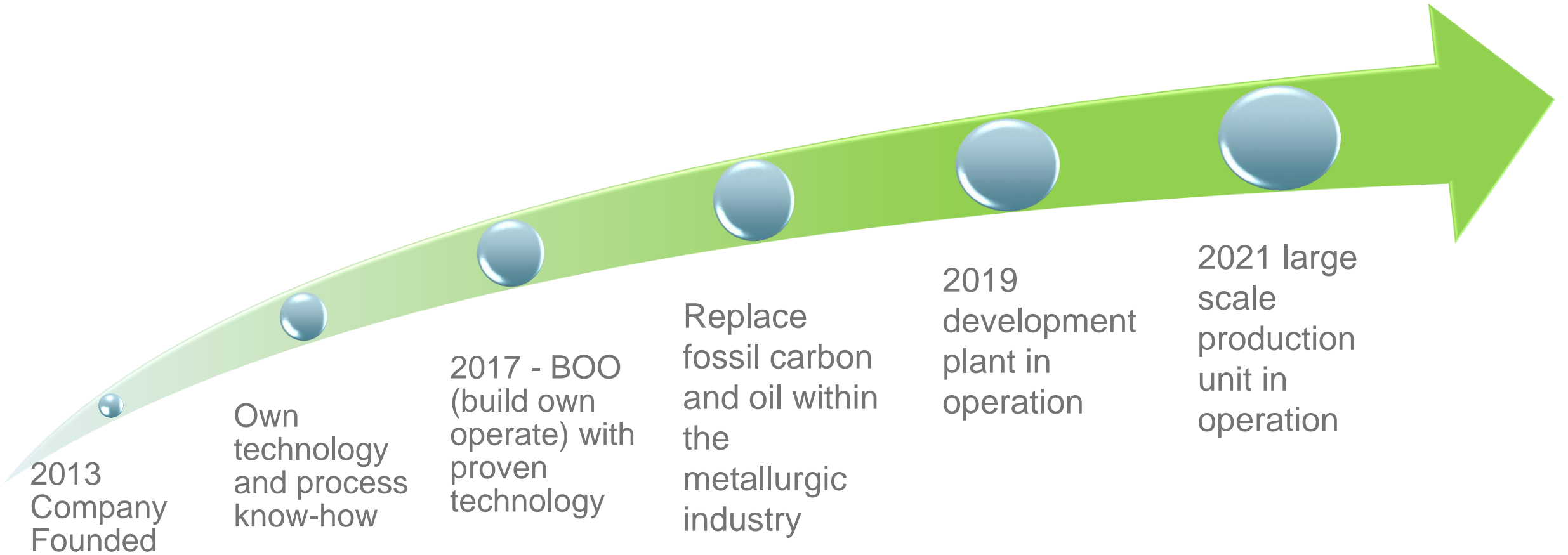


envigas

Fights global warming

Short history



Business strategy

- Mitigate climate change
- Feedstock - > forest waste
- Sales-focus primarily targeting metallurgic industry in the Nordic region and Europe
- First large scale producer of biocarbon/biocoke, biooil and syngas in the Nordic region
- Aggressive product-, process- and R&D- strategy – makes leading edge
- Direct sales in combination with indirect sales through selected partners
- TAM (total addressable market) >1,5 Mton/year

envigas

TÄNK FRAMÅT. TÄNK GRÖNKOL.



