

Digitizing the ocean space

# **Company Presentation**

26th of April, 2021

# **Argeo mission**

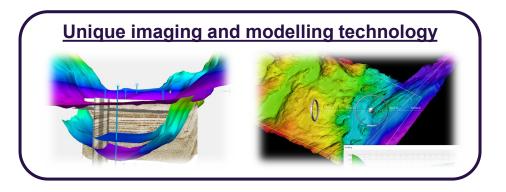
Transforming the ocean surveying and inspection industry

..by utilizing autonomous underwater and surface vehicles and unique sensor and imaging technology

..to significantly increase efficiency and quality

..and to substantially reduce the CO2 footprint for the industry





"Faster, better, greener and at a lower cost"



# Sustainable development goals is an integral part of Argeo's philosophy











Key for sustainable localization, installation and operations in a wide range of offshore industries

Strong focus on offshore wind

Supporting development of renewable energy

Sourcing of local resources

Project based vessel hires allows for local charters

Survey sensor development through 3rd party partners Reduced carbon footprint in operation

Vital surveys of environmental impact

Argeo solutions key to examine impact on habitat and species below water

Argeo can collect data for benthic surveys through non physical samples Strong committment to minimise impact on the environment

Reduced HSE exposure to the Argeo employees

Contributing to a sustainable future



# **Argeo highlights**

#### A first mover with zero legacy





# A technology focused imaging and geo-engineering specialist

### **Company overview**

- Argeo was established by an experienced team of professionals in 2017 with HQ in Asker, Norway
- International expansion to North and South America with first office opening in Houston
- Strong focus on robotized solutions that save time and cost for the customer
- Proof of concept from successful projects within aquaculture and infrastructure with excellent feedback from clients
- Recently acquired a Hugin AUV in the secondhand market
- Procurement of new build SeaRaptor 6000 AUV for Mineral Exploration and general survey applications
- Signed multi-year mineral exploration contract for Asia-Pacific region starting February 2022

#### Market segments

#### Infrastructure



## Offshore wind



# O&G Survey & Inspection



### **Deep Sea Minerals**



#### **Key market services**

- Data acquisition, imaging and underground modelling for large infrastructure projects and aquaculture
- High accuracy imaging needed to reduce project risk and construction costs
- Input to wind farm design, including design and location of foundations, substations etc.
- Investigation of routes for power cable and assessment of environmental impact
- Inspection of existing infrastructure
- Light intervention

- Input to offshore field design, including design and location of platform and subsea infrastructure
- Investigation of routes for pipelines
- Detection damage/erosion on existing installations
- Inspection and light intervention
- General survey

- Exploration and characterization of Deep Sea Mineral (DSM) deposits
- Environmental impact studies
- Wide use of sensors and in-house Mineral Hunter system under development by Argeo Robotics
- Significant upside in future Multi Client data library developed

Sustainable development goals - focus on reducing carbon footprint in all operations



# Management team with strong industrial track record

## Argeo team – experienced professionals from the seismic and oil & gas sectors

## Executive team and America's expansion



**Trond Figenschou Crantz** CEO / Founder

- 20+ years of leadership experience from Schlumberger and PGS
- Extensive technical, operational and commercial experience
- M.Sc. In Robotics and Cybernetics and MBA



**Odd Erik Rudshaug CFO** 

- 35+ years experience from shipping and oil &
- Co-founder & CFO for RXT, experience from **PGS and EMGS**
- M.Sc. Business & Economics



Thorbjørn Rekdal CTO

- 20+ years of leadership experience from **PGS**
- Head of PGS Research and Commercialization
- PhD in Geophysics



Bjørn Jensen COO

- 20+ years of leadership experience from Magseis, iSurvey and PGS
- · Global operational responsibility for all PGS marine seismic operations
- · M.Sc. In Engineering Cybernetics

To Be Announced CCO

· Recruitment process started

To Be Announced **EVP EAME/NSA** 

- Establishing US office in Houston
- · Recruitment process started

To Be Announced **VP** Marketing

· Recruitment process started

Team experience















# Highly experienced board



Jan P. Grimnes

#### Chairman

- Currently chairman of the board of Geoteric (Foster Findlay Associates Limited)
- Currently board member of Adrega AS
- Board member experience from Magseis Fairfield ASA, Fara AS, Q-Free ASA and SPT Group AS
- Founded Technoguide in 1996, the company that developed and commercialized the world's leading E&P software Petrel (held the position as Chairman and CEO)



