

LignoBoost installations

Domtar, Plymouth, USA
Start: Q1 2013



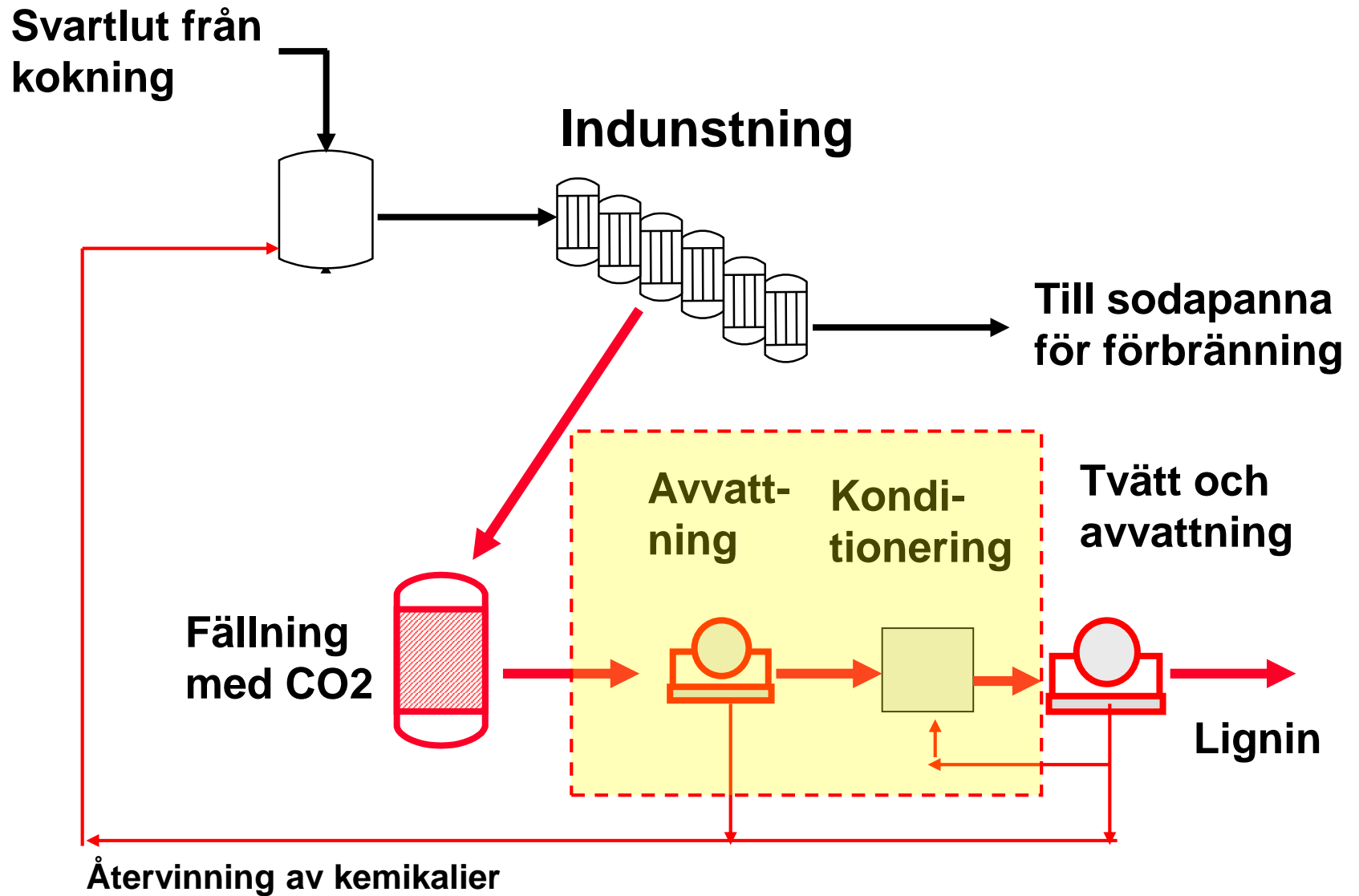
Pulp capacity: 466 000 t/y
Lignin capacity: 25 000 t/y (54 kg/ADt)

