

Exploring Autodesk Revit MEP 2014

CADCIM Technologies

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Sham Tickoo

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*To teachers, who make it possible to disseminate knowledge
to enlighten the young and curious minds
of our future generations*

*To students, who are dedicated to learning new technologies
and making the world a better place to live in*

SPECIAL RECOGNITION

*A special thanks to Mr. Denis Cadu and the ADN team of Autodesk Inc.
for their valuable support and professional guidance to
procure the software for writing this textbook*

THANKS

*To the faculty and students of the MET department of
Purdue University Calumet for their cooperation*

To employees of CADCIM Technologies for their valuable help

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Preface

Autodesk Revit MEP 2014 is a Building Information Modeling software developed by Autodesk. This software is primarily used in designing the Mechanical, Electrical, Plumbing, and Piping system of a building. It helps the users to create a Building Information Model (BIM) in which the plans, elevations, sections, schedules, and 3D models can be easily accessed and shared between different users.

The **Exploring Autodesk Revit MEP 2014** textbook explains the concepts and principles of Revit MEP through practical examples, tutorials, and exercises. This enables the users to harness the power of BIM with Autodesk Revit MEP for their specific use. In this textbook, the author explains in details the procedure of evaluating HVAC cooling and heating loads and the usage of tools required for designing HVAC, electrical, and plumbing design. In addition, in this textbook, you will learn tools and concepts for creating families and process to document the final drawings.

In this textbook, special emphasis has been laid on the concepts of space modeling and tools to create systems for all disciplines(MEP). Each concept in this textbook is explained using the detailed description and relevant graphical examples and illustrations. The accompanying tutorials and exercises, which relate to the real world projects, help you understand the usage and abilities of the tools available in Autodesk Revit MEP. Along with the main text, the chapters have been punctuated with tips and notes to make the concepts clear, thereby enabling you to create your own innovative projects.

The main features of this textbook are as follows:

- **Project-based Approach**

The author has adopted the project-based approach and the learn-by-doing theme throughout the textbook. This approach guides the users through the process of creating the designs given in the tutorials.

- **Real-World Designs as Projects**

The author has used real-world building designs and architectural examples as projects in this textbook so that the users can correlate them to the real-time designs.

- **Tips and Notes**

Additional information related to various topics is provided to the users in the form of tips and notes.

- **Learning Objectives**

The first page of every chapter summarizes the topics that are covered in that chapter.

- **Self-Evaluation Test, Review Questions, and Exercises**

Every chapter ends with a Self-Evaluation test so that the users can assess their knowledge of the chapter. The answers to the Self-Evaluation Test are given at the end of the chapter. Also, the Review Questions and Exercises are given at the end of each chapter and they can be used by the Instructors as test questions and exercises.

- **Heavily Illustrated Text**

The text in this book is heavily illustrated with about 200 line diagrams and screen capture images.

Symbols Used in the Text

Note



The author has provided additional information to the users about the topic being discussed in the form of notes.

Tip



Special information and techniques are provided in the form of tips that help in increasing the efficiency of the users.

Formatting Conventions Used in the Text

Please refer to the following list for the formatting conventions used in this textbook.

- Names of tools, buttons, options, browser, palette, panels, and tabs are written in boldface. Example: The **Duct** tool, the **Modify** button, the **HVAC** panel, the **Systems** tab, **Properties Palette**, **Project Browser**, and so on.
- Names of dialog boxes, drop-downs, drop-down lists, list boxes, areas, edit boxes, check boxes, and radio buttons are written in boldface. Example: The **Options** dialog box, the **Wire** drop-down in the **Electrical** panel of the **Systems** tab, the **Name** edit box in the **Name** dialog box, the **Chain** check box in the **Options Bar**, and so on.
- Values entered in edit boxes are written in boldface. Example: Enter **4"** (**100mm**) in the **Offset** edit box.
- Names of the files saved are italicized. Example: *c03_Office-Space_tut2.rvt*
- The methods of invoking a tool/option from the ribbon, Application Menu, or the shortcut keys are given in a shaded box.

Ribbon: Systems > Electrical >
Wire drop-down > Arc Wire
Application Menu: New
Shortcut Keys: CTRL+N
- When you select an element or a component, a contextual tab is displayed depending upon the entity selected. For Example: **Modify** | (**Elements** / **Components**).

Ribbon: Modify | (Elements / Components) > Modify > Move
Shortcut Keys: MV

Naming Conventions Used in the Text

Tool

If you click on an item in a panel of the ribbon and a command is invoked to create/edit an object or perform some action, then that item is termed as **tool**.

