1st STEERING COMMITTEE MEETING ON iLABS

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Introduction - 1

A short history for those who know very little about UDSM

- UDSM became a full fledged University in 1970 after being a University College of London and then of East Africa since 1961

- Initially it started with the faculty of Law and then Faculty of Arts and Social Science.

- The faculty of Engineering came in as late as 1973.

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Introduction - 2

By all standards therefore the UDSM

- Is a young University among the three Universities

- The student population is very low (compare with 45,000 at Makerere)

- To cope with global changes, efforts are being made to increase her enrollment.

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Introduction - 3

To increase enrollment there are hurdles which have to be overcome

- Human Resources have to be increased

- Physical Resources have to be increased

- Space has to be increased

- For courses with labs the hurdles are even harder to jump.

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Introduction - 4

- To increase the Human Resource since it can be done gradually, it is surmountable

- To increase the Physical Resources more funds are needed at a go

- To increase Space more funds are needed at a go

- To acquire funds for lab facilities it can be a nightmare!

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Introduction - 5

A two pronged approach has been adopted by the UDSM

- For non laboratory based programmes where space allows, increase enrollment

- For non laboratory based programmes where space does not allow explore distance learning techniques and increase enrollment.

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Introduction - 6

The introduction of iLabs came at an opportune time since now UDSM can also increase her enrollment even in those programmes which are laboratory based by using the distance mediated teaching methods.

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Preparations for iLabs at UDSM

In order to test the usefulness of iLabs, the University of Dar es Salaam staff in the Physics Department and the Electrical Power Engineering Department will start using the available experiments at MIT.

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Development of iLabs at UDSM

On components suitable for Power Electronics, it is noted with appreciation that MIT has already developed a component suitable for that.

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Development of iLabs at UDSM ....1 Continued

- In the Physics Department as well as in Telecommunications Engineering Department experiments on OpAmps and Digital Circuits can easily be developed

- In the Electrical Power Engineering Department, experiments on Power Electronics can easily be developed.
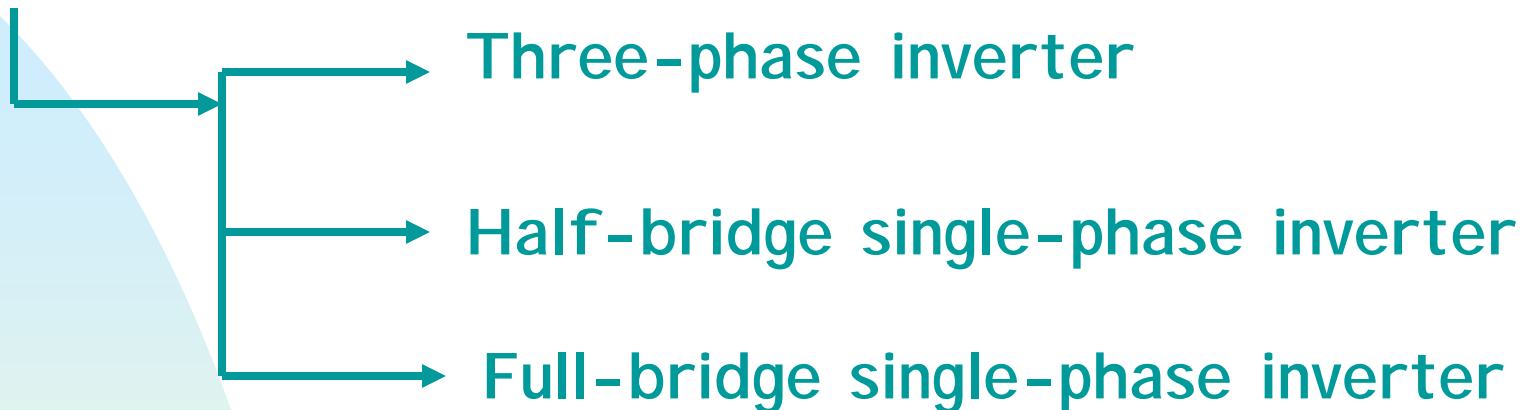
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In Power Electronics we can look at Power Converters

- AC – DC Converter (Rectifier)

- DC – AC Converter (Inverter)

- DC – DC Converter (DC chopper)

