgraded for giving actual physical training.

Only **qualified and certified contractors** rather than Petty contractors be allowed to carry out electrical works on the networks. Proper directions may please be given immediately to properly address the recent licensing issues for petty contractors in Distribution and for operators in Substations. A co-ordination meeting may be called with Electrical Inspectorate to resolve the issue.

The Board, about three years ago, had taken a decision to **fix rate contracts for supply safety equipment** from standard manufacturers. Though this was entrusted with SCM, it has not been done so far. It is therefore appealed that the Board may resort to central rate contract for safety materials.

8. Renewable Energy:

As per the present renewable energy regulation, KSEBL has to meet both solar and non-solar targets separately. However, large scale development of solar energy in the state is not very economical with the present technology, because of lower yield (CUF @ 14-15% compared to 19-21% in other states) and cost of land required. KSEBL may resort to build the minimal capacity envisaged in policies and regulations.



Since it is more economical to purchase RE from open market, KSEBL may resort to purchase RE through bidding for short or medium term. We expect that the technology may improve further and the per unit cost would come down further in future.

It is understood that the GoI is considering a policy to treat all hydro stations as renewable sources. Then, our non-solar RE obligation would be very minimal.

The system stability impact of integration of RE has to be conducted before going for large scale integration.

There should also be a policy guideline regarding Roof Top solar (both off grid and grid connected) since poor quality equipment will be affecting our network very badly.

9. ERP Implementation

It is understood that KPMG has submitted the Report regarding ERP implementation and As-Is Study of the existing IT infrastructure. This report may be shared with the stakeholder associations for discussion. It is also understood that the consultant has pointed out huge gaps and inadequacies in many of the in house software developed. These software were developed at a waste expense of manpower and cost has now become not suitable for integration to ERP.

The Board therefore may seriously consider outsourcing software development, if economical, rather than blindly adopting impractical policies such as open source software etc. For this, we request to conduct an IT audit in KSEBL. The Board may rather focus on the core business of supply of electricity and retain only essential team for IT implementation.

10. Tariff

Tariff is a major concern for KSEBL. There is a huge sum of un-bridged revenue gap at present. (Around Rs. 5000 Cr). It is also understood that the revenue gap would increase in the future even with normal monsoon. The present tariff does not cover the expenses of KSEBL. It would be necessary to seek suitable tariff revisions in future from KSEBL and the Government. A long term (say 5-10 year) tariff strategy may be evolved by mutual consensus with Government and Commission but without causing a tariff shock. The government may be apprised of the grave situation and suitable policy change may be sought in this regard.

The accounts of KSEBL may be segregated as per the Second transfer scheme, so as to have a better managerial control over the functions. The accounts also may be appropriately cleaned up to ensure correct accounting of expenses.

11. Stalled projects

The execution of Pallivasal extension Scheme (60 MW) and Thottiyar HEP (40MW) projects , were foreclosed after spending almost Rs.200 Cr . Though decision was taken to revamp those projects, the process has not been progressed appreciably. Therefore, we request to take immediate decisions to accelerate the execution of these projects.

We request the Board to formulate policies, long term schemes and programmes for addressing the above issues. We extend our whole hearted support to the organisation in this regard.

Yours faithfully,

Sd/-

GENERAL SECRETARY



KSEB ENGINEERS' ASSOCIATION

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No. KSEBEA / T& P / 2017 -18

10-11-2017

To

The Director (Finance)
Chairman, Grievance Redressal Committee
General Transfer - 2017
KSEB Limited

Sir,

Sub : General Transfer - 2017 of Asst. Executive Engineer (E) grievance-request-reg.

Ref : 1. Transfer order No. EB1/ AEE (E) / General Transfer 2017 dtd 07-10-2017

2. Appeal of Sri. Manoj M.R. and our letter dated 11-10-2017 to the appeal committee.

3. Order No. EB. 1/ AEEE /GT - 2017 / GRC - Appeal / FTD dated 10-11-2017

This has reference to the General Transfer order of AEE (E) and subsequent correction order, referred (3) above in which some of the appeals are seen addressed.

