TideTec

Viable tidal power through smarter solutions

Business plan

10 November 2015

TideTec

Viable tidal power through smarter solutions

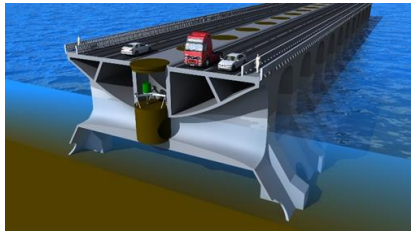
History:

- Founded in 2003 by Per Kollandsrud
- R&D and patent development 2003 - 2013
- Arne Kollandsrud hired as MD in 2013
- 1,9m Euro EU Eurostar project in 2014
- Commercialisation in 2018

What do we do?

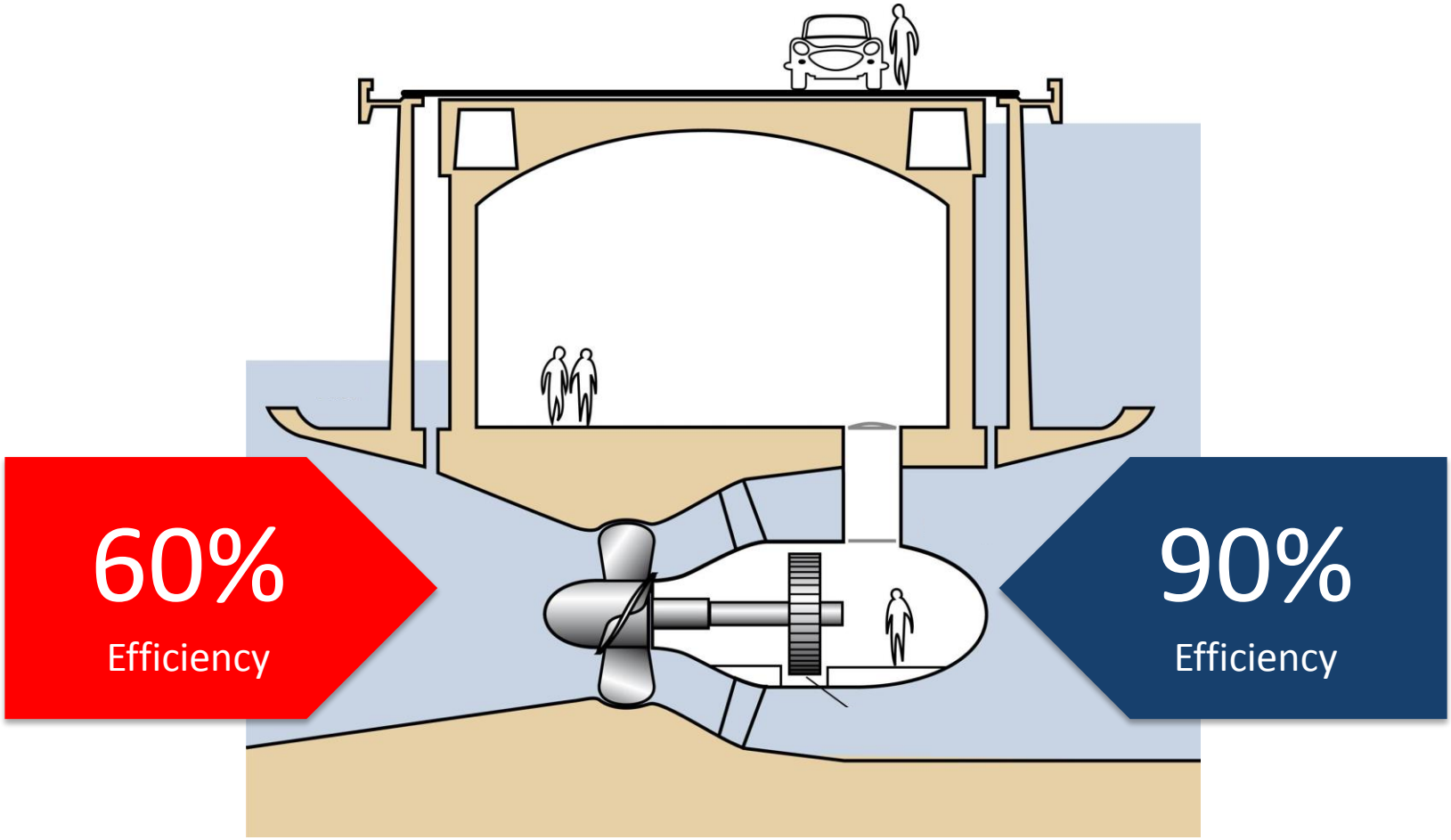
The most efficient tidal turbine technology:

- Optimised two-way operation
- Pumping and storage
- Simpler maintenance
- Integration with infrastructure



