Hydraulic Fluids and Contamination Control

Dr. Medhat Kamel Bahr Khalil, Ph.D, CFPHS, CFPAI.
Director of Professional Education and Research Development,
Applied Technology Center, Milwaukee School of Engineering,
Milwaukee, WI, USA.



CompuDraulic LLC

Workbook

Hydraulic Fluids and Contamination Control

ISBN: 978-0-9977816-4-9

Copyright © 2019 by CompuDraulic LLC. 3850 Scenic Way, Franksville, WI, 53126 USA. www.compudraulic.com Published by October 2019

All rights reserved

No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without written permission from CompuDraulic LLC at the address above.

Printed in the United States of America First Published by October 2019

Disclaimer

It is always advisable to review the relevant standards and the recommendations from the system manufacturer. However, the content of this book provides guidelines based on the author's experience.

Any portion of information presented in this book could be not applicable for some applications due to various reasons. Since errors can occur in circuits, tables, and text, the publisher assumes no liability for the safe and/or satisfactory operation of any system designed based on the information in this book.

The publisher does not endorse or recommend any brand name product by including such brand name products in this book. Conversely the publisher does not disapprove any brand name product by not including such brand name in this book. The publisher obtained data from catalogs, literatures, and material from hydraulic components and systems manufacturers based on their permissions. The publisher welcomes additional data from other sources for future editions.

Workbook: Hydraulic Fluids and Contamination Control Table of Contents

Workbook Hydraulic Fluids and Contamination Control

PREFACE, 4
Chapter 1: Introduction, 5
Chapter 1: Reviews and Assignments, 12
Chapter 2: Hydraulic Fluids, 15
Chapter 2: Reviews and Assignments, 91
Chapter 3: Energetic Contamination, 98
Chapter 3: Reviews and Assignments, 108
Chapter 4: Gaseous Contamination, 111
Chapter 4: Reviews and Assignments, 120
Chapter 5: Fluidic Contamination, 123
Chapter 5: Reviews and Assignments, 151
Chapter 6: Chemical Contamination, 155
Chapter 6: Reviews and Assignments, 173
Chapter 7: Particulate Contamination, 177
Chapter 7: Reviews and Assignments, 212
Chapter 8: Hydraulic Fluid Analysis, 215
Chapter 8: Reviews and Assignments, 266
Chapter 9: Hydraulic Filters Performance Ratings, 271
Chapter 9: Reviews and Assignments, 295
Chapter 10: Contamination Control in Hydraulic Transmission Lines, 299
Chapter 10: Reviews and Assignments, 319

Answers to Chapters Reviews, 323

Workbook: Hydraulic Fluids Contamination Control Preface

PREFACE

This Workbook is a complementary part to the textbook of the same title. This book is used as a workbook for students to take notes during the course delivery. It contains colored printout of the PowerPoint slides that are designed to present the course. Each chapter is followed by a number of review questions and assignments for homework.

Dr. Medhat Kamel Bahr Khalil