For example:

Duct tool, **Air Terminal** tool, **Isolated** tool

Filled Region tool, **Trim/Extend to Corner** tool, **Rotate** tool

If you click on an item in a panel of the ribbon and a dialog box is invoked wherein you can set the properties to create/edit an object, then that item is also termed as **tool**, refer to Figure 1.

For example:

Load Family tool, Duct tool, Wall tool

Plumbing Fixture tool, Visibility/Graphics tool

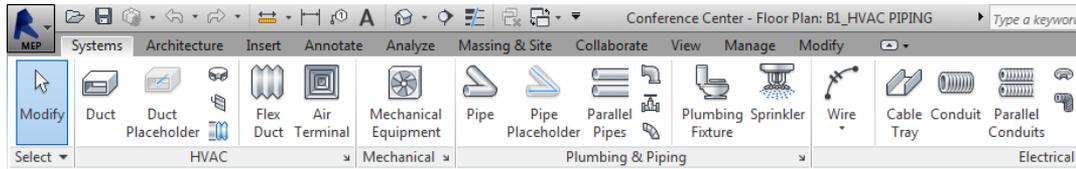
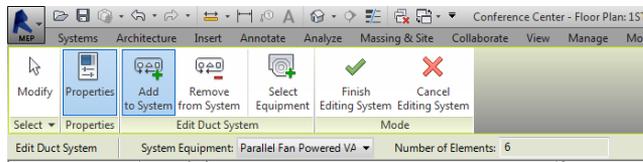


Figure 1 Tools in the ribbon

Button

The item in a dialog box that has a 3d shape like a button is termed as **button**. For example, **OK** button, **Cancel** button, **Apply** button, and so on. If the item in a ribbon is used to exit a tool or a mode, it is also termed as button. For example, **Modify** button, **Finish Editing System** button, **Cancel Editing System** button, and so on; refer to Figure 2.



*Figure 2 Choosing the **Finish Edit Mode** button*

Dialog Box

The naming conventions used for different components in a dialog box are mentioned in Figure 3.

Drop-down

A drop-down is the one in which a set of common tools are grouped together for creating an object. You can identify a drop-down with a down arrow on it. These drop-downs are given a name based on the tools grouped in them. For example, **Wall** drop-down, **Component** drop-down, **Region** drop-down, and so on; refer to Figure 4.

Drop-down List

A drop-down list is the one in which a set of options are grouped together. You can set various parameters using these options. You can identify a drop-down list with a down arrow on it. For example, **Type Selector** drop-down list, **Units** drop-down list, and so on; refer to Figure 5.

Options

Options are the items that are available in shortcut menu, drop-down list, dialog boxes, drop-down lists, and so on. For example, choose the **Zoom In Region** option from the shortcut menu displayed on right-clicking in the drawing area; refer to Figure 6.