Sri. Manoj M.R. AEE. Domicile of Ernakulam, less than 3 years in the present place was under orders of transfer to Moolamattom, a place not requested by him. He was in the Regional list during the trial order, but replaced with the lady AEE having lower index, from the Ernakulam out list. The grievance was submitted to the appeal Committee vide ref(2), in which he has requested to retain, but declined by the Appeal committee and he has been re-posted to LD Station Kalamassery, vide order referred (3) above. The grievance was once gain submitted to the appeal committee for consideration.

We appeal that the above anomaly may please be addressed and Sri. Manoj M.R. may be retained in the present station.

Yours faithfully

Sd/-

General Secretary



KSEB ENGINEERS' ASSOCIATION

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No. KSEBEA / T& P / 2017 -18

10-11-2017

To

The Director (Finance)
Chairman, Grievance Redressal Committee
General Transfer - 2017
KSEB Limited

Sir,

Sub : General Transfer - 2017 of Asst. Executive Engineer (E) grievance-request-reg.

Ref : 1. Transfer order No. EB1/ AEE (E) / General Transfer 2017 dtd 07-10-2017

2. Appeal dtd 30-1-2017 of Sri. Manoj B. and our letter dated 11-10-2017 to the appeal committee.

3. Order No. EB.1 /AEE(E)/GT - 2017/GRC-Appeal / FTD dated 10-11-2017.

This has reference to the General Transfer order of AEE (E) and subsequent correction order, referred (3) above, published in the website of KSEBL, in which some of the grievances are seen addressed, but not solved. Sri. Manoj B. AEE. Relay subdivision, Kottarakkara is under orders of transfer to TRAC, Thiruvananthapuram vide Sl. No. 117 of the transfer order referred above, with remarks No choice available, resigned to available office from domicile. He is in the transfer out list of Kollam, before completing 3 years in that place, but eligible for posting in the adjacent District.

Though, he is a native of Kollam having index 85786 and Electrical subdivision Charummoodu in Alappuzha, was his choice no. 9, Smt. Suchitra, native of Thiruvananthapuram, having an index of 12811 was initially posted to that place.

The grievance of Sri. Manoj B. was submitted to the appeal Committee vide ref(2), in which he has requested reposting at Electrical Subdivision, Charummodu, but declined by the appeal committee.

Also, it may be noted that Sri. Syamkumar A., having lower index (60489) than that of Sri. Manoj B. from the same District, has been posted to Electrical subdivision, Charummoodu. This is a clear violation of the existing guidelines and prevailing rules in this regard.

We appeal that the above anomaly may please be addressed and Sri. Manoj B., may be re-posted to Electrical Subdivision, Charummodu.

Yours faithfully
Sd/-
General Secretary



KSEB ENGINEERS' ASSOCIATION

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No. KSEBEA / T& P / 2017 -18

13-11-2017

To

The Director (Finance)
Chairman, Grievance Redressal Committee
General Transfer - 2017
KSEB Limited

Sir,

Sub : General Transfer - 2017 of Asst. Executive Engineer (E) - grievance - request for re- posting reg.

- Ref: 1. Transfer order No. EB1/ AEE (E) / General Transfer 2017 dtd : 07-10-2017
2. Appeal of Sri. Suresh kumar S. and our letter dated 11-10-2017 to the appeal committee.
3. Order No. EB.1 /AEE /GT- 2017 / GRC - Appeal /FTD dated 10-11-2017.
4. Submission dated 10-11-2017 of Sri. Sureshkumar S. to the Director (Finance)

This has reference to the General Transfer order of AEE(E) and subsequent correction order, referred (3) above, in which some of the grievances are solved and some are not addressed. It may be noted that Sri. Suresh Kumar S. AEE, ESD, Punalur is under orders of transfer to TC Sub Division, Nedumakandam vide Sl.No. 274 of the transfer order (1) referred above. He was transferred out, before completing 2 years in the present place, which is a clear violation of existing norms.

The above grievance, was submitted to the appeal committee vide ref (2). Also obtained favorable interim orders from the Honorable High Court of Kerala, directing the Board to consider the grievance and retain the petitioner, till it is addressed. The grievance was seen upheld vide note referred (3) of the Chief Engineer(HRM) with a direction of retain him at ESD, Punalur till the disposal of his petition, pending before the Hon. High Court of Kerala. Subsequently, a correction order was also issued by Chief Engineer (HRM), Where in the anomaly was not seen addressed.