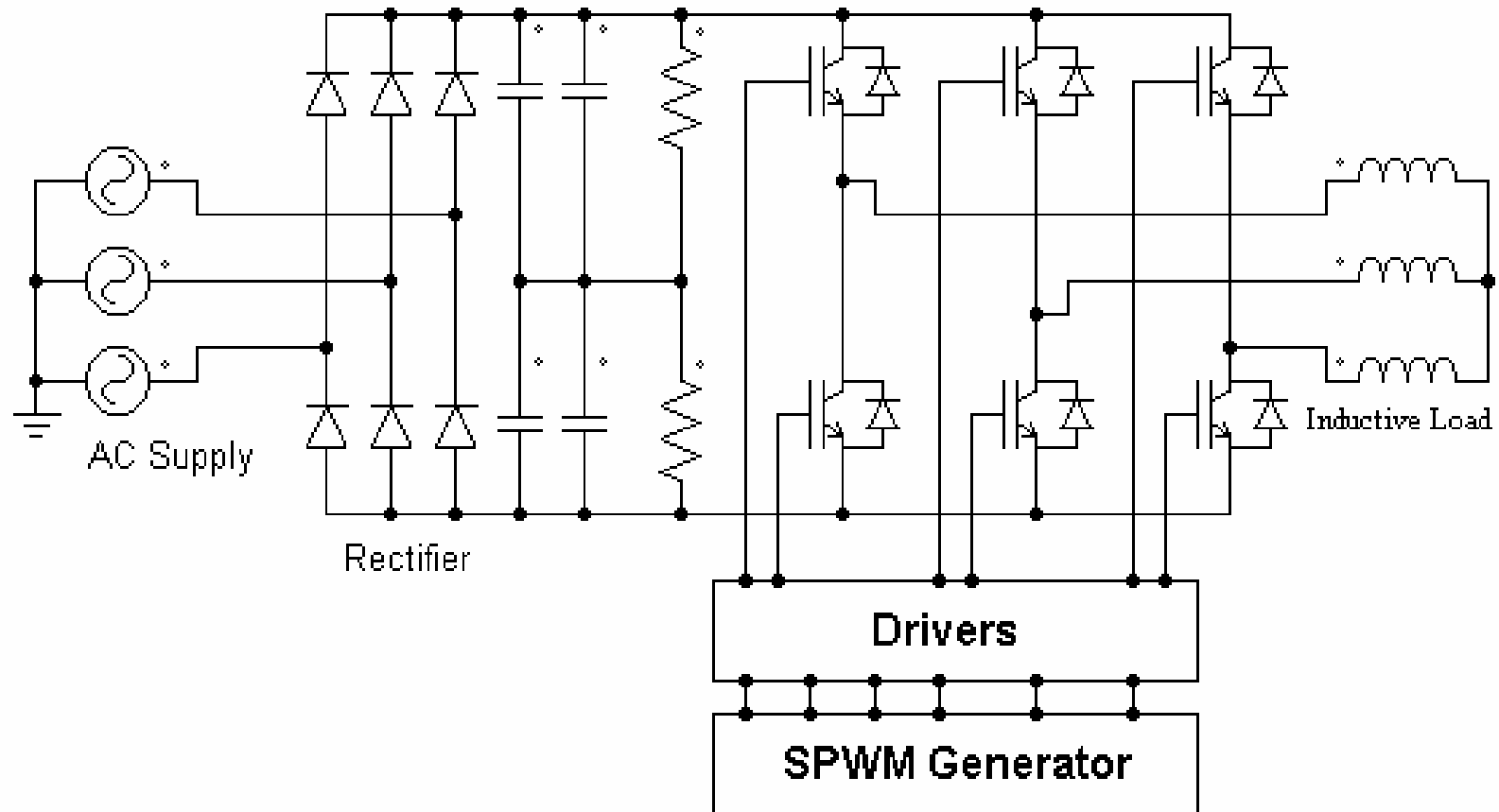.AC – AC Converter (Cycloconverter)