Geir Kaasen

#### Board member

- 29 years of experience from Investment Banking, of which 20 years from Corporate Finance
- Currently working as investor and independent financial advisor
- Experience from capital markets including M&A transactions, IPOs and capital raising for more than fifty energy and technology companies
- Previous experience as partner in ABG Sundal Collier, SEB Enskilda and Hagstrøm & Qviberg



#### Ann-Christin Andersen

#### Board member

- Experienced executive with more than 30 years background from the oil & gas industry
- Has held the position as Chief Digital Officer, Managing Director and various SVP/VP positions for projects and products for ABB, Kongsberg Gruppen and Technip FMC
- Currently chairman of Glitre Energi and board member of Rotork plc., Maersk Drilling and Quantafuel



Jim Dåtland

#### **Board** member

- Experienced executive with vast background from corporate and capital markets
- Previously CFO and Investment Director of the family office T.D. Veen AS
- Experience from several listed offshore drilling companies including Seadrill Ltd.
- Currently board member of Quantafuel and Aquarobotics



Arne Kjørsvik

#### Board member

- More than 20 years of extensive technical and managerial experience
- Previously CEO and cofounder of Eelume AS, a revolutionizing subsea inspection robotics system
- Manager of the digital service group and Chief Marketing Manager of Marine Cybernetics AS
- Lately CTO AutoVeri, a Digital Twin focused startup company



## Argeo's tools are high-capability AUV's with complimentary abilities

#### **Hugin AUV**







#### · Up to 80 hours battery capacity

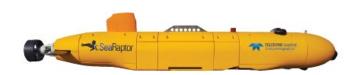
- 4,500m depth rating
- · Great maneuverability and stability
- Visual, bathymetric and sonar survey data
- ✓ Asset light and very scalable
- ✓ Completely autonomous deployment and recovery
- ✓ Marine diesel consumption reduced by> 10t per day

#### **Eelume AUV**



- Modular combination of joints, thrusters and payload modules
- Disruptive technology for subsea inspection, maintenance and repair (IMR)
- Engineered to live permanently under water
- ✓ Ultra-flexible and slender body that can operate in restricted areas subsea
- ✓ Modular system that can be tailor made for various operations
- ✓ Robotic arms that can operate tools and carry out intervention tasks

#### **SeaRaptor AUV**







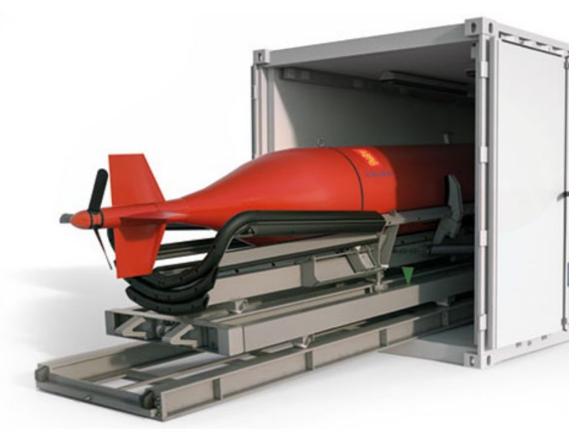
- Depth rated to 6,000m
- Wide range of available sensor integrations
- · Custom sensor integrations available
- · Navigation sensors and acoustic aiding
- ✓ Several payload ports that provide serial communication
- √ Redundant emergency systems
- ✓ Proven software
- ✓ Marine diesel consumption reduced by> 10t per day





## **HUGIN 1000 Autonomous Underwater Vehicle**

### **Kongsberg Hugin robots**



The compact 10-foot operations container houses the operator system required for AUV operation and data processing. The Portable AUV System is highly automated, a complete mission including planning, localization, identification and neutralization is controlled by one operator.

AUV operations are run directly from the two ISO containers, with no need to tie into a ship's systems or internal spaces.

A KONGSBERG High-Precision Acoustic Positioning (HiPAP) 350 system and a tow-fish transducer for acoustic communication can be included, as well as a KONGSBERG SeaPath system for accurate ship reference position and attitude.



