Nanocoating – A single solution for corrosion, fouling and friction in fluid filtration and flow systems
Problem:
Corrosion, fouling and friction in screen filters, pipes, valves and other articles made from steel and alloys

- Higher grade steel expensive and still prone to fouling/clogging
- No technology for applying coating to screen filters and long pipes

- Problems that need to be avoided in the multi-billion dollar industries in which they occur
Solution:
A one-step, patent pending plasma process that applies nanotreatment to 3D and porous objects
- Process design gone through two independent validation steps

✓ Excellent corrosion protection guaranteed, ≥ 40 x improvement (CASS test, ISO 9227)
✓ Vast reduction in fouling demonstrated ≥ 5 x improvement (Test with BP @ Ula field)

Guaranteed: ❖ Improved operational efficiency ❖ Significant savings in maintenance cost
Analyses leaning towards filtration due to our experience in water treatment technologies and also due to the fact that we elicited interests from two screen filter manufacturers – one, based in Hong Kong, is already willing to adopt the technology.

- $34 billion filtration market
- Screen filter up to 50% of this
- Screen filters exclusively used in ballast systems – due to their advantages over other types of filters
- Other water treatment markets not shown, overall market worth $674 billion by 2025
- Plus other fluid filtration (e.g. oil filtration)
- Additional hundreds of million $ in coated pipe business
Business Model

- Sell or lease coating equipment to manufacturer
- Additional fee per coated unit or per year
- Interests from screen manufacturers in Hong Kong and EU with worldwide sales

**Cost of making 7,500 filters**

- Hong Kong manufacturer very keen, to expand to 15,000 filters/year
- With 50% of these coated, they save **at least $46.5 million/year** (vs 254 SMO, see green highlight in the graph)
- Hong Kong Manufacturer only a minor player among dozens
- InNano expects a revenue of **at least $15 million/year** from screen filter business alone by 2023 (with 3 customers)
- Plus additional revenue from businesses in coating pipes and others

- Note: 254 SMO is still prone to bio and crevice corrosion, and together with alloy c-22, subject to fouling
- Cost of Nanocoated 316 worst case scenario, normal estimate $37 million
Potential for More Value

- Nanotreatment will have same effect on lower grade stainless steel, leading to further savings; e.g. extra savings of $8 million for 7500 Nanocoated 304 steel filters, vs 254 SMO ($55 mil in total)
- Potential to use carbon or mild steel, leading to extra savings of $29.5 million ($76 mil in total)
- InNano’s revenue will increase with use of steel grade lower than 316 l
- Process technology (plasma) gentle on plastics; plastic pipes and filters can be nanotreated for enhanced flow and reduce fouling/clogging
- Plasma technology is a powerful enabling tool for manufacturing
What We Need

Investors

- Require **NOK 3.8 million** to build and optimise process parameters for a production unit for 750 to 1500 screen filters/year - expected minimum revenue of **NOK 3.5 million/ year** for InNano - looking to raise at least **1 million kr** in order to be able to apply to Innovasjon norge

- Overall construction and installation cost for plant capable of 7500 filters/year **NOK 12 million** – 8 month delivery period promised by Engineering contractor.

- Return on investment expected within two years of operation

- We aim to have a plant operational by last quarter of 2019 to take advantage of an impeding boom in ballast water management installations

Partners

- To explore markets for fouling, drag and maintenance reduction in coated pipes and valves
The Team

Kingsley Iwu, Project Manager
PhD Materials Science. Led the conceptual design of the patent pending technology. More than 8 years experience in materials and nano technologies

Aage Bjørn Andersen, CEO
M.Sc. Naval Architect, serial entrepreneur. Vast experience from technology development, industrialisation and commercialisation