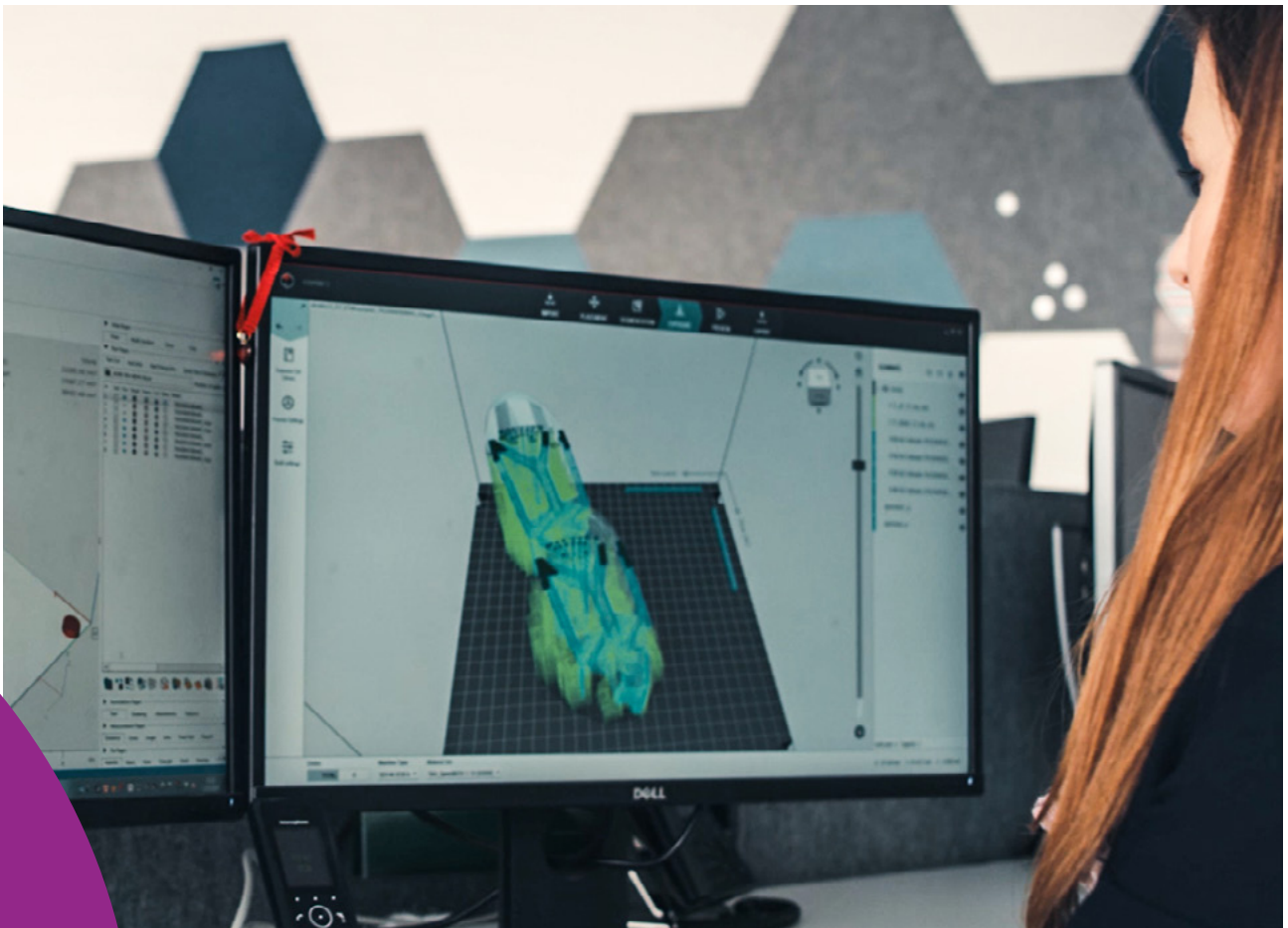# Learning Path

AM Data Preparation – Metal

Realise your full potential with our Learning Path and gather the AM Academy certificate "Data Preparation" for Metal Applications.