Inside View of the 10-Foot Operations Container

Mobilization in a 20" + 10" ISO container, anywhere in the world



# Unmanned from continent to continent is coming with full force

### **The Argeo Surface robots**





Near-shore Autonomous robot for survey or Hugin surface link to shore

**Next generation Long Endurance Autonomous robot** 



#### **Mariner Long Endurance – key features**

- Low carbon footprint
- Uninterrupted shore-to-shore operations; up to 30+ days mission duration
- Unsupervised geophysical, hydrographical and AUV survey
- Link and Dock with Hugin and Eelum system
- Multi sensor installation for shallow water survey
- Launch and Recovery from shore or ship of opportunity.
- Containerized shipping and operation



♦ Argeo

## SeaRaptor 6000 meter Autonomous Underwater Vehicle

### The growing Argeo deep water «fleet»



#### Planned project scheduling

Factory Acceptance Test: Q1-2022
Mobilizing for Asia Pacific (AP) DSM: Q1-2022

Building AP Commercial projects: Q3-2021- Q2-2022

Norwegian DSM Campaign tendering: Q3-2022

#### **SR6K–** key features

Length: 5.8 meter

Weight (in air): 1.200 kg

Depth rating: 6000 meters

The AUV is modular and very mobile (air transportable) with supporting systems which can be strategically placed in our Geomarkets for rapid deployment between regions. All data collected will be processed onboard (the AUV) using onboard-postprocessing and mosaicking software to allow quick turnaround during missions and improved decision making for the customer.

#### The AUV will be equipped with the latest:

- Kraken MinSAS 120 Synthetic Aperture Sonar (providing large swath area coverage and high-resolution imagery and bathymetry data collection.
- Teledyne Reason T50-S Multi-Beam dual frequency 200/400 kHz Echo Sounder
- Teledyne Benthos Chirp III Sub Bottom Profiler
- iXblue PHINS 6000 INS
- Teledyne RDI Tasman DVL
- · CathX Hunter Laser & Camera System.

In addition to a whole host of extra environmental sensors, extra batteries and LARS systems

# **Eelume Autonomous Underwater Inspection Drone (UID)**

### **Argeo Light Intervention and Inspection services**

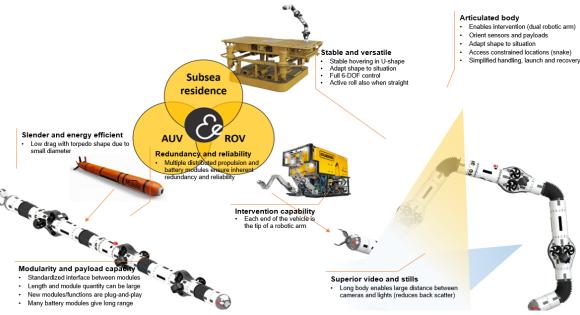


#### **Eelume- key features**

The snake-like robot Eelume is designed to live permanently underwater and carry out tasks that would normally require the use of a remote-controlled robot from the surface.

Eelume's value proposition will disrupt the Subsea IMR and Offshore wind O&M value chain and significantly improve economics and environmental footprint

Features full autonomy operation with long endurance hibernation and remote operations from Argeo's Control centers internationally



# Transforming the ocean surveying and inspection industry

#### **Dedicated survey vessel**



Day rate: High

CO2-emission: High

Data Quality: Low

Productivity: High

#### **Dedicated ROV vessel**



Day rate: High

CO2-emission: Medium

Data Quality: High

Productivity: Low

Traditional players delivering high-cost and time consuming services, applying large vessels and expensive equipment