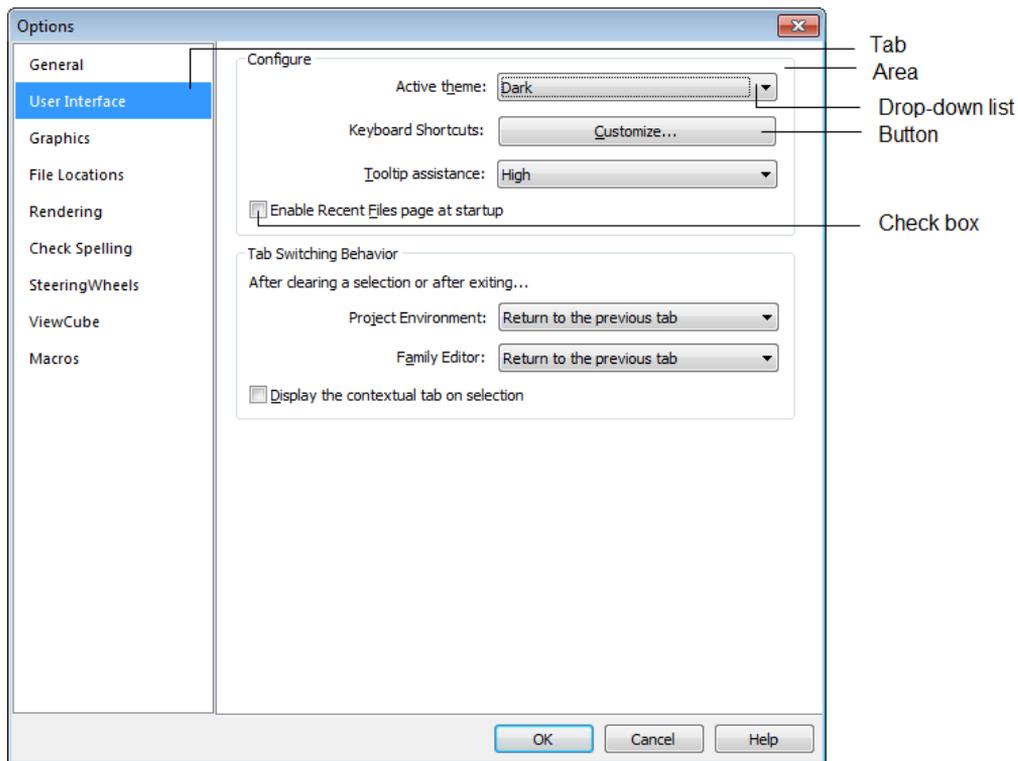


Figure 3 Different terminologies used in a dialog box

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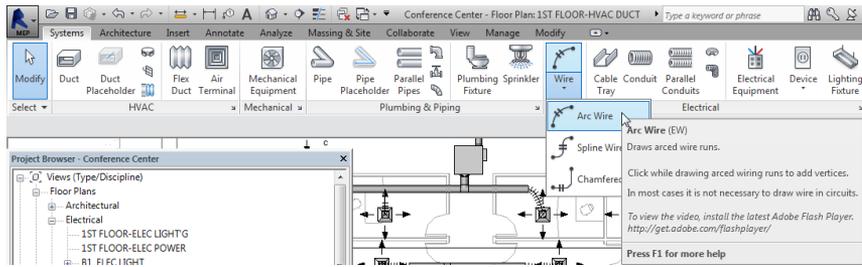


Figure 4 Choosing a tool from the drop-down

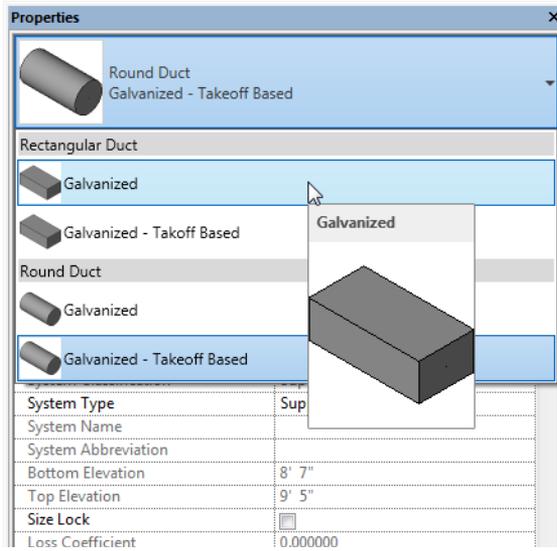


Figure 5 Selecting an option from the Type Selector drop-down list

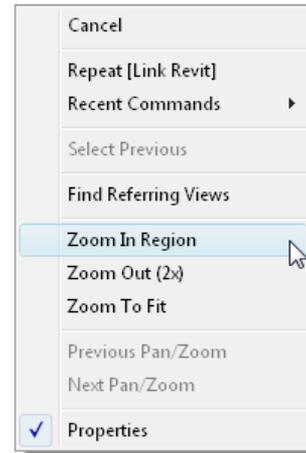


Figure 6 Choosing an option from the shortcut menu

Free Companion Website

It has been our constant endeavor to provide you the best textbooks and services at affordable price. In this endeavor, we have come out with a Free Companion website that will facilitate the process of teaching and learning of Autodesk Revit MEP 2014. If you purchase this textbook, you will get access to the files on the Companion website.

To access the files, you need to register by visiting the **Resources** section at www.cadcim.com. The resources available for the faculty and students in this website are as follows:

Faculty Resources

- **Technical Support**

You can get online technical support by contacting techsupport@cadcim.com.

- **Instructor Guide**

Solutions to all review questions and exercises in the textbook are provided in this link to help the faculty members test the skills of the students.

- **PowerPoint Presentations**

The contents of the book are arranged in PowerPoint slides that can be used by the faculty for their lectures.

- **Revit Files**

The Revit files used in illustration, examples, and exercises are available for free download.

Student Resources

- **Technical Support**

You can get online technical support by contacting techsupport@cadcim.com.

- **Revit Files**

The Revit files (.rvt) used in illustrations and examples are available for free download.

- **Learning Resources**

Additional learning resources at <http://revitxperts.blogspot.com> and <http://youtube.com/cadcimtech>

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