Being the situation, he has requested posting at TSD, Neyyattinkara which is presently a vacant place, so that he may be able to address his current family issues, as stated in his submission (copy of request attached).

We appeal that the above request of Sri. Sureshkumar S. may be considered favorably and direction may please be given to the concerned to re-post him to **Transmission Sub Division, Neyyattinkara**, as requested.

Yours faithfully

Sd/-

General Secretary



KSEB ENGINEERS' ASSOCIATION

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No. KSEBEA / Letters / 2017 -18

14-11-2017

To

The Director (Finance)
Chairman, Grievance Redressal Committee
General Transfer - 2017
KSEB Limited

Sir,

Sub : General Transfer - 2017 of Asst. Executive Engineer(E) - grievance - request - reg.

- Ref: 1. Transfer order No. EB1/AEE(E) / General Transfer 2017 dtd 07-10-2017
2. Our letter dated 11-10-2017 to the appeal committee.
3. Note No. EB1/AEE (E) / GR 2017/ Appeal /2017 - 18 dated 06-11-2017 of the CE (HRM)
4. Order No. EB.1/AEE(E) / GT- 2017/ GRC- Appeal /FTD dated 10-11-2017

This has reference to the General Transfer order of AEE(E) and subsequent correction order, referred (4) above. Even though most of the grievances submitted to the appeal committee, are seen upheld vide note referred (3) of the Chief Engineer (HRM), the following grievances are not seen addressed in the correction order referred (4) above.

Jayachandran R. having less than three years in the present place and Domicile of Kollam, not considered in the Adjacent/ Zonal / State eligibility. He was under orders of transfer to TC SD Manjeri and re-posted to ED, Thirurangadi, which is not requested. Requested to retain in the present station.

Manoj M.R., Domicile of Ernakulam also having less than 3 years in the present place was under orders of transfer has been re-posted to LD station Kalamessery, not requested by him. He is in the Regional list during trial order, but replaced with a lady AEE having lower index, from the our list. Requested to retain.

Manoj B., Domicile of Kollam having higher index has been posted to TRAC TVPM with comment "No Choice available, though his Choice :9 is given to another incumbent from Kollam, having lower index.

Ritesh P.R., Domicile of Ernakulam, Not requested for transfer. Incumbency is not as per service book details. Posted to Moolamattom. Requested to retain.

Biju Andrews P. George, Domicile of Ernakulam has been posted to GSD chithirapuram which is not in the choice list. Choices given to others having lower index.

Beenakumari K.S., Domicile of Alappuzha has been posted to TVPM. Domicile section given as Oachira which is not in the list of Alappuzha. Requested to retain at Alappuzha

We once again request the intervention of Appeal committee to solve the above anomalies favorably.

Yours Faithfully,

Sd/-

General secretary



BOARD ORDERS

KERALA STATE ELECTRICITY BOARD LTD.

(Incorporated under the Indian Companies Act, 1956)

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Office of the Chief Personnel Officer, Personnel Department,
Vydyuthi Bhavanam, Pattom, Thiruvananthapuram, Kerala-595004

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KSEB
കെ.എസ്.ഇ.ബി.
കേരളം



ABSTRACT

Group Personal Accident Insurance Scheme - Renewal of the Scheme for the year 2018- Orders issued.

CORPORATE OFFICE (PERSONNEL)

B.O.(FTD) No.2911/2017 (PS 9/GL/GPAIS/ 2012) Dated, Thiruvananthapuram: 20-11-2017

Read:- 1. G.O (P)No.616/10/Fin dated 23.11.2010.