Gain skills in

→ Quick and efficient data preparation for metal 3D printing

→ Recognizing the main challenges of your applications

→ Leveraging software to make the impossible possible

Additive Manufacturing
AM Data Preparation - Metal

Bring everything together and excel your personal skills

Article N°: 500003168 (1 seat)
Article N°: 500009554 (4 seats)
Venue: Online and self-study
Study Time: 79.5 hours (mandatory), 22 hours (optional)
Ideal length: 4 to 6 weeks
Language: English

Hardware & Software prerequisits
EOS Base
EOSPRINT 2.x
Material Set: M 290, 17-4PH, 40 μm
EOSPRINT Premium
Materialise Magics 24.1

Learning Method

E-Learning

Webinar

Video

Practice Task

Certificate

Q&A Session

Additive Manufacturing
AM Data Preparation - Metal

79,5 h mandatory   22 h optional

Phase 1
EOS Technology – Introduction

1. Welcome
2. General Technology Introduction
3. Basic System Operation (optional)
4. Safety Metal (optional)
5. Magics Introduction
6. EOSPRINT 2 Introduction

Phase 2
Build Up Your Know-How

1. Data Preparation Basic
2. Advanced Data Preparation - Materialise Magics
3. Task – Fixing of Parts I
4. Task – Fixing of Parts II
5. Part Labeling (optional)
6. Magics Exercise
7. Metal Material Overview
8. Reflection (optional)

Phase 3
Apply Your Knowledge

1. Support & Orientation Introduction
2. Support & Orientation Advanced
3. Part Screening and Selection (optional)
4. Part Screening and Selection Exercise (optional)
5. Achieving Basic Quality
6. Reaching Quality - Advanced (optional)
7. Case Study (incl. Tips & Tricks)
8. Question & Answer "prepare for final Exam" (optional)

Phase 4
Demonstrate What You Have Learned

1. Practical Test: Final Exam Part I
2. Theoretical Test: Final Exam Part II
3. Farewell

Phase 1
EOS Technology – Introduction

4.5 h

9.5 h
optional

1. Welcome

Video (0.5h)

Get an understanding of your learning path and methods used. Also, you will be introduced to the skills you will develop, such as:

- Understand 3D printing and DMLS
- Apply data preparation theory to real cases
- Understand which support parameter can be changed and what are the changes
- Know the characteristics of certain materials and can chose the suitable material

2. General Technology Introduction

E-Learning (2h)

Understand the process of 3D printing for metal and get a first insight into the EOS systems and their functionality. Learn how the data preparation process looks like in general. Understand the EOS system components such as recoater, build plate and laser system.

3. Basic System Operator (optional)

Webinar (8h)

Learn to operate an EOS system, such as the EOS M290 as well as its periphery. Understand work safety instructions and how to check and adjust machine settings.

4. Safety Metal (optional)

E-Learning (1.5h)

Understand the EOS safety concept as well as important safety signs. Afterwards you will learn more about potential hazards and how you can avoid them. Finally you will learn more about how to protect yourself with personal protective equipment.

5. Magics Introduction

E-Learning (1h)

Learn the basics about data preparation for EOS metal systems. As an example, the content is presented with the Magics software.

6. EOSPRINT 2 Introduction

E-Learning (1h)

Learn how to use EOSPRINT 2, the EOS software to apply standard part parameters. Get to know the main functions of the software for your role.

Phase 2
Build Up Your Know-How

42 h

1.5 h
optional

7. Data Preparation Basics

Webinar (16h)

The EOS partner of choice for data preparation is Materalise. Their software Magics offers a wide range of functions to help you prepare your application for building, like automated support, measurements, layer-by-layer view. Get an introduction to Magics as well as the whole data preparation workflow.

8. Advanced Data Preparation - Materialise Magics

E-Learning (4h)

Learn more advanced options within the data preparation software, Materialise Magics and different options to repair parts such as manual fixing of holes, remesh, and smoothing. You will also learn about part offset and labelling, and hollow parts, and how to auto place and orientate parts as well as special options for support generation.

9. Task – Fixing of Parts I

Practice Task (8h)

Apply the different methods to fix a part in Materialise Magics software.

10. Task – Fixing of Parts II

E-Learning (4h)

Compare your work with the EOS solution.

11. Part Labeling (optional)

E-Learning (1h)

In this training you will learn more about part labelling on a real built test job. It focuses on label quality on the different types of surfaces like DownSkin, Standard Contour, and UpSkin.

12. Magics Exercise

Practice Task (8h)

Apply all your learnings to our AM examples and work on Magics examples. You will download different STL files and load them in your data preparation software. Here you will learn the difference in data import, how to use the main functions in Magics and part consolidation.

