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DREAM INSTITUTE OF TECHNOLOGY

❑ PERFORMANCE EVALUATION OF SYNCHRONOUS IMPEDANCE CONTROLLER BASED SELF EXCITED INDUCTION GENERATOR SYSTEM

Special points of interest:

- ➔ ***ARTICLES BY FACULTY***
- ➔ ***ARTICLES BY STUDENTS***
- ➔ ***IMAGE GALLERY***
- ➔ ***ABOUT US***
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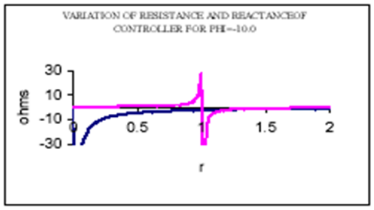
In recent years due to increase in demand of energy the emphasis has been on harnessing electrical energy from renewable energy sources such as solar, bio-fuel, tidal wave, wind, micro-hydel etc. As these methods being cost effective and are cleaner option. Among these the micro-hydel and wind energy sources have attracted greater attention of researchers. Recently, Self-Excited Induction Generator (SEIG) has been increasingly used in isolated as well as grid connected power systems that employ renewable energy sources. [1] discovered the possibility of using induction machine as an SEIG. This could only be used in practice, when the knowledge of automatic voltage and frequency control were acquired. Arillaga [2] gave a practical system for SEIG operation also provided insight to the effect of active and reactive power on the amplitude and frequency of voltage waveform.



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❑ SOCIAL NETWORKING

A **social network** is a social structure made of individuals (or organizations) called "nodes," which are tied (connected) by one or more specific types of interdependency, such as friendship, kinship, financial exchange, dislike, or relationships of beliefs, knowledge or prestige.

Social network analysis views social relationships in terms of network theory consisting of *nodes* and *ties*. Nodes are the individual actors within the networks, and ties are the relationships between the actors. The resulting graph-based structures are often very complex. There can be many kinds of ties between the nodes. Research in a number of academic fields has shown that social networks operate on many levels, from families up to the level of nations, and play a critical role in determining the way problems are solved, organizations are run, and the degree to which individuals succeed in achieving their goals. In its simplest form, a social network is a map of all of the relevant ties between all the nodes being studied. The network can also be used to measure social capital -- the value that an individual gets from the social network. These concepts are often displayed in a social network diagram, where nodes are the points and ties are the lines.

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❑ *CONTINUED:*-PERFORMANCE EVALUATION OF SYNCHRONOUS IMPEDANCE CONTROLLER BASED SELF EXCITED INDUCTION GENERATOR SYSTEM

Novotny [3] developed an analytical model of an induction generator connected to resistively loaded inverter where the steady state system behavior was studied by setting loop voltage in equivalent circuit to zero. Subsequent models [4] [5] [6] were also developed in the similar way around conventional equivalent circuit.

Rajakaruna [7] and T.F.Chan [11] gave modified model of Induction Generator where the impedance on both sides of magnetizing reactance was represented in parallel. Chan [11] also evolved a simpler method to evaluate the performance of SEIG and similar approach has been used here for its performance evaluation with SIC. Recently electronic control of voltage and frequency have become popular among the researchers such as Controlled Rectifier based systems as proposed in [2], [1] and Step up chopper based system in [8]. However all these methods were neither efficient nor cost effective.

PWM inverter based SEIG system [12] has been developed recently mainly for voltage amplitude control and also for compensating losses in the dc capacitor. This set up does not have the capability to compensate large load demand changes. Both simulation and experimental studies have been done for fixed load operation. In the present work the SEIG is controlled by PWM inverter based Synchronous Impedance Controller (SIC) to control both amplitude and frequency of the generator for varying active and reactive load demands. Simulation study of the SEIG-SIC has been presented here. A detailed study of steady state SEIG performance with and without the controller has been done under open loop condition.

Fig. 1 shows the block diagram of the proposed SEIG-SIC system.

The Induction Generator with squirrel cage rotor is driven by a regulated speed prime mover.