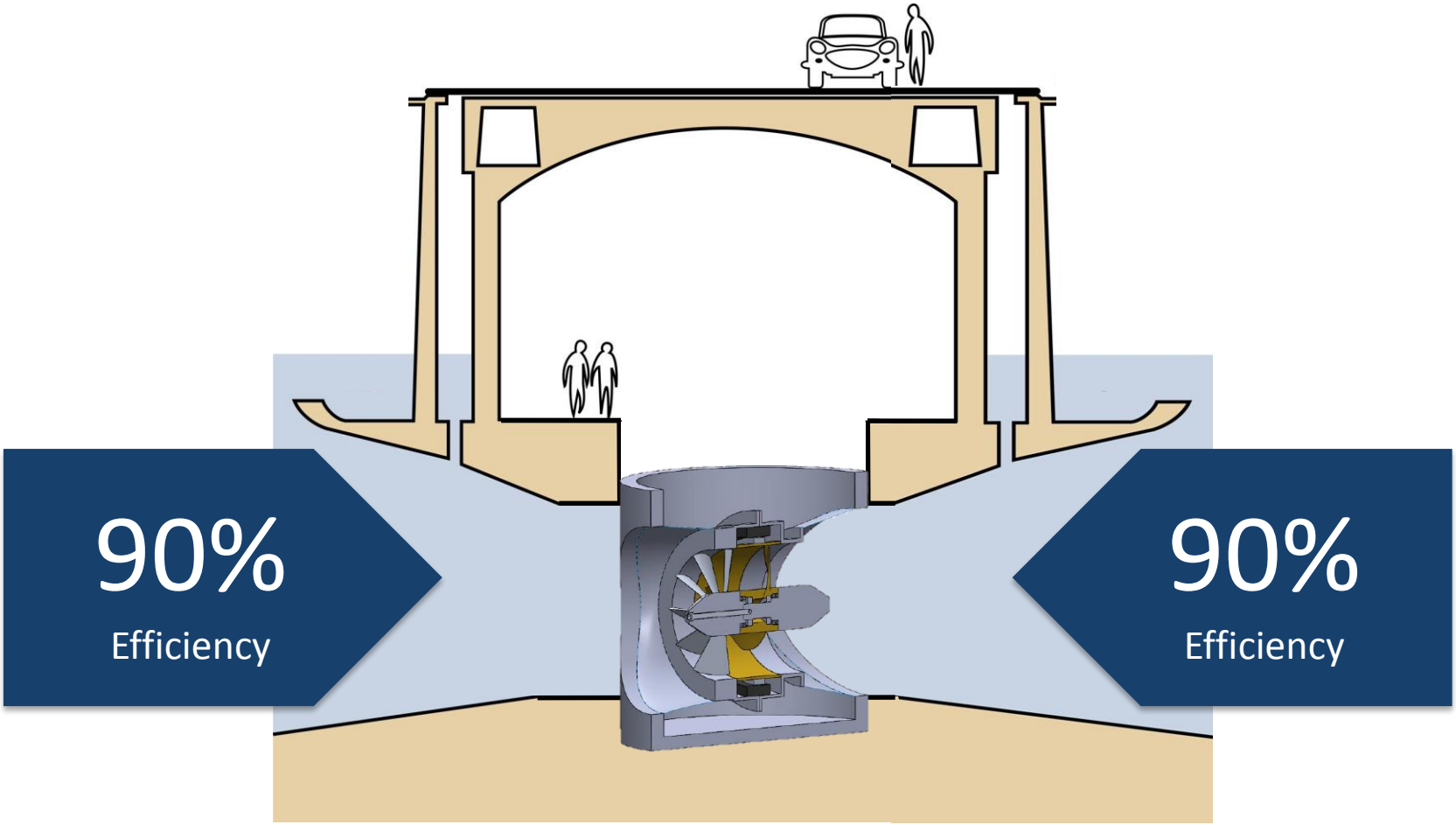
Tidal power plants today produce power one-way. Projected tidal plants with two-way production have sub-optimal production

Conventional Tidal Turbines



TideTec technology improves efficiency of the most cost effective Tidal turbine technology by having optimal efficiency both ways

TideTec turbine technology



The foreseeable turbine market size in UK for tidal turbines is 9 Bn €, while the global potential is 23 bn €

