Test Project Day 3

Mechanical Design Challenge

WSC2013\_TP05\_M3\_EN

Submitted by: Autodesk® Inc.

# Contents

This Test Project proposal consists of the following documentation/files:

|  |  |
| --- | --- |
| **PROJECT 1** | **PROJECT 2** |
| WSC2013\_TP05\_M3\_EN.doc | WSC2013\_TP05\_M3\_EN.doc |
| WSC2013\_TP05\_M3\_PROJ1.pdf | Data Files folder > 02\_Conveyor > All files |
| Data Files folder > 01\_Hedgetrimmer > All files |  |

# Introduction

Your company has asked you to work on two design projects. The first is to model an alternate design for a hedge trimmer. The second is to create multiple versions of a conveyor.

# Description of projects and tasks

## PROJECT 1

After you have reviewed the prints, design brief and data files, you revise, model and assemble the alternate design for a hedge trimmer. You also create an exploded view drawing and 3 animations.

## PROJECT 2

After you have reviewed the prints, design brief, and data files, you create 2 new versions of the conveyor system design. You also create a rendered image and a drawing.

You have **6 hours** to complete the projects.

# Instructions to the competitor

## OPEN AND REVIEW SUPPLIED FILES FOR PROJECT 1

1. WSC2013\_TP05\_M3\_PROJ1.pdf is the design brief.
2. Supplied assembly and part files are located in Data Files > 01\_Hedgetrimmer.
3. WSC2013\_TP05\_M3\_PROJ1.iam is the current design of the hedge trimmer body.
4. Open 8102401-1201-Base.ipt. This is the starting file for the alternate housing design. It is described as the left half of the design.
   1. The YZ and XY work planes align with the existing design, 8102401-1201.

## MODEL AND ASSEMBLE THE PARTS FOR PROJECT 1

1. Review the part sketches and notes in the PDF file. Complete the tasks.
   1. Design alternate hedge trimmer housing parts (right and left) from 8102401-1201-Base.ipt based on the images supplied.
   2. Model the blades and drive parts and assembly with alternate housing design.
   3. From the original given assembly the only components to remain in the alternate housing design are:
      1. #15 to #20
   4. Open 8102401-14.ipt. Model the handle based on the images given in the PDF file.
   5. Assemble the complete alternate hedge trimmer, including fixings between alternate housing sides left and right.
2. Save the assembly using competition file naming conventions.

## CREATE A DRAWING FOR PROJECT 1

1. To complete the drawing:
   1. Create an exploded, shaded isometric view of the hedge trimmer with the alternate housing visible.
   2. Add balloons and a parts list. The parts list should have 3 columns, ITEM, QTY, and PART NUMBER.

## CREATE ANIMATIONS FOR PROJECT 1

1. Using Autodesk Inventor, create an animation as follows:
   1. Illustrate the 2 housing designs. Start the animation with the original housing design visible.
   2. Screen size: 1024x768
   3. Length: 15 seconds
   4. Save the file using the competition file naming convention.
2. Using Autodesk Inventor, create an animation of the alternate design as follows:
   1. Animate the hedge trimmer blades functioning.
      1. The gearing must be visible at some point during the animation.
      2. A nut and bolt assembly and the slot in the blades must be visible at some point during the animation.
   2. Screen size: 1024x768
   3. Length: 15 seconds
   4. Save the file using the competition file naming convention.
3. Create an exploding animation of the alternate design hedge trimmer.
   1. Use the alternate housing body design for this animation.
   2. Save the file in AVI format using the competition file naming convention.

## OPEN AND REVIEW SUPPLIED FILES FOR PROJECT 2

1. Supplied assembly and part files are located in Data Files > 02\_Conveyor.

## CREATE MULTIPLE VERSIONS OF CONVEYORS FOR PROJECT 2

1. Your company has designed a small conveyor system. You must create the 2 new conveyor systems (medium and large) from the given small assembly. The sizes are:

|  |  |  |  |
| --- | --- | --- | --- |
| **DIMENSION NAME** | **SMALL** | **MEDIUM** | **LARGE** |
| length | 1200 | 1600 | 2000 |
| width | 498 | 798 | 998 |
| height | 800 | 800 | 1000 |

## CREATE A DRAWING FOR PROJECT 2

1. On an A2 sheet, produce a drawing showing the 3 conveyors designs, identifying the overall dimensions on each.

## CREATE A RENDERED IMAGE FOR PROJECT 2

1. Using Inventor Studio, create a rendered image showing all 3 conveyor designs as follows:
2. Image size: 640 x 480.
3. Save the file in PNG format using the competition file naming convention.

# Marking scheme

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CRITERION** | **SUB-CRITERION** | **MARKS P1 (O/S)** | | **MARKS P2 (O/S)** | |
| C1 | Fulfilment of the Design Brief | 10 | 1 | 3 | 0 |
| C2 | Physical simulation | 4 | 1.5 | 0 | 0 |
| C3 | Exploded view simulation | 2 | 1.5 | 0 | 0 |
| C4 | Photo rendering | 0 | 0 | 1 | 1 |
|  | **Sub-Total**: | 16 | 4 | 4 | 1 |
|  | **Total:** | 20 | | 5 | |