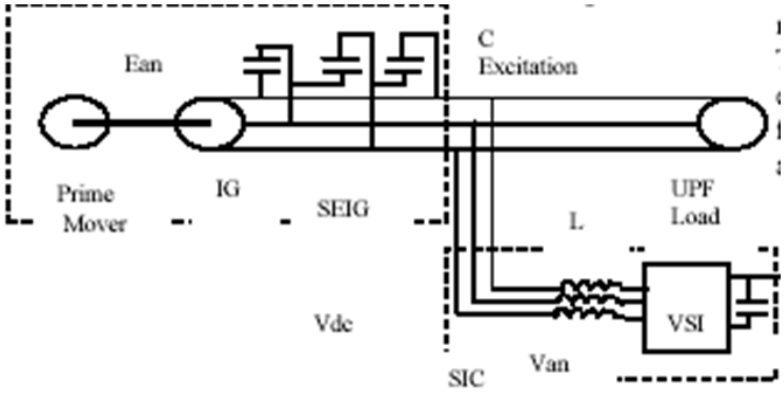


Fig.1 Block Diagram of SEIG-SIC system

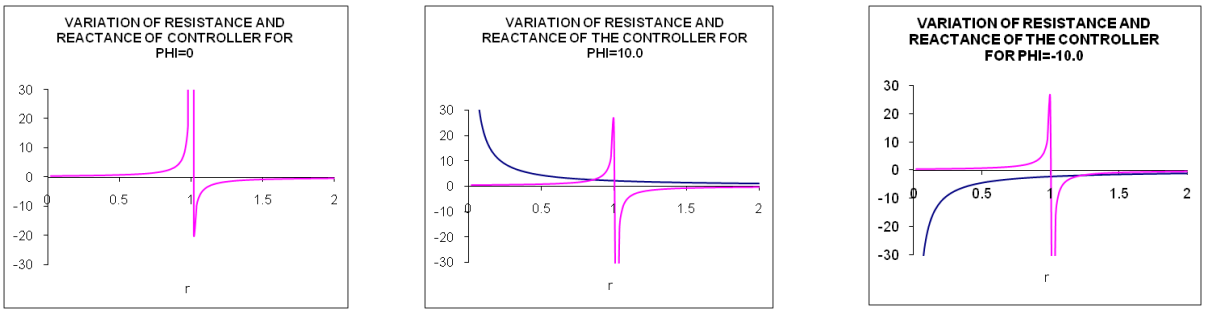


Fig. 2 Variation of Resistance and Reactance of the controller for change in ϕ_v.

A 3-phase PWM Voltage source inverter is used to supply the excitation and compensating loss currents to the induction generator to maintain output voltage amplitude and frequency. Under varying source and load conditions the PWM controller is operated in Synchronous Impedance Controller (SIC) form where it has the capability to control both active and reactive power.

A capacitor bank is connected across the generator terminals. The choice of the capacitors is based on the optimum system performance. In the present investigation the load is operated at unity power factor whose conductance is continuously varied from 0 to 1.5pu for the simulation studies. SIC is connected to the generator terminals through balanced 3-phase reactor. On the DC side of the PWM controller a capacitor/battery bank having large storage and fast response to energy transfer capability is connected

In the present investigation the performance of the SEIG-SIC System operation has been studied using programs written in C++. The suitability of the SIC for controlling voltage of a stand-alone SEIG with regulated prime mover has to be properly explored. Integrated operation of the SEIG and the proposed aforesaid controller under steady state condition has been taken up to assess the voltage controlling capability of the stand-alone generating system.

