|  |
| --- |
| CAE simulation 4 |

스케치, 도표, 그림, 기술 도면이(가) 표시된 사진

자동 생성된 설명

**Figure 1. Overload protection device**

**스크린샷, 텍스트, 디자인이(가) 표시된 사진

자동 생성된 설명**

**Figure 2. Ansys model analysis**

**1. Reaction force at pin A**

텍스트, 스크린샷, 번호, 폰트이(가) 표시된 사진

자동 생성된 설명

**Figure 3. Reaction force at pin A**

As can be seen in the **Figure 2**, reaction force value at pin A is same with theoretical value.

**2. Mesh convergence test**

1) mesh size :

|  |  |
| --- | --- |
| **Equivalent stress** | **Total deformation** |
|  |  |

2) mesh size :

|  |  |
| --- | --- |
| **Equivalent stress** | **Total deformation** |
|  |  |

3) mesh size :

|  |  |
| --- | --- |
| **Equivalent stress** | **Total deformation** |
|  |  |

4) mesh size :

|  |  |
| --- | --- |
| **Equivalent stress** | **Total deformation** |
|  |  |

5) mesh size :

|  |  |
| --- | --- |
| **Equivalent stress** | **Total deformation** |
|  |  |

As can be seen in the figures above, unlike deformation values, equivalent stress values increase as mesh size decreases. This is because as mesh size gets smaller, the more stress concentration at specific point occurs. Furthermore, skewness of mesh used in this simulation is under , which indicates that the quality of mesh is good enough to use.

텍스트, 스크린샷, 번호, 라인이(가) 표시된 사진

자동 생성된 설명

**Figure 4. Mesh quality worksheet**

**3. Thickness of device to prevent material yield (safety factor = 3)**

Tensile yield strength of material used in this simulation is . To consider the safety factor over 3 in the aspect of material yield, thickness of it has to be increased. Stress concentration factor K is considered with .