Market

1 Bn €
Projects built

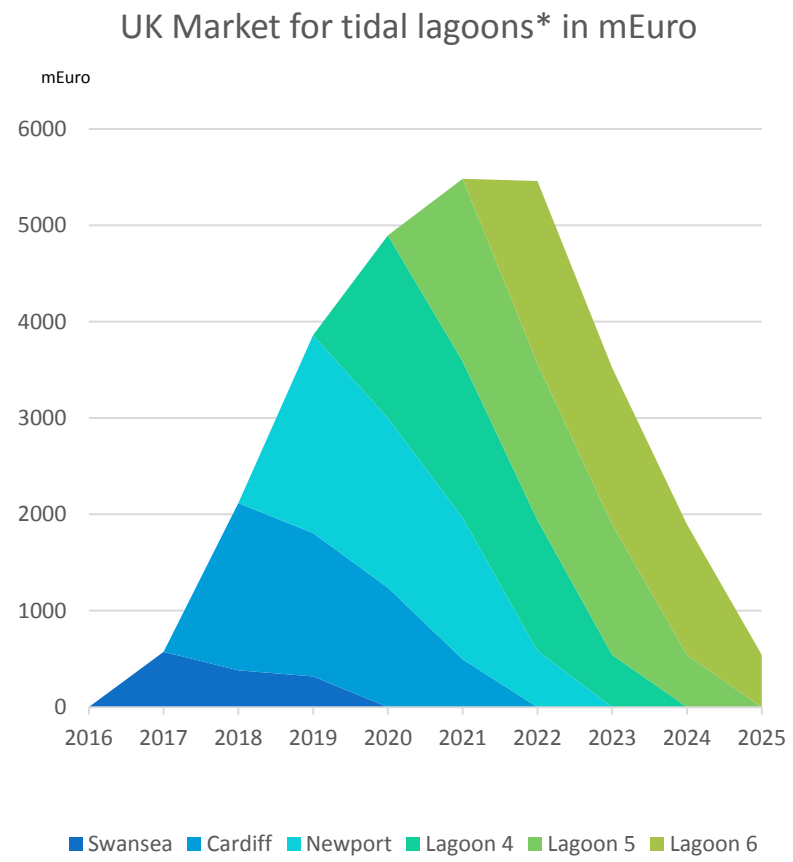
9 Bn €
Projects planned / initiated

23 Bn €
Foreseeable potential within 2020

Market analysis UK

Market for planned tidal lagoons within 2025 is estimated to 28 bn Euro. The turbine value for these projects is estimated to 9bn Euro

Market



*Source: ECON Poyry report:
http://www.tidallagoonpower.com/storage/documents/tidallagoonpower_levelisedcoststudy_v7_0.pdf
Tidal lagoon power (2015)

Market situation Tidal Power UK

- One lagoon in process (Swansea bay). Expected power production start is 2018.
- Two more lagoons are planned initiated in 2017 (Cardiff) and 2018 (Newport)
- There are plans for three more large lagoons in 2019, 2020 and 2021

Market situation Globally

- Expect additional projects globally after Swansea Bay is completed. China, France, Canada and Chile are interesting locations.

