

Performing a design check in Osdag

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

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Learning Objectives

In this tutorial, we will learn how to



Learning Objectives

In this tutorial, we will learn how to

- ▶ **Perform a design check**



Learning Objectives

In this tutorial, we will learn how to

- ▶ Perform a design check
- ▶ Interpret the log messages



Learning Objectives

In this tutorial, we will learn how to

- ▶ Perform a design check
- ▶ Interpret the log messages
- ▶ **Rectify unsafe designs using log messages**



Learning Objectives

In this tutorial, we will learn how to

- ▶ Perform a design check
- ▶ Interpret the log messages
- ▶ Rectify unsafe designs using log messages
- ▶ **Arrive at a safe design using log messages**



System Requirements

To record this tutorial, I am using



System Requirements

To record this tutorial, I am using

▶ **Windows 11**



System Requirements

To record this tutorial, I am using

- ▶ Windows 11
- ▶ **Osdag v2021.02.a.a12f**



Pre-requisites

To follow this tutorial you should have,



Pre-requisites

To follow this tutorial you should have,

- ▶ **Osdag installed on your system**



Pre-requisites

To follow this tutorial you should have,

- ▶ Osdag installed on your system
- ▶ **Basic knowledge of structural steel design**



Pre-requisites

To follow this tutorial you should have,

- ▶ Osdag installed on your system
- ▶ Basic knowledge of structural steel design

The pre-requisite tutorials are available on <https://spoken-tutorial.org>



Sample Design Example

- ▶ **Design a Tension Member with a bolted end connection**



Sample Design Example

- ▶ **Design a Tension Member with a bolted end connection**
- ▶ **The member carries a factored axial force of 500 kN**



Sample Design Example

- ▶ **Design a Tension Member with a bolted end connection**
- ▶ **The member carries a factored axial force of 500 kN**
- ▶ **Perform a design check by adopting the given design specifications:**



Sample Design Example

Section:



Sample Design Example

Section:

▶ Profile: Back to Back Angles



Sample Design Example

Section:

- ▶ Profile: Back to Back Angles
- ▶ Connection Location: Long Leg



Sample Design Example

Section:

- ▶ Profile: Back to Back Angles
- ▶ Connection Location: Long Leg
- ▶ Section Size: 120x120x12



Sample Design Example

Section:

- ▶ Profile: Back to Back Angles
- ▶ Connection Location: Long Leg
- ▶ Section Size: 120x120x12
- ▶ Material Grade: E 250(Fe 410 W)A



Sample Design Example

Section:

- ▶ Profile: Back to Back Angles
- ▶ Connection Location: Long Leg
- ▶ Section Size: 120x120x12
- ▶ Material Grade: E 250(Fe 410 W)A
- ▶ Length: 3200 mm



Sample Design Example

End Connections:



Sample Design Example

End Connections:

▶ Connector:



Sample Design Example

End Connections:

- ▶ Connector:
 - ▶ **Type: Bolted**



Sample Design Example

End Connections:

- ▶ **Connector:**
 - ▶ **Type: Bolted**
 - ▶ **Diameter: 16, 20**



Sample Design Example

End Connections:

▶ Connector:

- ▶ Type: Bolted
- ▶ Diameter: 16, 20
- ▶ Bolt Type: Bearing Bolt



Sample Design Example

End Connections:

▶ Connector:

- ▶ Type: Bolted
- ▶ Diameter: 16, 20
- ▶ Bolt Type: Bearing Bolt
- ▶ Grade: 4.8, 5.8, 6.8



Sample Design Example

End Connections:

▶ Connector:

- ▶ Type: Bolted
- ▶ Diameter: 16, 20
- ▶ Bolt Type: Bearing Bolt
- ▶ Grade: 4.8, 5.8, 6.8

▶ Gusset Plate:



Sample Design Example

End Connections:

▶ Connector:

- ▶ Type: Bolted
- ▶ Diameter: 16, 20
- ▶ Bolt Type: Bearing Bolt
- ▶ Grade: 4.8, 5.8, 6.8

▶ Gusset Plate:

- ▶ Thickness: 16 mm



Summary

In this tutorial, we have

- ▶ **Learnt to perform a design check**
- ▶ **Interpreted the log messages**
- ▶ **Rectified unsafe design using log messages**
- ▶ **Arrived at a safe design using log messages**



Assignment

As an assignment, please do the following

- ▶ **Design a Tension Member with a welded end connection.**
- ▶ **The member carries a factored axial force of 500 kN**



Assignment

Perform a design check by adopting the given design specifications:

▶ **Section:**

- ▶ **Profile: Angles**
- ▶ **Connection Location: Short Leg**
- ▶ **Section Size: 150x150x10**
- ▶ **Material Grade: E 300 (Fe 440)**
- ▶ **Length: 2560 mm**



Assignment

- ▶ **Gusset Plate:**
 - ▶ **Thickness: 16 mm**



About the Spoken Tutorial Project

- ▶ Watch the video available at https://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to contact@spoken-tutorial.org



Answers for THIS Spoken Tutorial

- ▶ Questions in THIS Spoken Tutorial
- ▶ Visit <https://forums.spoken-tutorial.org/>
- ▶ Choose the minute and second where you have the question
- ▶ Explain your question briefly
- ▶ The Spoken Tutorial project will ensure an answer
- ▶ You will have to register to ask questions



- ▶ For any general or technical questions on Osdag, visit the FOSSEE forum and post your question <https://forums.fossee.in/>



Acknowledgements

- ▶ **The Spoken Tutorial project is funded by the Ministry of Education, Government of India**



Thank You!

- ▶ **This is Anandajith TS, FOSSEE IIT Bombay signing off**
- ▶ **Thanks for joining**