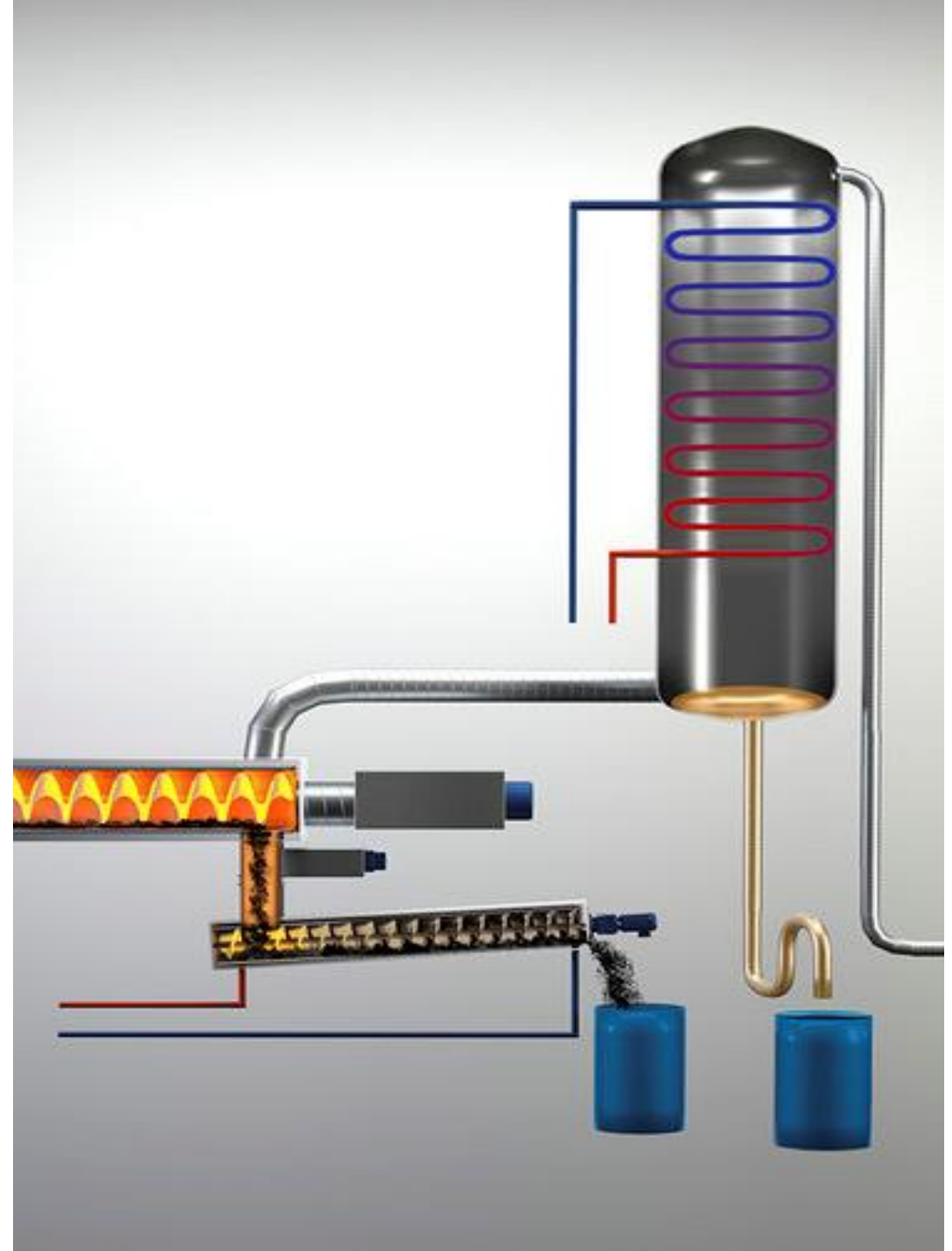
Över en natt kan du sänka utsläppen av fossil koldioxid från din stålproduktion, genom att ersätta 10-30 % av det fossila kolet med svenskproducerad biokol. Detta bygger bl a på vårt samarbete med Envigas som omvandlar sågspån, flis, bark och andra restprodukter från skogs- och träindustrin till ett högvärdigt biokol, redo att ingå i våra kundunika kolprodukter eller restproduktbriketter. Prata med våra utvecklare och låt oss testa fram ditt nya biokolalternativ.
carbomax.se