#### AUV



Day rate: Low

CO2-emission: Low

Data Quality: High

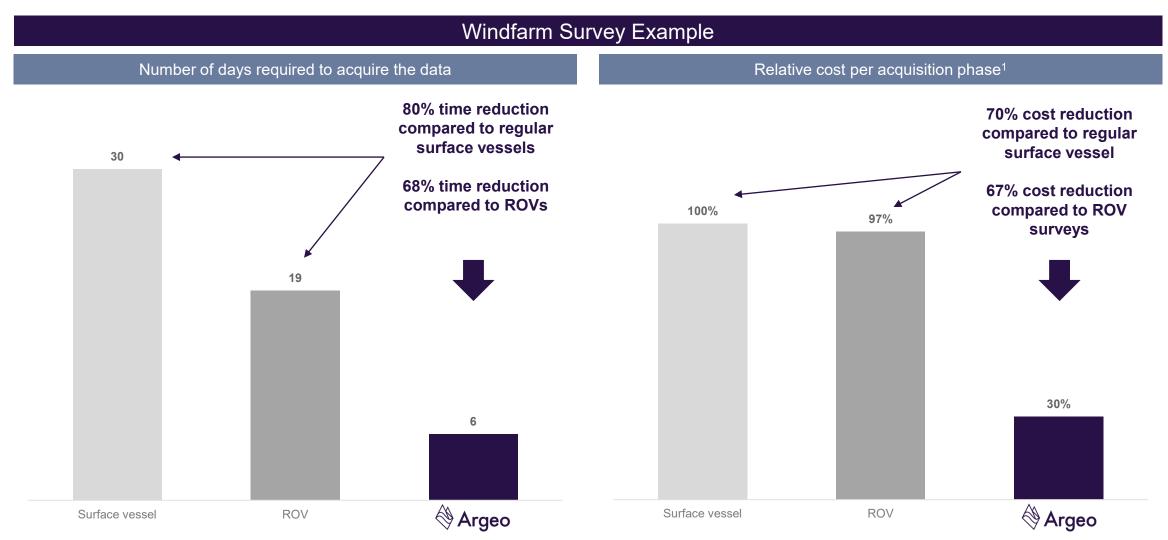
Productivity: High

√ The most efficient data acquisition robots in the world

√ Acquisition speed > 2.5x ROV

Source: Arkwright research, Company

## Game changer for offshore wind developers – significant time and cost savings





Source: Arkwright research Note: 1) Argeo AUV survey vs. ROV survey

# With current technology, operations are dependent on the need for costly surface vessels with limited operational time

ROV inspection value chain:

ROV1) manufacturer

Surface vessel operator

ROV<sup>1)</sup> operator

**Energy operator** 

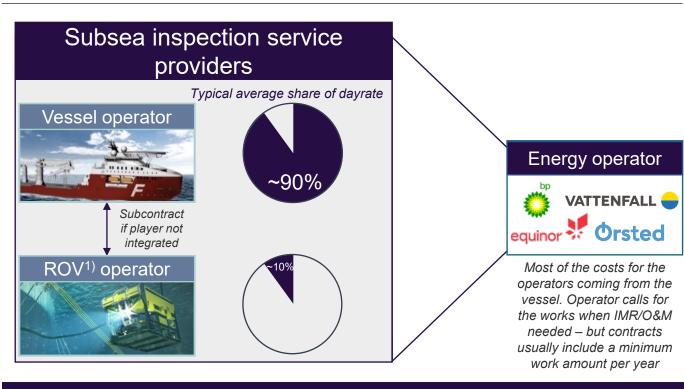
Hardware

Vessel operation & crew

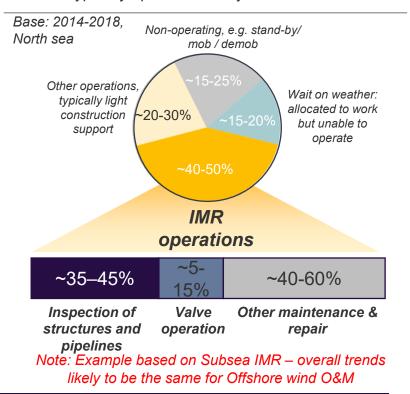
ROV<sup>1)</sup> operation & crew

End-user

Typical contract structure: call-off-based frame agreement; ~90% of costs from the vessel



Vessel typically operational only 60-70% of the time<sup>2)</sup>



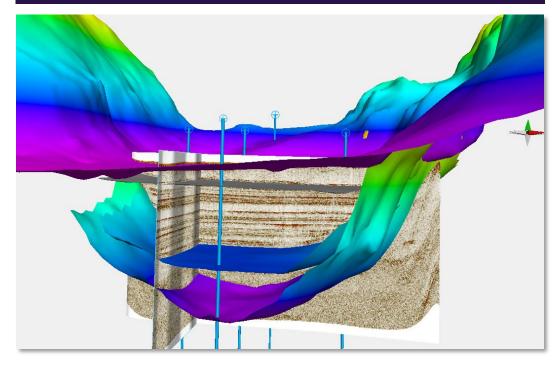
High potential benefit for the end-user by introducing a disruptive technology reducing the need for surface vessels



# **High barriers to entry**

Argeo has already spent three years building a competitive pure-play company with focus on unique technology and its own Digital Ocean-Twin project

An autonomous and digitized ocean solution



## Argeo's competitive advantage

- Asset light and pure-play
- Unique sensor technology
- Digital Ocean-Twin from satellites to seabed
- Proprietary integrated multidata imaging & modelling
- A dedicated team with the right competency

### Barriers to entry

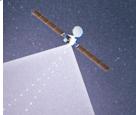
- Access to AUV's and time to build a track record
- Invention, engineering and commercialization of proprietary technology
- Competency to build a digital twin concept
- Establish expertise and develop a 3D digital ML/Al imaging & modelling environment
- Establish a team with the right combination of competency



# **Argeo Digital Ocean Space - SaaS Digital Twin Solution**

Integrated solution supported by Digital Twin technology for data acquisition simulation, project life-cycle activities and results modelling





Satellite services, including positioning, communication, wave/wind/current radar. Used for optical state and imaging services (KSAT) in addition to new and coming remote operations control and communications services, METOCEAN and environmental services.



