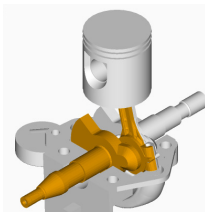
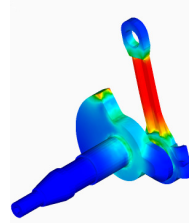
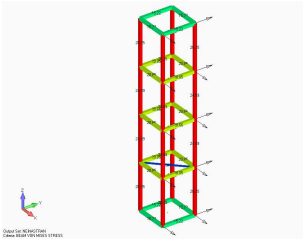
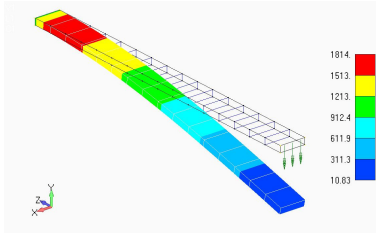
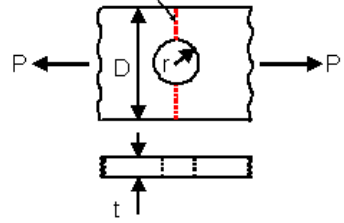


# Finite Element Course - A Training Manual with Worked Examples used in Industry

	
	
<p>Nominal stress area</p> 	$k_t := 3.00 - 3.13 \cdot \left(\frac{2 \cdot r}{D}\right) + 3.66 \cdot \left(\frac{2 \cdot r}{D}\right)^2 - 1.53 \cdot \left(\frac{2 \cdot r}{D}\right)^3$ $k_t = 2.508$ $\sigma_{\text{nom}} := \frac{P}{t \cdot (D - 2 \cdot r)}$ $\sigma_{\text{nom}} = 11.25 \text{ MPa}$ $\sigma_{\text{max}} := k_t \cdot \sigma_{\text{nom}}$ $\sigma_{\text{max}} = 28.217 \text{ MPa}$

© Value Design Consulting 2010. All rights reserved

You may not, except with our express written permission, distribute or commercially exploit the content of this document. No warranty is made, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness of any information from this document.

## Contents

	Page
<b>1. Introduction</b>	<b>3</b>
<b>2. Choosing FEA Software</b>	<b>4</b>
<b>3. Units</b>	<b>5</b>
<b>4. Coordinate Systems used in FEA</b>	<b>7</b>
<b>5. The FEA Procedure</b>	<b>8</b>
<b>6. Stress Theories for Maximum Principal and Von Mises</b>	<b>9</b>
<b>7. Cantilever Beam Worked Example</b>	<b>10</b>
<b>8. Pressure Vessel Worked Example</b>	<b>16</b>
<b>9. Shaft in Torsion Worked Example</b>	<b>23</b>
<b>10. Buckling Worked Example</b>	<b>25</b>
<b>11. Bearing (Contact) Stress Worked Example</b>	<b>29</b>
<b>12. Determining the Objectives of the Analysis</b>	<b>33</b>
<b>13. Choosing the Analysis Method for Nominal or Peak Stress</b>	<b>34</b>
<b>14. Importing Geometry</b>	<b>36</b>
<b>15. Meshing the Model</b>	<b>39</b>
<b>16. Assigning Material Properties</b>	<b>44</b>
<b>17. Applying Boundary Conditions</b>	<b>49</b>
<b>18. Running the Solver</b>	<b>54</b>
<b>19. Investigating Results for Quality and Mesh Refinement</b>	<b>55</b>
<b>20. Reporting Results</b>	<b>59</b>
<b>21. Closing Comments</b>	<b>60</b>

**Buy it online at**

<http://www.value-design-consulting.co.uk/buy-finite-element-course.html>

© Value Design Consulting 2010. All rights reserved

You may not, except with our express written permission, distribute or commercially exploit the content of this document. No warranty is made, express or implied, including warranties of merchantability and fitness for a particular purpose, or assumes any legal liability for the accuracy, completeness, or usefulness of any information from this document.