Stora Enso, Sunila, Finland
Start: Q1 2015



Pulp capacity: 370 000 t/y
Lignin capacity: 50 000 t/y (135 kg/ADt)

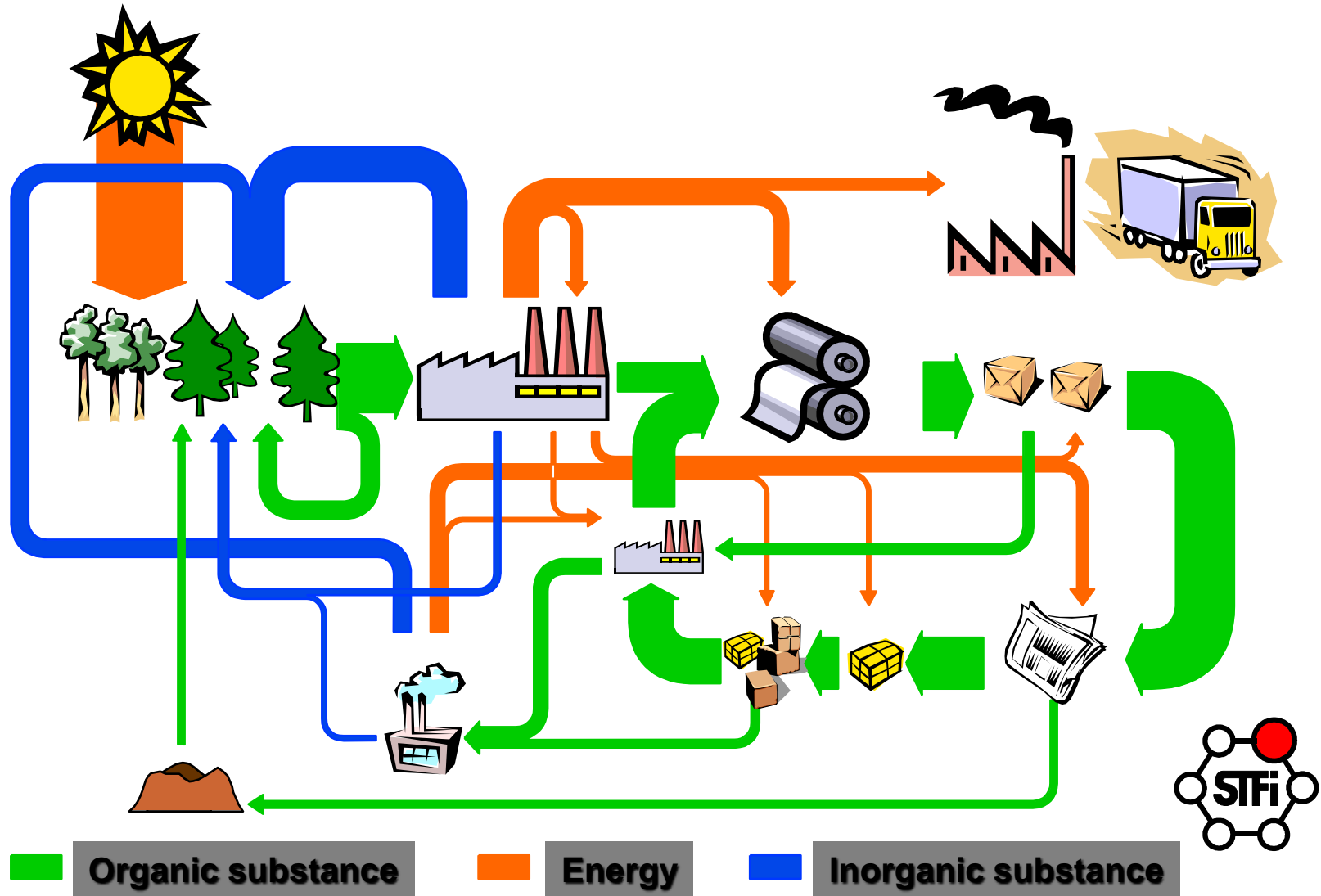
Ligninuttag med LignoBoost



Första leveransen till Fortum mars 2007

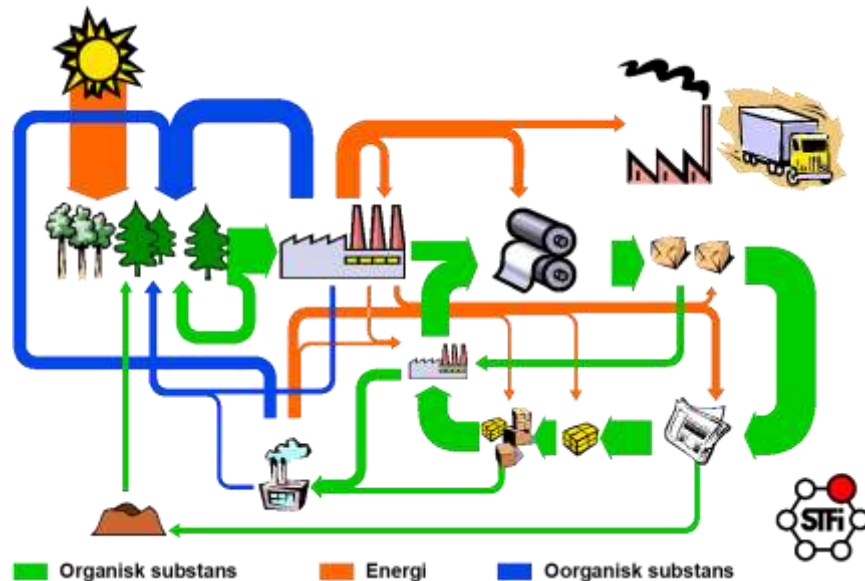


Kretsloppsvisjon 1992



Kretsloppsanpassad massafabrik (KAM)

- MISTRAS första program
- Period 1, 1996 - 1999
- Period 2, 2000 - 2002
- Total budget 115 MSEK