Autonomous Surface Vehicle (ASV) act as a link between Space satellite positioning and communication services and the Autonomous Underwater Vehicle (AUV) and allows for real-time remote unmanned operations or mobilised onboard other operational vessel not engaged in survey/inspection activities



Autonomous Underwater Vehicle (AUV), in single or in formation (swarm) data acquisition mode are connected to surface via acoustic data link enabling full data throughput for real-time QC. Argeo SD-Tracking for cable or pipeline inspection/verification.



Eelume inspection and light intervention robot in single or swarm mode connected to surface ASV for real-time QC. The system can be remote control from shore or vessel through subsea tether/umbilical if a semi-permanent resident system is needed using Blue Logic interface.



## Value proposition to customers



Fastest and most cost-effective survey solutions

- A significantly more flexible and faster pure-play provider not dependent on the shipping model
- More than 50% time savings and 60% cost reduction compared to traditional ROV survey solutions



Significantly reduced emissions

 Minimized need for vessel infrastructure and up to 60% reduction in CO2 emissions from operations



AUVs provide more effective data acquisition

- Lowers the number of operators and allows for smaller support/"mother" vessels
- Allows for higher speed and more effective data acquisition than by using ROVs



Improved data quality

• AUVs improve the image resolution and data quality by bringing the sensors closer to their targets



# Proof of concept from a highly successful project for Nordlaks Havfarm II

Argeo and Multiconsult responsible for subsea survey and geological modelling for safe anchoring

## **About the project**

Nordlaks Havfarm II is a NOK 2 billion project that aims to improve the environmental fish welfare production conditions

Seafarms will be located in areas that cannot be utilized for farming with current available equipment

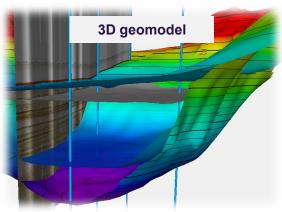
## **Argeo delivery**

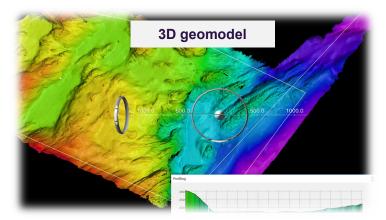
- Full AUV survey
- 1 day mobilization
- 6 days acquisition and demobilization
- 40 km<sup>2</sup> area covered

## **Selected illustrations**











# New Bridge (Mjøsa): Ultra High Resolution Seismic

Yet another hallmark project for Argeo

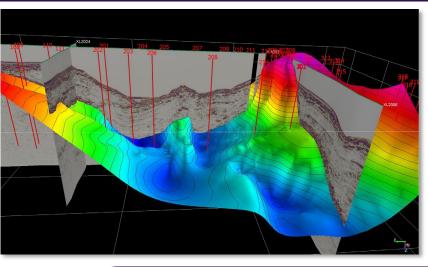
## **About the project**

- NOK 4 billion bridge project crossing Mjøsa lake in eastern Norway
- Significant responsibility given to Argeo by developer, Nye Veier

## **Argeo delivery**

- UHR surface seismic
- Integrated geological modelling and interpretation provided by Nye Veier
- Absolute 3D subsurface GEO-MOD (geo modelling) at construction grade (20-35 cm)

