Electromagnetic induction

Task and equipment

Information for teachers

Additional information

The process of electromagnetic induction and the use of it are to be worked out here.

Notes on procedure

This experiment can be carried out by a pair of students. One turns the crank handle and the other holds the coil.

Note

The measuring instrument must be able to measure alternating voltage either in the millivolt range or in the milliampere range.

Robert-Bosch-Breite 10
D - 37079 Göttingen

Tel: +49 551 604 - 0
Fax: +49 551 604 - 107

info@phywe.de
www.phywe.com

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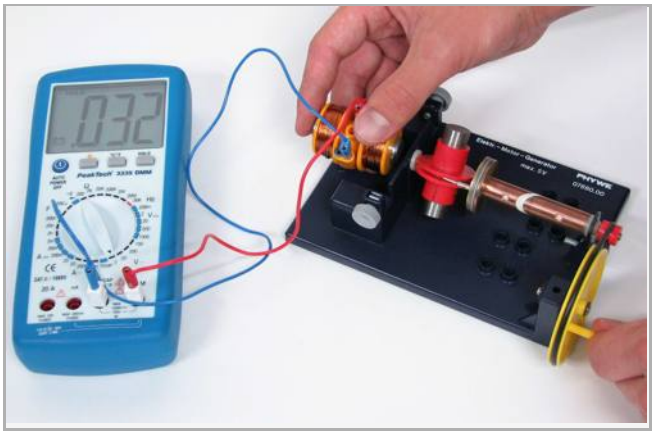
Task

Can movement generate current?

Observe the effect of a moving magnet in the vicinity of a coil.



Equipment

Position No.	Material	Order No.	Quantity
1	TESS advanced Physics set Electric motor/ Generator:	15221-88	1
	Base plate		1
	Connecting cables		2
	Adapter plugs		2
	Bar magnet		1
	Coil		1
	Iron core		1
	Current reverser		1
	Driving belt		1
2	DMM with NiCr-Ni thermo couple	07122-00	1

Set-up and procedure

You know, for example, that an electric motor can use current to generate movement. In this experiment you are to investigate if the reverse of this process can also take place, i.e. if you can cause movement to generate current.

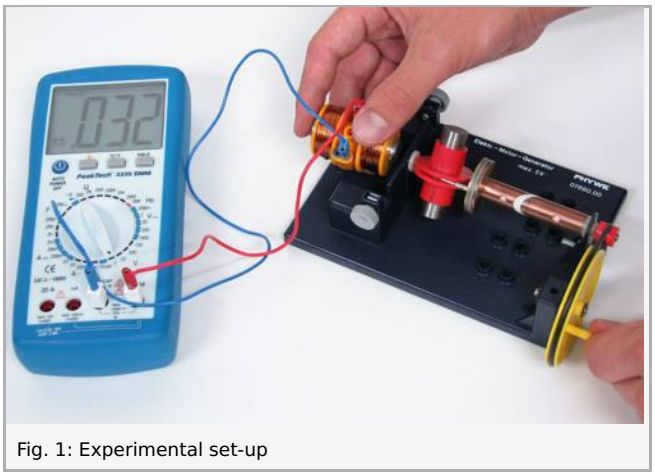


Fig. 1: Experimental set-up

Set the experiment up as shown in Fig. 1. The coil has an iron core and is connected to a voltmeter or ammeter.
Use the pulley with crank and the driving belt to keep the permanent magnet rapidly revolving. Use the other hand to bring the coil close to the revolving magnet as shown in Fig. 1. What do you observe? Note your observations in the report.
Repeat the experiment but this time use the coil without the iron core and observe what happens.

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Report: Electromagnetic induction

Result - Observations

Record your observations from the two measurements here.

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Evaluation - Question 1

The process observed in the experiment is called "electromagnetic induction". Describe the principle of electromagnetic induction and consider how it could be put to use.

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Evaluation - Question 2

What is the effect of the iron core in the coil?

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