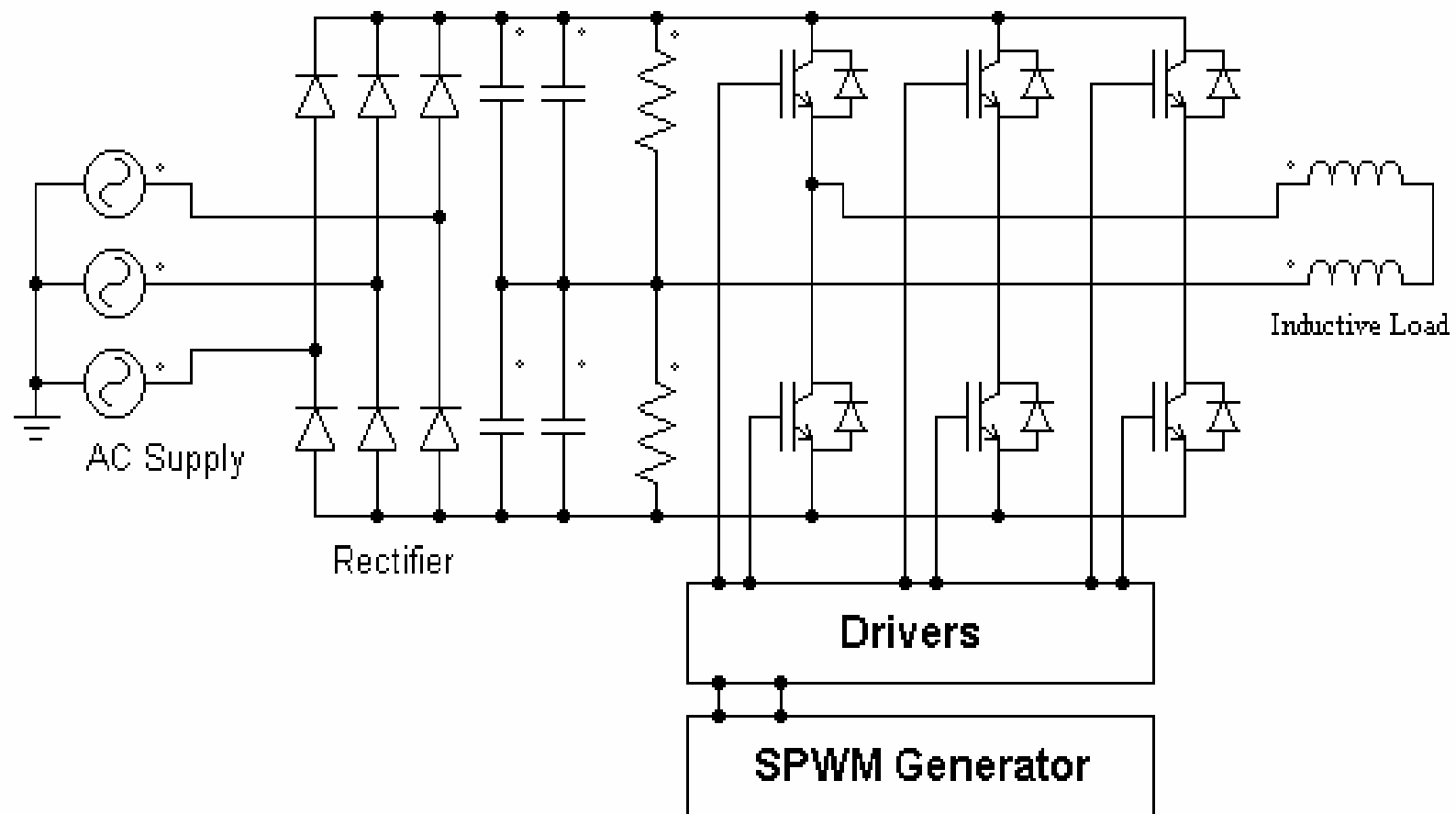Friday, June 24, 2005

- **DC – AC Converter**
  - → Three-phase inverter
  - → Half-bridge single-phase inverter
  - → Full-bridge single-phase inverter

- **DC – DC Converter**
  - → Step-Down (Buck) Converter
  - → Full-bridge Converter

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Three-phase Voltage Source Inverter (VSI)

AC Supply

Rectifier

Inductive Load

Drivers

SPWM Generator

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Half-bridge Single-phase Voltage Source Inverter (VSI)

AC Supply

Rectifier

Inductive Load

Drivers

SPWM Generator

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Full-bridge Single-phase Volltage Source Inverter (VSI)