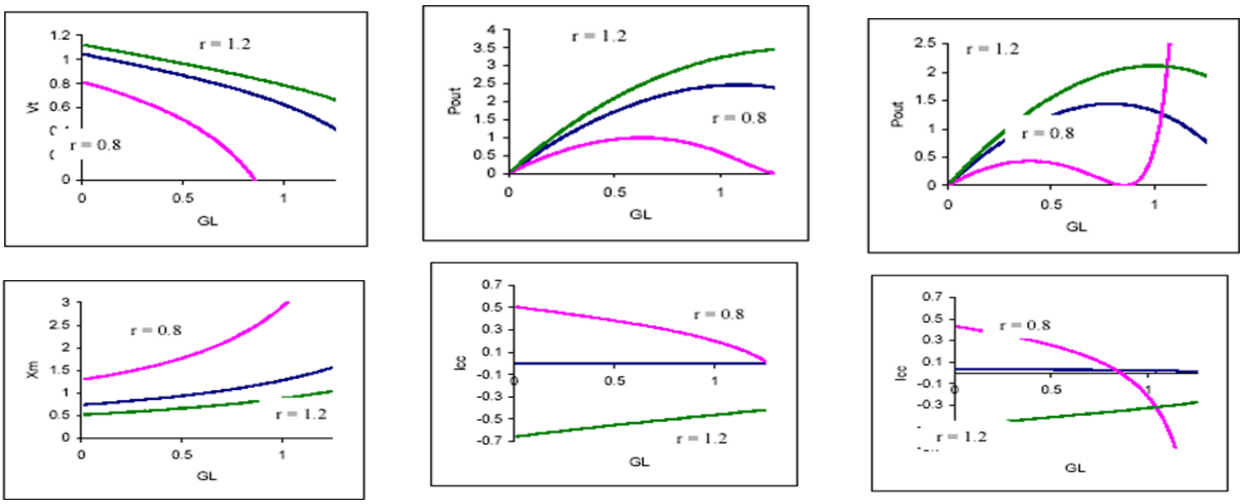


Fig.3 Performance Curves of SEIG Integrated with Controller for ϕ_v=0 and r = 0.8, 1.0, 1.2

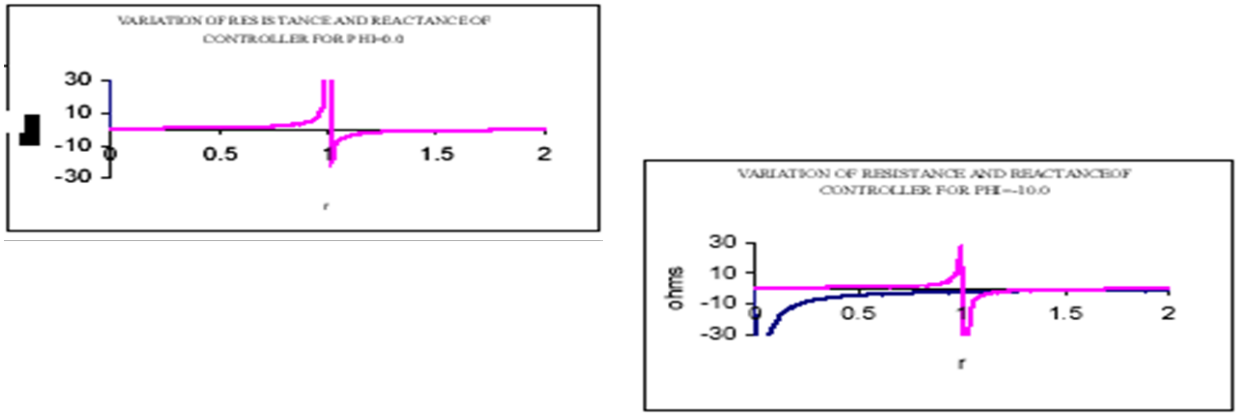
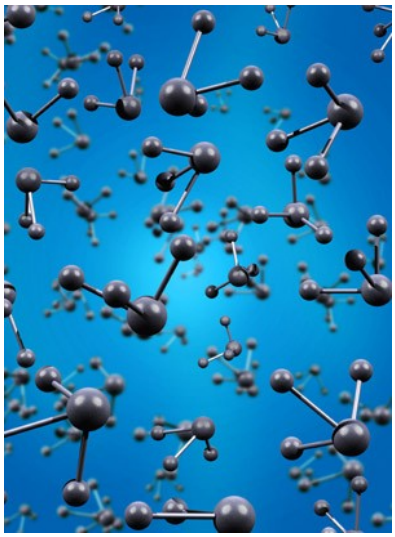


Fig.4 Variation of equivalent impedance of controller

BY Dr. Dipankar Sarkar (Director Dream Institute of Technology)

❑ *CONTINUED*:-SOCIAL NETWORKING



Social network analysis (related to *network theory*) has emerged as a key technique in modern sociology. It has also gained a significant following in anthropology, biology, communication studies, economics, geography, information science, organizational studies, social psychology, and sociolinguistics, and has become a popular topic of speculation and study.

