



AMVENTURES

3D PRINTING

RISKS AND OPPORTUNITIES

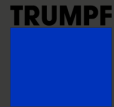
ARNO G. HELD, MANAGING PARTNER



1 THAT'S ME



THAT'S ME ARNO HELD



- Field Service Engineer
- Working Student



- MSc Industrial Engineering
- Practical terms TRUMPF Shanghai + e'Carz Cape Town



- Executive Assistant
- Strategy + Business Development



- Executive MBA + PLD
- Modules in Capetown + Dubai



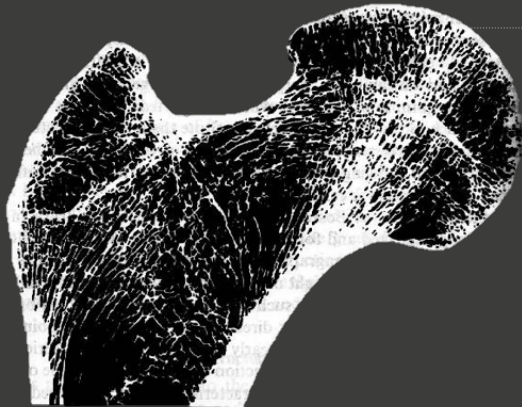
- Co-Founder
- Managing Partner

2 3D PRINTING



INSPIRED BY NATURE

3D PRINTING MAKES USE OF FUNDAMENTAL PRINCIPLES



Instead of subtracting material which is not needed
material is added where it is required

Therefore, 3D printing is called
Additive Manufacturing (AM)



DIGITAL MANUFACTURING

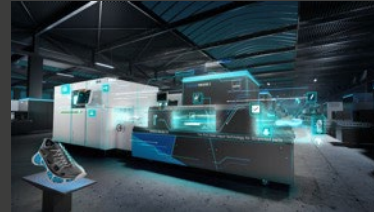
AM IS A DIGITAL TECHNOLOGY PUSHING DIGITIZATION IN MANUFACTURING TO THE NEXT LEVEL



1. Computer Aided Design (CAD)



2. Production job preparation



3. Production & finishing



4. Final Part

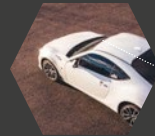
THE HOT STUFF: THERMAL MANAGEMENT HEAT EXCHANGERS BY CONFLUX TECHNOLOGY

The **next generation in heat exchange** technology:
Providing greater fuel efficiency through weight
reduction by a factor of 3

Aerospace



Automotive



Oil & Gas



Electronics



conflux
TECHNOLOGY

REVOLUTION WITH A SMILE

LIGHTFORCE ORTHODONTICS

The biggest volume AM application today: clear aligners (approx. 500k pcs/d)

BUT: aligners can only treat <20% of misalignments.

➤ Braces are a 4x bigger market



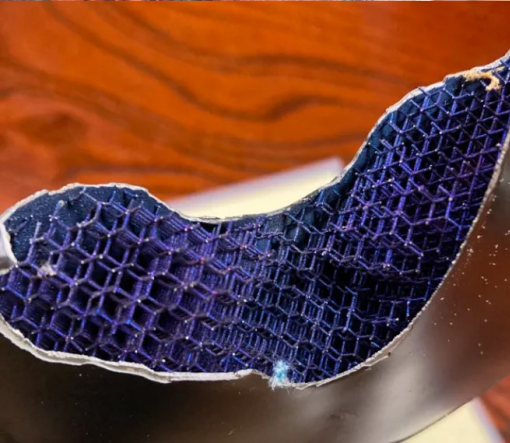
LIGHTFORCE

AM PAVES THE WAY FOR E-MOBILITY ELECTRIC MOTORS BY **ADDITIVE DRIVES**

Revolutionizing a revolution:

- ▲ **R&D times:** accelerated from 9 months to 1 click
- ▲ **End turn length:** reduced by 50%
- ▲ **Reducing weight = Increasing distance travelled**





DIGITAL MANUFACTURING

AM IS A DIGITAL TECHNOLOGY PUSHING DIGITIZATION IN MANUFACTURING TO THE NEXT LEVEL



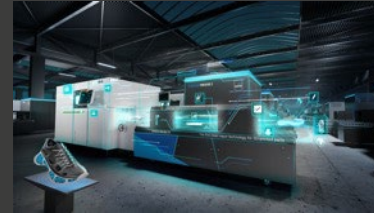
1. Computer Aided Design (CAD)

- Input data
- Software failure?
- Algorithmic failure?



2. Production job preparation

- Distributed manufacturing
- Equipment selection
- Parameter selection



3. Production & finishing

- Machine operation
- Raw material condition
- Autonomous manufacturing
- Post-processing



4. Final Part

- Part storage
- Part handling
- Part usage

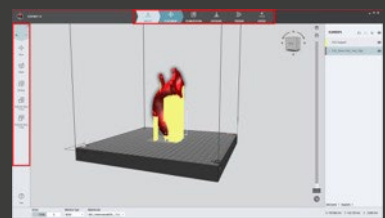
DIGITAL MANUFACTURING

AM IS A DIGITAL TECHNOLOGY PUSHING DIGITIZATION IN MANUFACTURING TO THE NEXT LEVEL



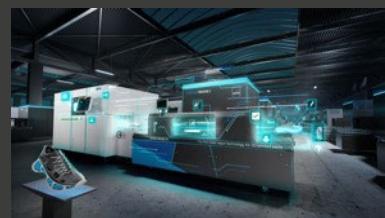
1. Computer Aided Design (CAD)

- ▲ Input data
- ▲ Software failure?
- ▲ Algorithmic failure?



2. Production job preparation

- ▲ Distributed manufacturing
- ▲ Equipment selection
- ▲ Parameter selection



3. Production & finishing

- ▲ Machine operation
- ▲ Raw material condition
- ▲ Autonomous manufacturing
- ▲ Post-processing



4. Final Part

- ▲ Part storage
- ▲ Part handling
- ▲ Part usage

IS THIS OPPORTUNITY A RISK?

THIS RISK IS AN OPPORTUNITY!

- ▲ Parts designed by Algorithms
- ▲ Digital warehousing, revision and transportation
- ▲ Autonomous manufacturing





THANK YOU

MANAGING PARTNERS:

Johann Oberhofer
jo@amventures.com
+49 172 642 10 22

Arno G. Held
agh@amventures.com
+49 172 829 06 54

AM Ventures Management GmbH

Petersbrunner Str. 1b
82319 Starnberg
Germany

