

Inserting PDF Files into L^AT_EX

Yohan Fajar Sidik
yohanfajarsidik@live.com

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Abstract:

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1. Syntax

PDF files can be inserted by using the **pdfpages** package [1].

```
\usepackage{pdfpages}
```

 1

To include all the pages in the PDF file:

```
\includepdf[pages=-]{filename.pdf}
```

 1

To include just the first page of a PDF:

```
\includepdf[pages={1}]{filename.pdf}
```

 1

To include the page number and the section title on the inserted page:

```
\includepdf[scale=1,pages=15,pagecommand=\section{Example}]{filename.pdf}
```

 1

To include multiple pdf files into one page:

```
\includepdf[nup=2x1,pages=15-16,pagecommand=\section{section  
title}]{filename.pdf}
```

 1

1 Applications: Speed and Torque Control

There are many electromechanical systems where it is important to precisely control their torque, speed, and position. Many of these, such as elevators in high-rise buildings, we use on daily basis. Many others operate behind the scene, such as mechanical robots in automated factories, which are crucial for industrial competitiveness. Even in general-purpose applications of adjustable-speed drives, such as pumps and compressors systems, it is possible to control adjustable-speed drives in a way to increase their energy efficiency. Advanced electric drives are also needed in wind-electric systems to generate electricity at variable speed, as described in Appendix 1-A in the accompanying website. Hybrid-electric and electric vehicles represent an important application of advanced electric drives in the immediate future. In most of these applications, increasing efficiency requires producing maximum torque per ampere, as will be explained in this book. It also requires controlling the electromagnetic torque, as quickly and as precisely as possible, illustrated in Fig. 1-1, where the load torque T_{Load} may take a step-jump in time, in response to which the electromagnetic torque produced by the machine T_{em} must also take a step-jump if the speed ω_m of the load is to remain constant.

1-1 HISTORY

In the past, many applications requiring precise motion control utilized dc motor drives. With the availability of fast signal processing capability, the role of dc motor drives is being replaced by ac motor drives. The

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Advanced Electric Drives: Analysis, Control, and Modeling Using MATLAB/Simulink®, First Edition, Ned Mohan.
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2 APPLICATIONS: SPEED AND TORQUE CONTROL

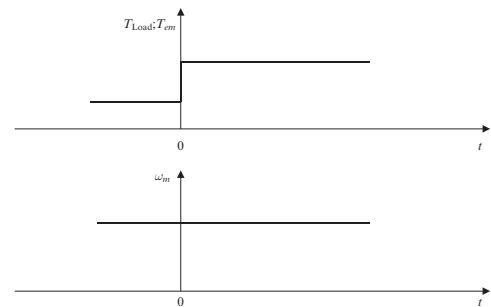


Fig. 1-1 Need for controlling the electromagnetic torque T_{em} .

use of dc motor drives in precise motion control has already been discussed in the introductory course using the textbook [1] especially designed for this purpose. Hence, our emphasis in this book for an advanced course (designed at a graduate level but that can be easily followed by undergraduates) will be entirely on ac motor drives.

1-2 BACKGROUND

In the introductory course [1], we discussed electric drives in an integrative manner where the theory of electric machines was discussed using space vectors to represent sinusoidal field distribution in the air gap. This discussion included a brief introduction to power-processing units (PPUs) and feedback control systems. In this course, we build upon that discussion and discover that it is possible to understand advanced control of electric drives on a “physical” basis, which allows us to visualize the control process rather than leaving it shrouded in mathematical mystery.

1-3 TYPES OF AC DRIVES DISCUSSED AND THE SIMULATION SOFTWARE

In this textbook, we will discuss all types of ac drives and their control in common use today. These include induction-motor drives, permanent-

References

- [1] A. Matthias, “The pdfpages package,” Apr. 2016. [Online]. Available: <http://texdoc.net/texmf-dist/doc/latex/pdfpages/pdfpages.pdf>