AC Supply

Rectifier
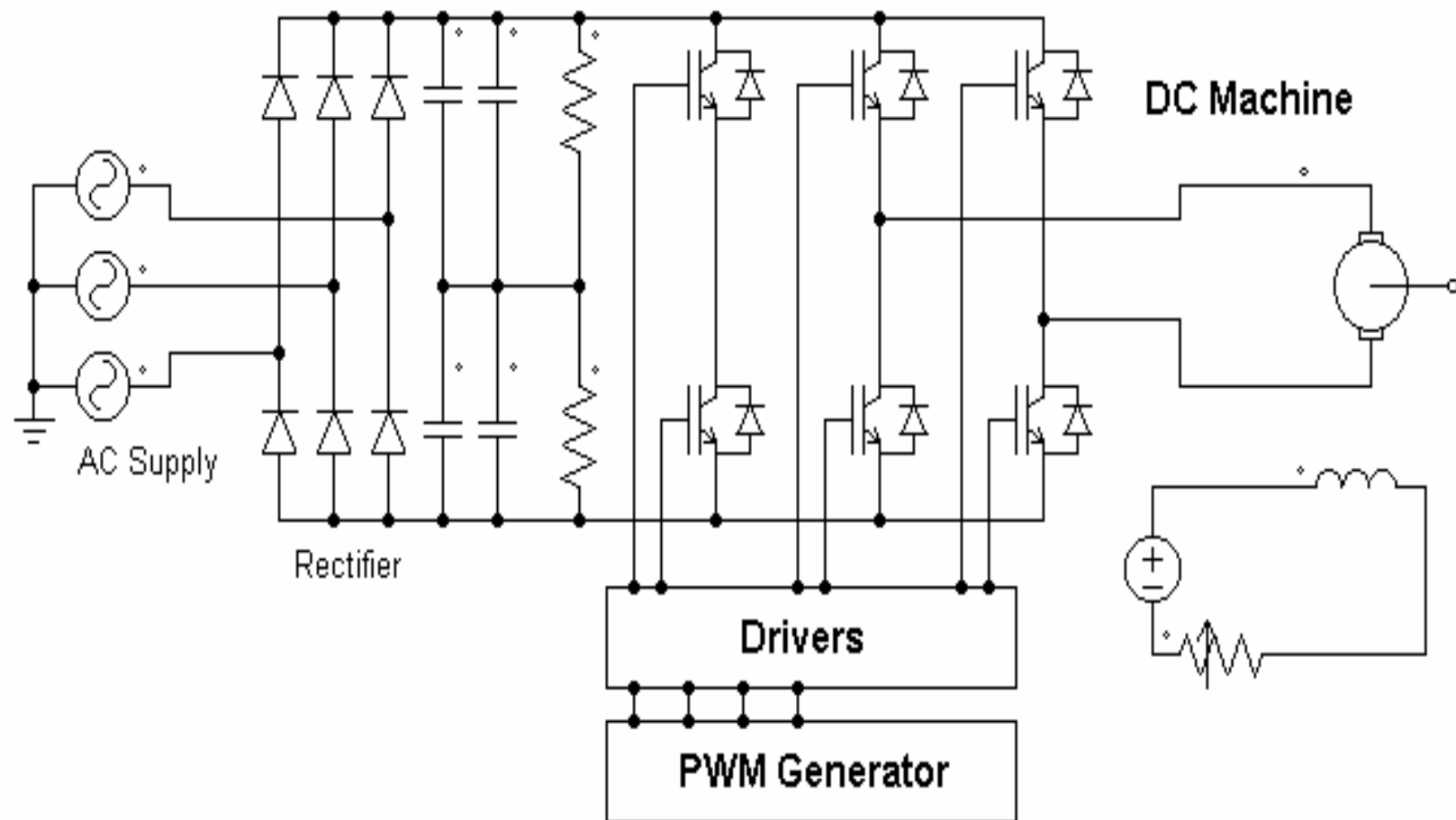
Inductive Load

Drivers

SPWM Generator
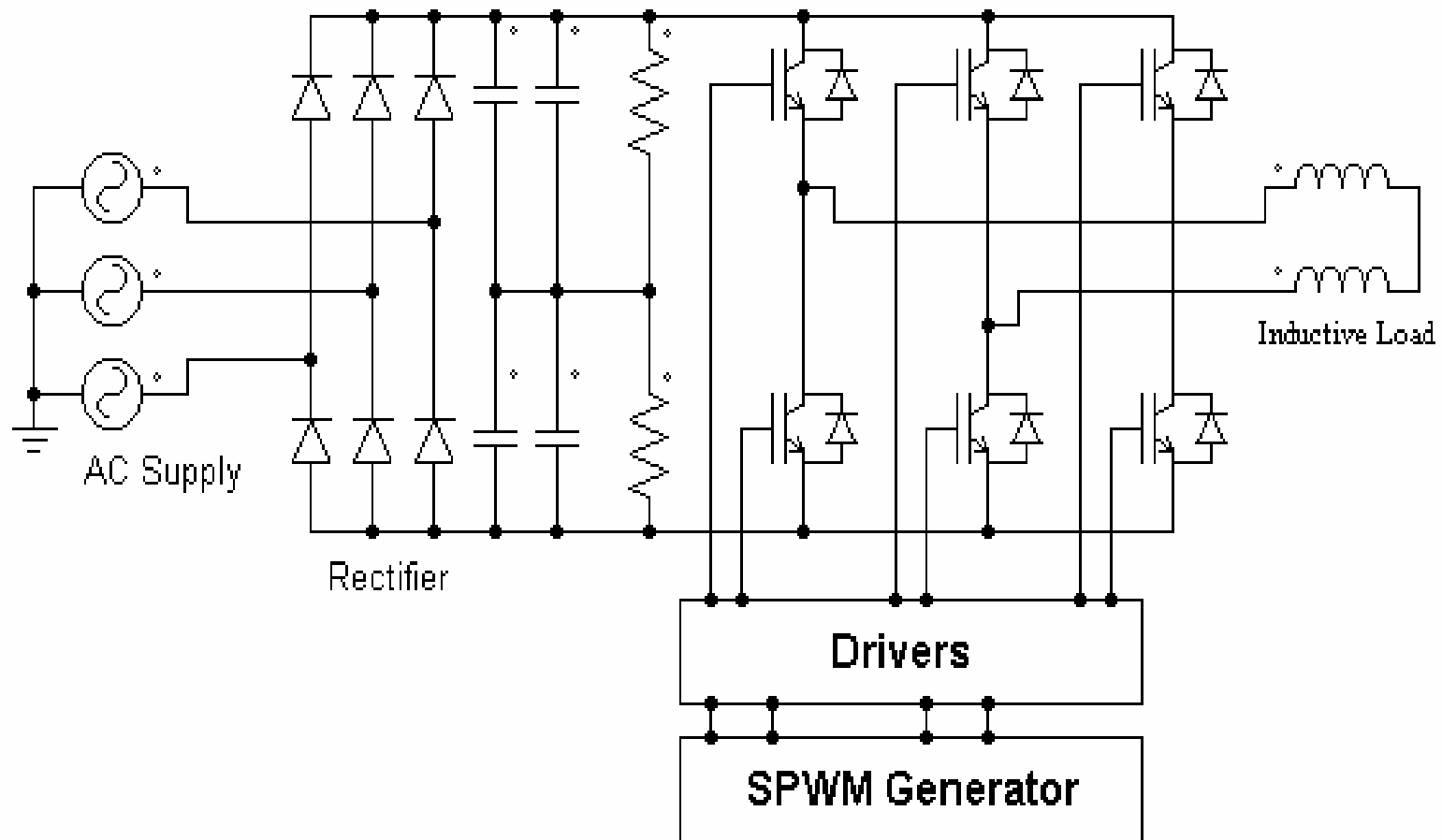
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Step-down DC Chopper
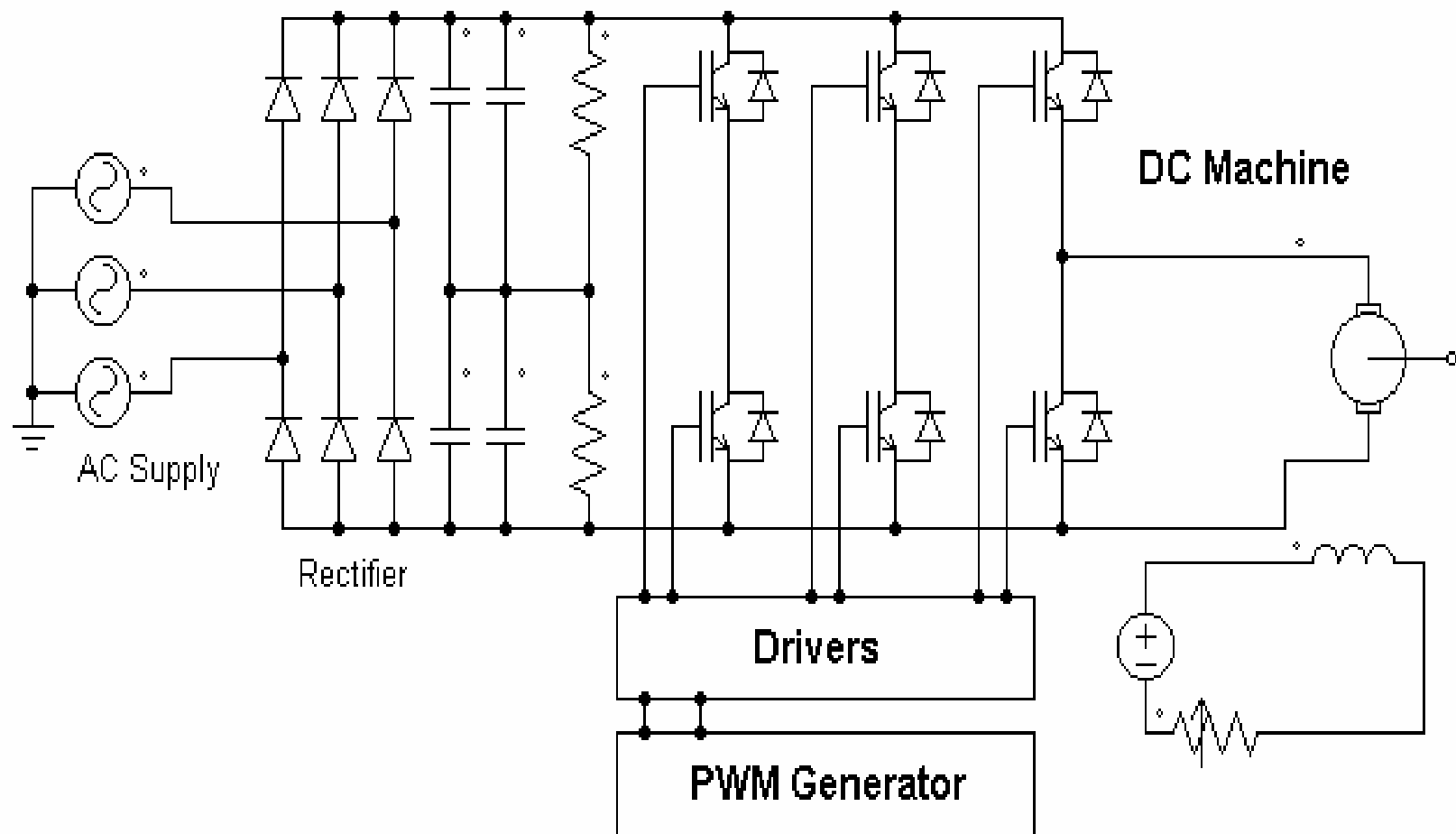
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Full-bridge DC Converter

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Development of iLabs at UDSM ....2 Continued

On Human Infrastructure

- ◆ Plans are underway to take one graduate student to MIT for 2 weeks.
- ◆ Plans are also underway to take one staff work on curriculum development for relevant subjects.

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Development of iLabs at UDSM ....3 Continued

On Physical Facilities Infrastructure

Plans are underway to acquire the iLab Shared Architecture to enhance the use of MIT labs

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The iLab team from UDSM

At Present the iLab Team from UDSM is comprised of

- Prof. Aggrey H. Nzali   The team leader
- Dr. Alfred Mwambela from Physics Department
- Mr. Elias Mturi from the University computer centre

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Conclusions

- Let us forget that there are physically many kilometers between us

- Instead let us assume that the labs we are to use are under one roof.

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THANK YOU FOR YOUR ATTENTION

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