13. Metal Material Overview

E-Learning (2h)

Each material has its unique properties and will behave differently when melting. Some materials need stronger attachment to the build plate, some less. By learning how to read the EOS material data sheets you will better understand the values. In addition, you will understand its implication for data preparation.

14. Reflection (optional)

E-Learning (0.5h)

EOS Experts will guide you online, reflecting on your current learning progress as well as encouraging you to engage in online discussions. This will boost your motivation, as we know work and life can be challenging sometimes.

Phase 3

Apply Your Knowledge

23 h   11 h optional

15. Support & Orientation Introduction

E-Learning (6h)

For any metal build job you need to consider the best orientation in accordance to your part's requirements as well as suitable support types. This is the bread and butter for a data preparation specialist. The following learning outcomes will be tackled:

- Learn more about different support structure types and how to use them
- Get a deeper understanding of the correlation between orientation and process/ part quality
- Optimize efficiency, success rate and cost per part

16. Support & Orientation Advanced

Webinar (8h)

With an EOS Expert you will apply your support and orientation theoretical knowledge to real world examples. Based on the theory from the module "Support and Orientation Introduction" you will increase your theoretical knowledge further in regards to support strategies as well as orientation – assessing the support needs of the cases, preparing build jobs and evaluating the results.

17. Part Screening and Selection (optional)

E-Learning (6h)

Learn an easy adaptable method to determine which applications have the highest potential within your portfolio, and determine a starting point for your journey. Evaluate the economical and the technical fit quickly and have a high-level assessment.

18. Part Screening and Selection Exercise (optional)

Practice Task (1h)

Apply the part screening methodology to your own portfolio. You will fill out several scorecards of your own portfolio and discuss these with your colleagues. This will lead into a first rating of your portfolio into the ECO-TEC Matrix.

19. Achieving Basic Quality

E-Learning (1h)

It goes without saying that quality is very important, especially to your role as a Data Preparation Specialist where your charter has a high impact on part quality. Therefore, you will spend time building up your quality knowledge in regards to AM and DMLS. You will get to know your role along the AM production chain and where you can

influence part quality. After a definition of quality, you will learn about the Ishikawa model and how it helps you to create a quality case. You will learn more about Standardization for AM and technical drawings. In addition, you will gain an understanding of the impact of data import into Materialise Magics to ensure a high resolution as well as how to ensure surface accuracy.

20. Reaching Quality – Advanced (optional)

E-Learning (2h)

Let's have a closer look on the material data sheets for metals and how to read them. Part placement and part positioning has a huge impact on your quality as well as gas flow and its' optimization. There are some tricks to get a better quality in EOSPRINT, which you will learn, too. Moreover, by getting an overview of the different monitoring solutions you are well equipped to produce high quality parts.

21. Case Study (incl. Tips & Tricks)

Practice Task (8h)

Nothing is better than real life examples; so now it is time to apply your new knowledge to these intermediate cases and deepen your learning curve.

Afterwards you can clarify all your open questions in the forum.

22. Questions & Answers "prepare for final Exam" (optional)

Q&A (2h)

Do you have any open questions bevor you start with your final exam? Now is the time to ask our experts.

Phase 4

Demonstrate What You Have Learned

10 h

23. Practical Test

Final Exam Part I
Practice Task (8h)

You will apply your knowledge to a more difficult build job.

24. Theoretical Test

Final Exam Part II
Practice Task (1h)

Show your expertise for data preparation in this theoretical test.

25. Farewell

Video (0,5 h), Certification (0,5 h)

Congratulations, you mastered the learning path and you are now an AM Data Preparation Specialist for Metal! Have a look into your new future and get your certificate.

Additive Minds Academy Making Additive Manufacturing Expertise Accessible

Additive Minds Academy is the training and knowledge transfer provider of EOS. Our portfolio caters to a wide range of roles, such as machine operators, application specialists and production managers. All of our trainers have years of experience with EOS solutions and are familiar with the specific challenges that you are facing.

Our certified learning paths combine online education with traditional classroom methods. This blended learning concept gives you much flexibility – you decide the instruction method that best suits your learning style. Each learning path is an ideal sequence of learning activities that help you reach your full potential for AM as quickly as possible.

Learning Path
AM Data Preparation – Metal

Ready to learn?
For further information please contact us:
amacademy@eos.info
store.eos.info

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