A social networking theory explores that social networks have a great role in influencing the spread of new ideas and practices.

In today's world, when life has become fast, there is no time for people to go and meet their near and dear ones, social network has become the part and parcel of every body's life. From a well known politician to a normal salesman; from a Septuagenarian to a teenager to a house-wife,who is fed up with all the household chores, everybody is engaged with social networking sites. Now a question arises in one's mind that why is this social networking, craze nowadays? But the fact is that, it had been a craze for a long time, but as the high profile people are using this, has become a style statement for everyone, we can name this as a trend nowadays or vogue.

Now another question arises, that ***what is the necessity of social networking??*** A big important question!! The answer to this question is very simple. The whole world is coming to us, in a single click! This social networking makes the huge world look so smaller. Social networking is like connecting people. It connects us with long lost friends, family members and with many more important people who can prove important to ones life. It can be treated as a refreshment, through it we can share our happin ess, sadness and other innovative ideas.Nowadays, in job interviews also, they are stressing the candidates, to have a social networking account. They also want their employees to be well communicated. The interaction with other people makes us more knowledgeable to know the human values, more acquainted with each others culture, etc.

As all things have a disadvantages, it has also got some disadvantages, of course to the people who are misusing this. Like, there are a lot of the dangers of the Internet for young people. Whether it's the risk of sexual predators, or the risk that a virtual existence can somehow replace a child's thirst for a real life, the Web has often been described as a bad influence on the youth of today.

So it's nice to finally see some research that suggests the opposite is true.

The Internet has been an absolutely revolutionary invention, giving people new ways of working, new ways of communicating, and of being entertained. The effect it has had on adults has been seen to be wholly good, except of course those people who become addicted to *World of War craft*, *Second Life*, and such. But children are another matter altogether.

Parents are rightly worried about the influence of the Internet on their kids lives, and most offer guidance, advice, and often limits on Web usage. But maybe they should relax those rules, as a new study by the Macarthur Foundation called 'Living and Learning With New Media' suggests the Internet can be a force for good for youngsters.

So, from all this researches and theories it is concluded that social networking is good for all. The popularity of social networking is growing day by day and it be a massive hit after some years when it will be the ultimate destination of all people.

BY Sudeshna Das (ECE, 3RD YEAR)

❑ IMAGE GALLERY

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ABOUT US

In today's society science and technology plays a very important part in every walk of life. Every day the role of technology in our lives are becoming more and more important and with this increases the need for engineers. So it is necessary to setup more and more engineering colleges. But the engineering college setup must have all the necessary provisions required for a student to get proper training in their respective branches. The college should not remain only as a profit making company; instead it should be a place to provide best possible facilities for the students and the best working atmosphere for the staff. So here we propose an institute of technology where all the students will get the best possible facilities in their respective fields.

COLLEGE CAMPUS DETAILS

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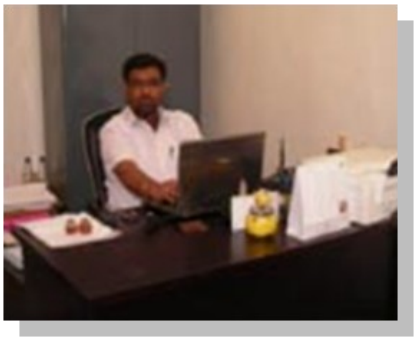

Dr. D. Sarkar (college director):

Mr. Dipankar Sarkar is a Doctorate in Electrical Engineering IIT (New Delhi) and also involved in the promotion of various colleges for the past 7 years.

DREAM
RESEARCH
EDUCATION
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ABOUT DREAM

Establishment: 2006

Institution Type: Private College

Recognition: Approved by the All India Council for Technical Education (AICTE), New Delhi;

AICTE Region: Eastern

Here is list of courses offered by the institution:-

1. COMPUTER SCIENCE ENGINEERING(60 SEATS)
2. ELECTRONICS AND COMMUNICATION ENGINEERING(60 SEATS)
3. ELECTRICAL ENGINEERING(60 SEATS)
4. APPLIED ELECTRONIC ENGINEERING(60 SEATS)