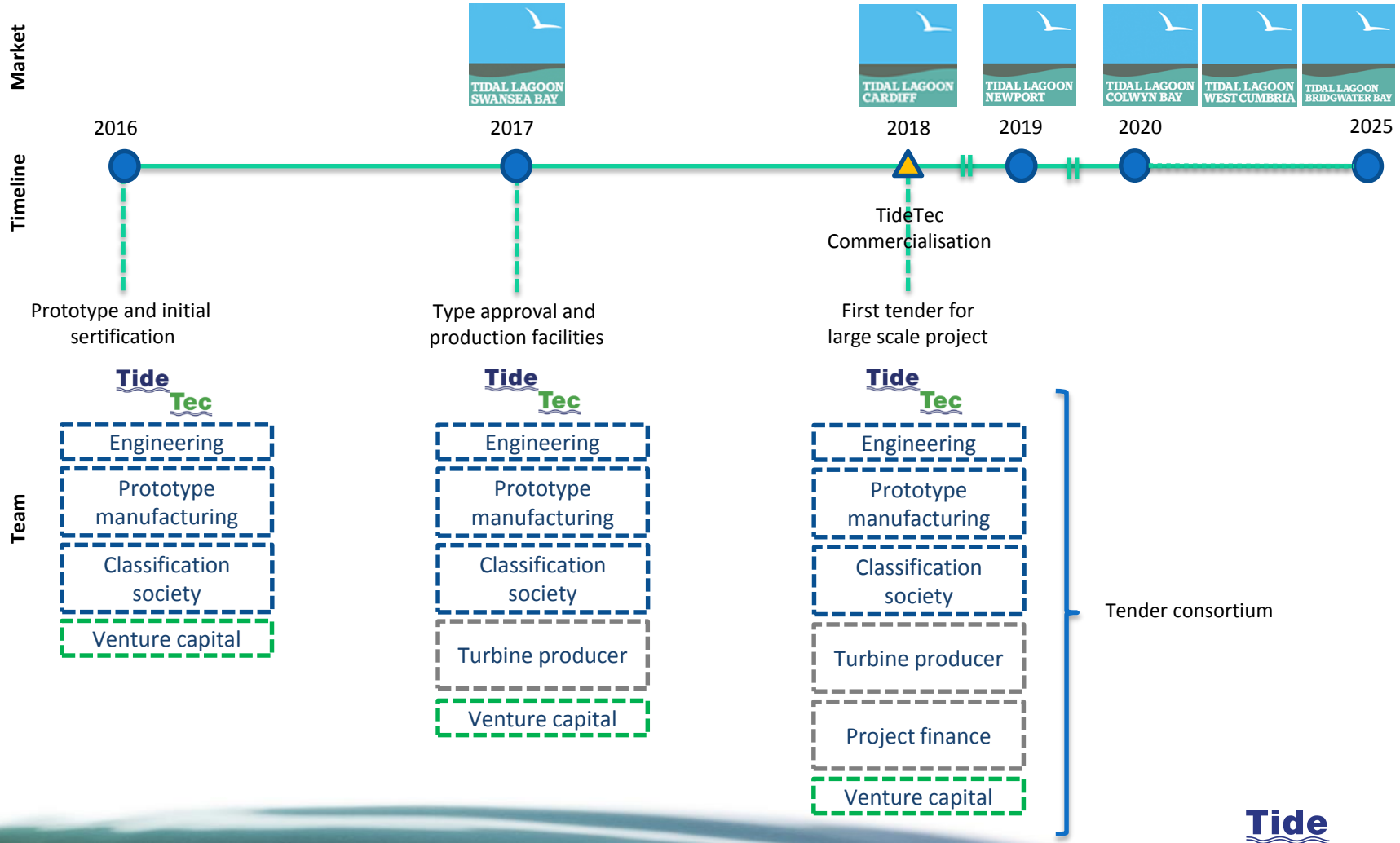
Turbine Market

- Turbine cost is expected to be 1/3 of the total value of this market (9bn Euro)

Confidential

Timeline for TideTec team, business development and market

Business model



TideTec business model is based on being the technology and IP provider to the production entity of turbines (licencing)

Model 2: Licencing technology to turbine suppliers

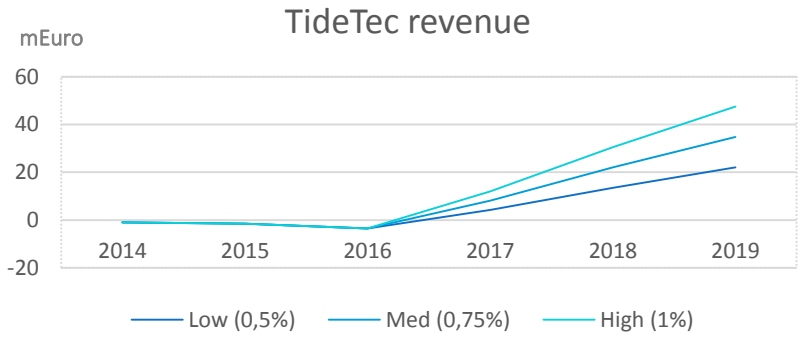
What do you need to believe in?

Consortium technology licencing turbine producers

- TideTec teams up with class society and engineering competence. Turbine providers are encouraged to use TideTec technology with a licencing cost of 0,5-1% if technology is applied.
- Value of the three forthcoming tidal turbine tenders:
  - 2017/18: 1500 mEuro
  - 2018/19: 1800 mEuro
  - 2019/20: 1700 mEuro
- The 0,5-1% licencing fee is split between consortium partners

Requirements

- Tidal lagoons are being built in UK or somewhere where the turbine suppliers we are close to (Voith, Alstom, Andritz) are able to tender
- "Not invented here" syndrome is overcome
- Proof of technology shows enough potential to overcome inherent disbelief in new technology from the hydro turbine suppliers
- Classification society gives "go-ahead"
- Tender is won with TideTec technology



Main challenges and competitors

- Few, but large projects
- Few, but strong competitors with traditional technology

- … but no one can compete with TideTec efficiency numbers, by far
- … so we regard them as potential customers/partners

TideTec Team

Core team:

Arne Kollandsrud,
Managing Director and Owner

Innovator
Realising the TideTec dream

Joachim Amland - M.Sc
Technical Director and Owner

Business development
5 yr Mgmt Consultant (EY and DNVGL)

Sai Win - M.Sc
Engineer

Engineering
15 yr rocket scientist

Current partners:

TECHNISCHE UNIVERSITÄT MÜNCHEN

MAREVAL Hamburg

METROTIDAL

Tide Tec

Financial plan

Emission strategy

What do we need?	What do we need it for?
0,7m Euro — 2015: Emission 1	First functional model Initial certification process Initial consortium building
2,5 m Euro — 2017: Emission 2	Scaling up model to full prototype Engineering Type approval of technology Building the consortium for tendering
Exit: 25 - 200 mEuro — Exit	

Thank you for your attention!

Contact

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www.tidetec.no