## **Selected illustrations**





Data acquisition in cooperation with Multiconsult

3D subsurface integration modelling as a separate project for Nye Veier

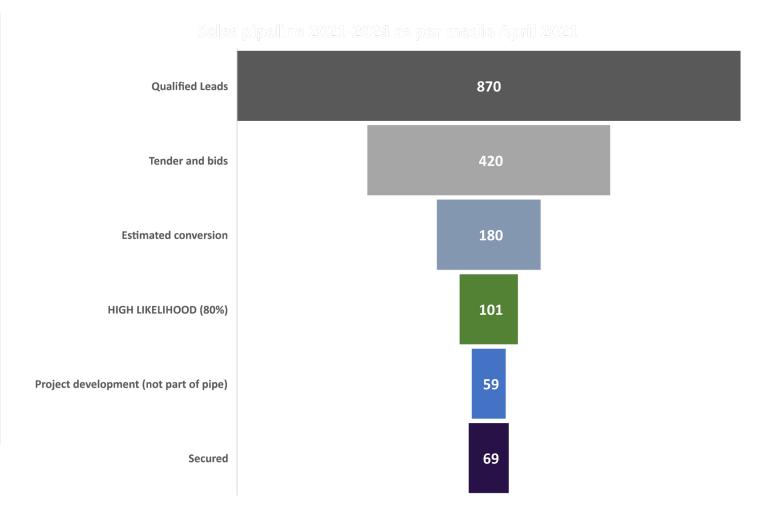
Survey conducted by Argeo to result in significant reduction in construction costs



## Commercialization and ramp up of product sales

### Status commercial project pipeline 2021-2024 (MNOK)

- International expansion
  - Europe Middle East and Africa
  - North & South America
  - Asia Pacific
- Expand commercial and operational team
  - · Opening office in Houston, US
  - · Large recruitment campaign started
  - · Attracting highly talented people
- Marketing focus initiatives 2021
  - Build brand awareness
  - Create a High-Quality pipeline
  - Grow revenue
  - · Expand backlog on contracts worldwide



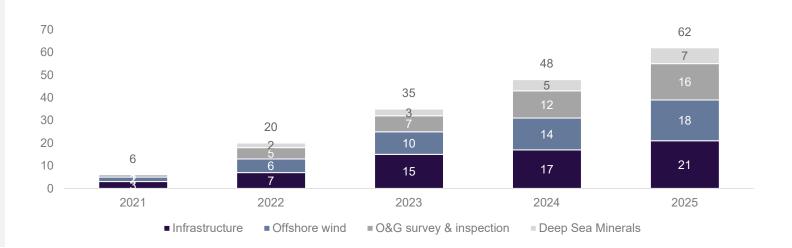


## Step-wise roll-out in key markets

- Use the team's experience from rapid buildup of organizations to build and develop organizational capacity and capability
- Invest in AUVs in order to capture additional market share within each of the company's key segments
- Utilize broad industry network to acquire vehicles in the market at attractive pricing and delivery terms
- Hire additional personnel through a structured process where key candidates are shortlisted and identified
  - Argeo will be able to handle large and growing markets with a relatively small organization

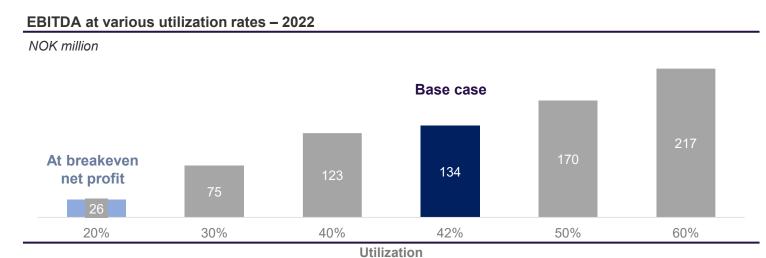


Total number of projects per segment (2021 – 2025)

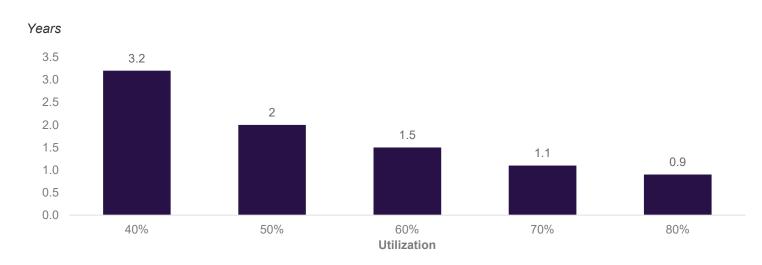


## Robust and profitable case with a low required utilization for breakeven

- Due to the pure-play and light business model, Argeo require a relatively low fleet utilization for operations to be breakeven
- Example from 2022 in business plan (first year of "full operation"):
  - Breakeven on net earnings at 20%
  - Well below the relatively conservative estimate of 42% in business plan
- → Robust business case!



#### Pay-back AUV



# **Summary**



Transforming the market for survey and inspection services with cutting-edge technology and significantly faster, cheaper and better solutions



First mover advantage as a pure-play provider with no legacy



Services contribute to significantly lower fuel consumption and man hours in operations



Attractive financials with strong cash generation