3D PRINTING SPARE PARTS ON-BOARD

WAREHOUSE CONTAINS
300.000 PARTS IN TOTAL

EQUALS 1.400.000 KG
OF STORED MATERIALS

WITH AN AVERAGE VALUE
OF 13.000.000 US$

WHY?

"WE ACT SUSTAINABLY BECAUSE WE WANT TO, NOT BECAUSE WE HAVE TO"

CURRENTLY OCCURING PROBLEMS

DELIVERY TIME
"GETTING A PART ON-BOARD CAN TAKE **WEEKS OR MONTHS**" - HANS HAVERMANS

STOPPING PROJECT
STOPPING A PROJECT BECAUSE OF A MISSING PART COSTS HEEREMA **1 MILLION $** PER DAY

AIR FREIGHTS
ALL AIR FREIGHTS OF ONE VESSEL COSTED **93.240$** IN 2011

OLD PARTS NO MANUFACTURE
PARTS THAT ARE STILL NEEDED ON-BOARD ARE NOT PRODUCED ANYMORE

PURCHASE PACKAGES
ONLY ONE PART MIGHT BE NEEDED, BUT THE ARE SELLED BY **50 OR 100 UNITS**

AMOUNT IN-STOCK
WITH THE GROWING AMOUNT OF PARTS IN-STOCK, **OVERVIEW** GETS LOST

ADMIN
INFOR SYSTEM TAKES UP A LOT OF TIME OF THE USERS

ORDERING PROCESS
AMOUNT OF STEPS TAKEN BEFORE ORDERING CAN TAKE UP **3-5 WEEKS**

HOW?

THE 3D PRINT ROADMAP OF HEEREMA

1 RESEARCH PHASE NOW

INTRODUCED TO SMOOTHEN THE IMPLEMENTATION:
- FOLLOW-UP ON RECOMMENDATIONS.
- INVOLVE STAKEHOLDERS.
- EDUCATE USERS OF PRINTER.

ENGINEERS, STOREKEEPERS AND LAYERTEC

2A PLASTIC PRINTING PHASE Q4 2020

INSTALLATION IN THE WAREHOUSE ON-BOARD THE THIALF

BASED ON THE STEPWISE APPROACH OF INNOVATION (HUIZINGH, 2009), PLASTIC PARTS WILL BE PRINTED FIRST:
- USING THE ULTIMAKER S5, A FUSED DEPOSITION MODELLING PRINTER.
- PRINTING NON-CRITICAL PLASTIC PARTS.

2B METAL PRINTING PHASE Q2 2021

THE NEXT STEP ACCORDING THE STEPWSE APPROACH IS PRINTING METAL PARTS:
- USING THE DESKTOP METAL STUDIO SYSTEM, A PRINTER USING THE BOUND METAL DEPOSITION TECHNOLOGY.
- START PRINTING NON-CRITICAL METAL PARTS.
- CONTINUE PRINTING CERTIFIED PARTS IN COLLABORATION WITH LLOYDS.

3 OPPORTUNITIES PHASE 2021

FOLLOWING UP ON OPPORTUNITIES THAT OPEN UP ONCE ADDITIVE MANUFACTURING IS IMPLEMENTED IN HEEREMA'S ORGANIZATION.

MATERIALS: BIO-PLASTICS, HIGH QUALITY PLASTICS, PLASTIC BAKE-OFF
TECHNOLOGY: DIGITAL INVENTORY, TOPOLOGY OPTIMIZATION, WAAM
OTHER: EXPANDING OTHER VESSELS, EXTERNAL FACTORIES, DRONES

WHY THIS WAY?

SOLUTION ASSESSED ACCORDING THE ASPECTS OF THE INDUSTRIAL DESIGN ENGINEERING DOMAIN:

IT IS FEASIBLE

SELECTED HARDWARE PROVEN TO WORK BY PRINT STUDIES

PRINTABLE PARTS SELECTED DURING FIELD STUDY

SELECTED PARTS PRINTED DURING PRINT STUDY

MECHANICAL TESTING SHOWED PROMISING PRINT QUALITY

IT IS VIABLE

TOTAL INVESTMENT IS 1,8% OF IN-STOCK VALUE

REDUCING MAN-HOURS IN SEVERAL DEPARTMENTS

DELIVERY TIME CAN BE DECREASED BY PRINTING ON-BOARD

PROCESSES IMPROVE BY REDUCING THE DIFFERENT TYPES OF WASTE

IT IS DESIRABLE

FITS CURRENT PROCESS BY INVOLVING STAKEHOLDERS

LAYERTEC PARTNERSHIP INCLUDES HARDWARE, SOFTWARE AND SERVICE

SAFE FOR USE ACCORDING TO MANUFACTURERS

FIT SUSTAINABILITY AIMS HEEREMA

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