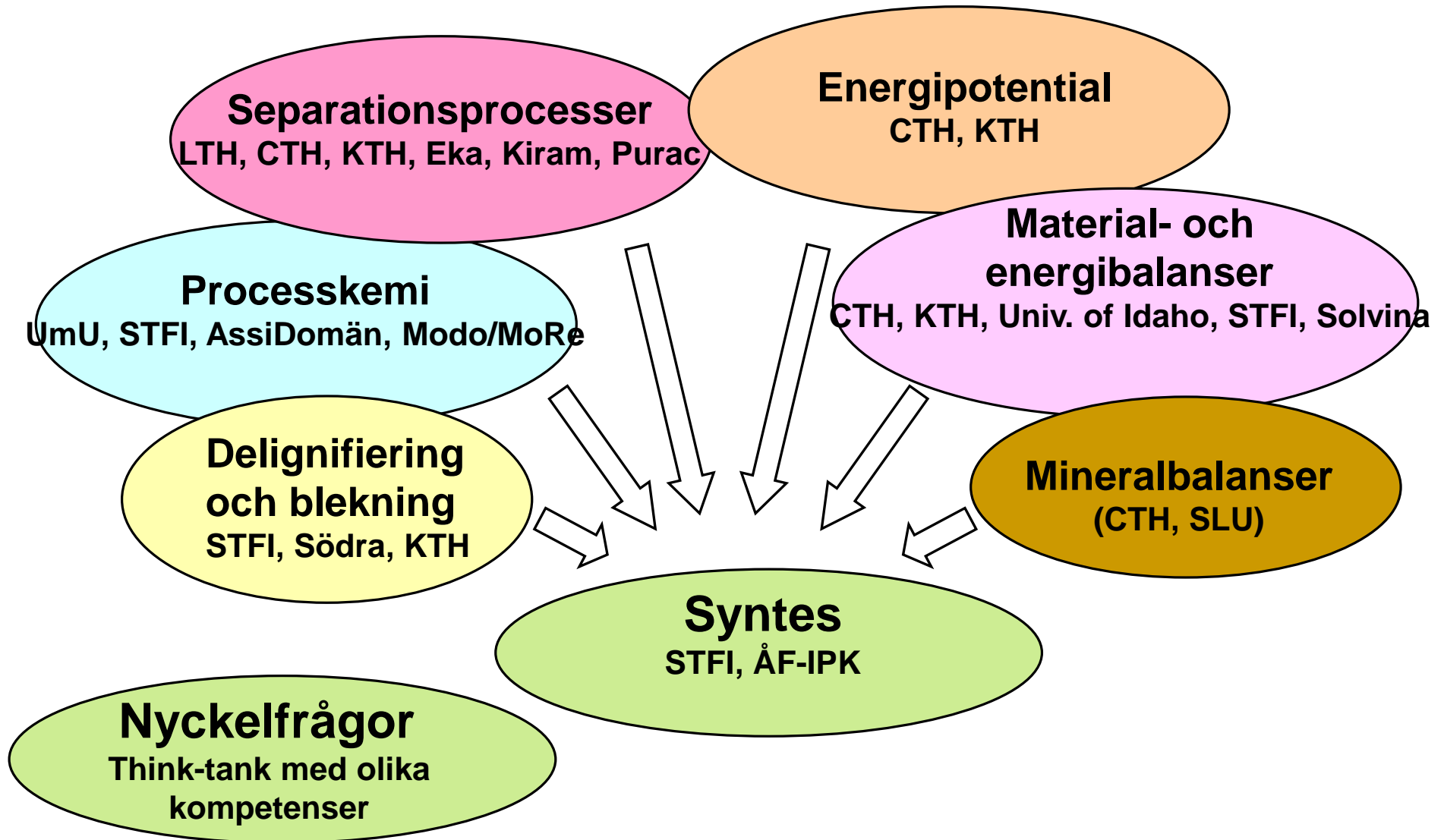
Företag

Södra
MoDo Paper/MoRe
AssiDomän
Eka Chemicals
StoraEnso
Purac
Solvina
ÅF-IPK
Nykomb Synergetics
Kiram
Korsnäs

Lärosäten och institut

LTH, Chalmers, KTH,
UU, SLU, MiUn, LuTU, STFI

Arbetsätt i KAM



Förmedling av resultat

KAM och FRAM

- **Sammanfattande slutrapport**
- **Över 200 publikationer och rapporter**
- **Ca 100 föredrag, exjobb, posters**
- **Lic/dr avhandlingar**
- **Årliga infodagar**

The LignoBoost story in short

- **1996** **Idea formulated**
- **1999** **Lab work starts at Chalmers**
- **2001** **Promising results at Chalmers**
- **2003** **Successful small pilot scale trials**
- **2004** **Industrial pilot scale trials and patent applications**
- **2006** **Innventia acquires kraft lignin plant from Lignotech**
- **2006/07** **Start-up of LignoBoost demo plant**
- **2007/08** **Over 5.000 lignin produced**
- **2008** **Technology sold to Valmet**
- **2008-** **Close collaboration Valmet – RISE/Innventia**
- **2013** **1st industrial plant in operation (Domtar)**
- **2015** **2nd industrial plant in operation (Stora Enso)**

Klabin's board approves construction of pilot plants for MFC and lignin; to target innovation

SAO PAULO, Sept. 18, 2018

Latin America) - Brazilian largest packaging paper producer Klabin announced Sept. 12 that the company's board has approved the construction of two pilot plants in its Telêmaco Borba mill, Paraná state, focusing on the development of microfibrillated cellulose (MFC) and lignin technologies.

"Our new R&D investment cycle will comprise a Real 32 million [\$7.6 million] investment, with a pilot plant park of 500 m² expected to kick off in the fourth quarter of 2019," the company's industrial director, Francisco Razzolini, said.

It is a project lignin where will be produced for commercial purposes, enabling the company to enter new markets for renewable and sustainable products. Klabin, because of its diversified wood base, has lignin from pine, eucalyptus and the mixing of both species, providing unique products to the market.