2. B.O.(FM) No.3294/2010(PS9/GI./GPAIS/2010) dated, TVM 17.12.2010.

3. G.O.(P) No.504/2011/Fin dated 04.11.2011.

4. B.O (FB) No. 2845/2011 (PS 9/GL/GPAIS/2017) dated 09.12.2011.

5. G.O (P) No.606/2012/Fin dated 03.11.2012

6. B.O (CM) No. 2184/2012 (PS9/GL/GPAIS/2012),dated 17.11.2012.

7. G.O.(P) No. 176/2013/Fin dated 17.04.2013

8. B.O.(CM)No. 1052/2013 (PS 9/GPAIS/2012)dated 10.05.2013.

9. G.O (P) No.555/2013/Fin dated 13.11.2013.

10. B.O (CM) No.2442/2013 (PS 9/GL/GPAIS/2012)dated 20.11.2013.

11. G.O (P)No.507/2014/Fin dated 17.11.2014.

12. B.O (DF) No. 3008/2014(PS9/GLAIS/2012) dated 19.11.2014.

13. G.O (P) No.526/2015/Fin dated 19.11.2015.

14. B.O. (CMD)No.2901.2015 (PS 9.GL.GPAIS.2012) dated 23.11.2015.

15. G.O.(P) No.144/16/Fin dated 30.09.2016.

16. B.O. (FTD) No. 3305/2016(PS 9/GL/GPAIS/2012)dated 23.11.2016.

17 . G.O.(P) No.133 / 2017 / Fin dated 21-10-2017

ORDER

As per order read as 1st above, the Group Personal Accident Insurance Scheme has been implemented through Kerala State Insurance Department from 2011 and is made applicable to State Government Employees and Teachers including Part Time Contingent employees, teaching and non teaching staff of Aided schools and Aided Colleges,



employees of Panchayath and Municipal Common Service, Contingent employees of Municipal Common Service, employees of Universities, employees of all Public Sector Undertakings, Co-Operative Institutions, Autonomous Bodies and Government Institutions.

The Kerala State Electricity Board Limited, as per order read as 16th paper above, has adopted Government Order read 15th above and renewed the Group Personal Accident Insurance Scheme for a period of one year with effect from 01.01.2017 to 31.12.2017 for implementation in Kerala State Electricity Board Limited in accordance with the terms and conditions of the Scheme appended with G.O. read 1st above and modifications issued as per G.O. read as 15th above. The term of the Scheme expires on 31.12.2017.

Having examined the proposal of the Director of Insurance for the renewal of the Scheme with effect from 01.01.2018 to 31.12.2018, Government as per Order read as 17th above, have renewed the Group Personal Accident Insurance Scheme for a further period of one year with effect from 01.01.2018. The Annual Premium for the Employees of Kerala State Electricity Board Limited and Kerala State Road Transport Corporation was ₹ 850 and ₹ 550 respectively and ₹ 400 for all other employees who are subscribers to State Life Insurance/Group Insurance and are being governed by Kerala Service Rules, with an assured sum of ₹ 10 lakhs subject to the following conditions.

- (i) The annual premium of ₹ 850 (Rupees Eight hundred fifty only) for 2018 shall be deducted from the salary for the month of November 2017, drawn in December 2017 and remitted in the Treasury without fail before 31st December 2017 by Drawing and Disbursing Officers. In the case of employees on LWA, any type of other leave, on deputation, employees not in receipt of salary on account of any reasons etc, it is the sole responsibility of the employee to remit the premium in the Treasury, before the last date prescribed for renewal/enrollment in the scheme for the Year 2018.
- (ii) An employee who had remitted premium for the previous years will not get the benefit of the Scheme in 2018 unless premium for the year 2018 has been remitted in the Treasury before the last date prescribed for remittance.
- (iii) The Drawing and Disbursing Officers authorized to draw and disburse the salary for employees shall be personally liable for the non renewal/non enrollment of the employees in the Scheme except in the case of employees on LWA, any type of leave, on deputation and employees not in receipt of salary on account of any reason.
- (iv) In case of any dispute, the rules prescribed in the Insurance Act, 1938 shall prevail.
- (v) The Drawing and Disbursing Officers shall ensure that all employees have submitted valid nomination during the renewal of the Scheme.

→



- (vi) A modification has been effected in the terms and conditions of the scheme for the year 2018 viz. the Director of Insurance has the power to settle the claim within one year from the date of accident.
- vii) All other terms and conditions specified in the Government Orders referred above remain unchanged.