 **Carbomax**
Designing Raw Materials.

Proven Technology

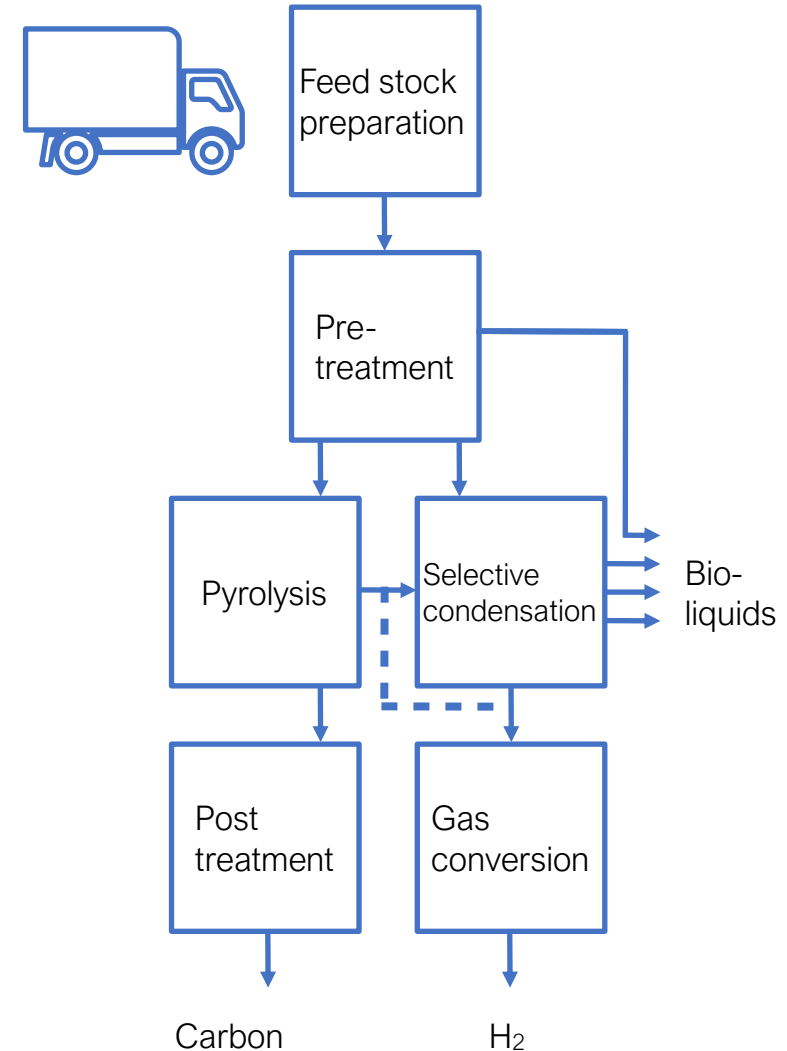
- Dry biomass is heated to $< 600\text{ }^{\circ}\text{C}$ in an inert atmosphere during $< 12\text{ min}$ to evaporate all volatiles.
- Output products: Biocarbon (carbon and ash), biooil, syngas and derivatives thereof
- Mass balance is $\sim 30\%$ carbon, $\sim 12\text{-}13\%$ oil and syngas
- Active IPR strategy and process development

envigas



Process schematics

- Preparation
- Pre-treatment to dry and size of material
- Pyrolysis
- Condensation
- Auto-thermal catalytic steam reforming to H₂
- Post-processing; densification, extruding, pelletisation, bricketing
- SCADA, management, quality and traceability system (follow CO₂ footprint)



Raw material

- Softwood residuals (saw dust, chips and wood shavings) from saw mills, or wooden pellets
- 4 M m³/a in Sweden, 2,5 M in Finland and 0,7 M (1 M) in Norway.
- Fiber sludge to be tested



Market

- Extensive demand from metallurgic industry for biocarbon (> 1,5 Mton/a in Sweden)
- Other applications; carbon-black, filtering, cement industry, soil amendment
- Huge environmental impact, 1 kg C → 3,67 kg CO₂
- Pyrolysis oil can replace fossil oil as heating oil, blended in refineries, or as binder



Growing operation

- Testbed in operation since January 2019
- Shipments to potential customers of BioCarbon and BioCoke for test purposes
- Large scale production plant with a capacity of 5.000 tonne/a C in operation 2021
- Upgraded capacity to 10 000 ton/a C by 2022
- Several other plants in the planning