Having considered the matter in detail, Kerala State Electricity Board Limited is pleased to adopt the Government Order read as 17th paper above renewing the Group Personal Accident Insurance Scheme for further period of One Year with effect from 01.01.2018 to 31.12.2018 for implementation in Kerala State Electricity Board Limited in accordance with the terms and conditions of the Scheme appended with the Government order referred 1st above and modifications issued thereafter.

All ARU Heads are directed to effect deduction of premium towards GPAIS from the Salary of the employees payable for the month of November 2017 and to remit the same at the concerned Treasuries to comply with the procedural formalities for bringing all the employees of Kerala State Electricity Board Limited under the coverage of the Scheme in line with the Government Order.

The details regarding consolidated premium paid from each ARUs for the Year 2018 and the claim amount disbursed to the beneficiaries from each ARU through the Kerala State Insurance Department shall be reported to the office of the Chief Personnel Officer, Personnel Department for record purposes.

By Order of the Full Time Directors

Sd/-

P.G. Unnikrishnan

Secretary (Administration)

വൈദ്യുതി ബിൽ ഓൺലൈനായി അടയ്ക്കാൻ രണ്ടു സംവിധാനങ്ങൾ കൂടി

തിരുവനന്തപുരം : വൈദ്യുതി ബിൽ ഓൺലൈനായി അടയ്ക്കാൻ നിലവിലുള്ള സൗകര്യത്തിനു പുറമേ രണ്ടു സംവിധാനങ്ങൾകൂടി. ഉപഭോക്താക്കളുടെ ബാങ്ക് അക്കൗണ്ടിൽ നിന്ന് സമയാസമയം ബിൽ തുക കെ.എസ്.ഇ.ബി.യിലേക്കു വരവു വയ്ക്കുന്ന സംവിധാനമാണ് ആദ്യത്തേത്. ബിൽതുക അടയ്ക്കുന്നതിനുള്ള മൊബൈൽ ആപ്ലിക്കേഷനാണ് രണ്ടാമത്തേത്.

അക്കൗണ്ടിൽനിന്നു പണം കൈമാറുന്നതിനായി ഉപഭോക്താക്കൾ ബിൽ തുക ബാങ്ക് അക്കൗണ്ടിൽ നിന്നു കൈമാറാനുള്ള സമ്മതപത്രം ഇലക്ട്രിക്കൽ സെക്ഷൻ ഓഫീസുകളിൽ നൽകണം. ഓരോരുത്തരുടെയും വൈദ്യുതിബിൽ സംബന്ധിച്ച വിവരം ബാങ്കുകളിൽ എത്തുകയും ബിൽ തുക കെ.എസ്.ഇ.ബിയിലേക്കു വരവു വയ്ക്കപ്പെടുകയും

ചെയ്യും. നാഷണൽ ഓട്ടോമേറ്റഡ് ക്ലിയറിംഗ് ഹൗസ് (എൻ.എ.സി.എച്ച്.) വഴി നാഷണൽ പേയ്മെന്റ് കോർപ്പറേഷൻ ഓഫ് ഇന്ത്യ (എൻ.പി.സി.ഐ.) യാണ് പദ്ധതി സാധ്യമാക്കുന്നത്. കോർപ്പറേഷൻ ബാങ്കാണ് സ്പോൺസർ ബാങ്ക്.

ഈ പദ്ധതി വരുന്നതോടെ ഉപഭോക്താക്കൾക്ക് ബിൽ അടയ്ക്കേണ്ട അവസാന തീയതിയും മറ്റും ഓർത്തുവെക്കേണ്ടിവരില്ല. കണക്ഷൻ വിച്ഛേദിക്കുന്നതു കൊണ്ടുള്ള അസൗകര്യം ഒഴിവാക്കാനുമാകും. കെ.എസ്.ഇ.ബി. എന്ന മൊബൈൽ ആപ്ലിക്കേഷനു പയോഗിച്ച് മൊബൈൽ ഫോൺ, ടാബ്ലെറ്റ് എന്നിവ വഴിയും വൈദ്യുതിബിൽ അടയ്ക്കാം. ഇതിന് മൊബൈൽ നമ്പർ മാത്രം മതി. ഗൂഗിൾ പ്ലേ സ്റ്റോർ വഴി ആപ്ലിക്കേഷൻ ഡൗൺലോഡ് ചെയ്യാം.





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