

Thermoacoustic heat pump for Distillation

Testing of alternative industrial type of driver



Project: ALTADIS
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Budget indication: 0.5 MEuro
Duration: 2012-2013 (fast track)

Objective

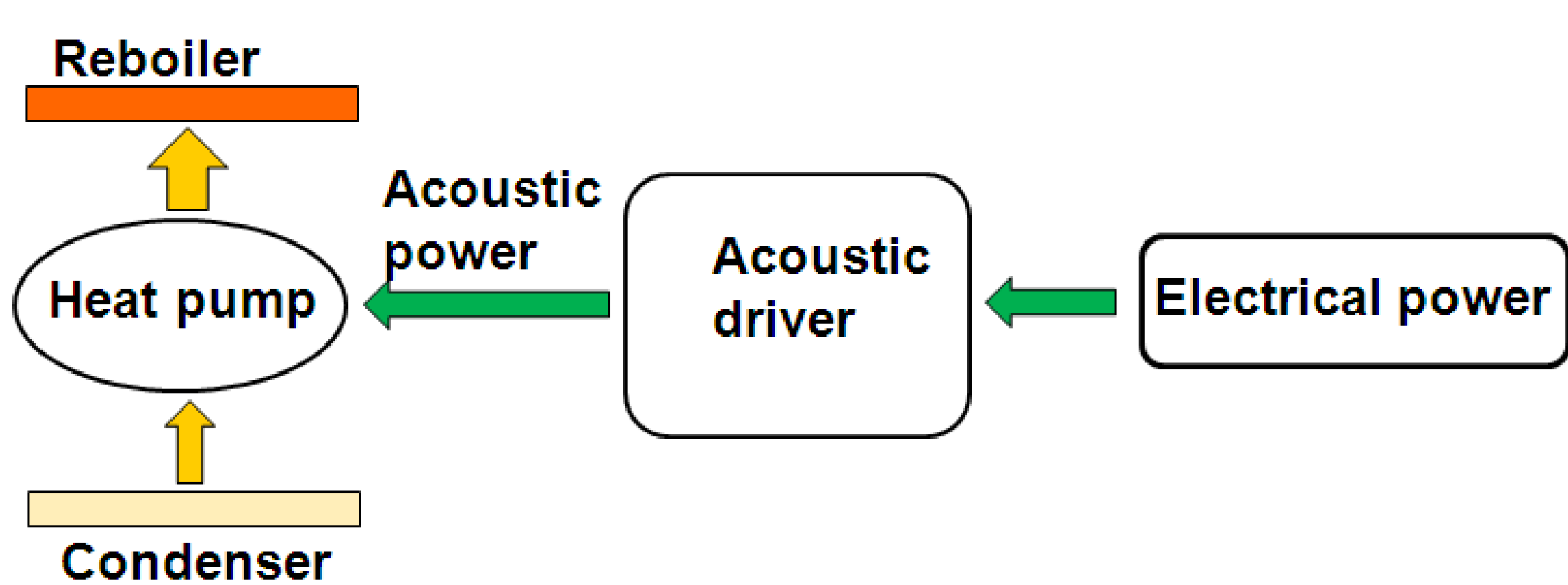
Testing of alternative driver (industrial type) for a electrically driven thermo acoustic heat pump (TAHP) for distillation (AITADis).

Motivation

- Primary energy savings of 45% resulting in total savings of 20 PJ for distillation in the Netherlands.
- Further scale-up of heat pump requires testing of industrial type of driver.

Principle TA heat pump

- Heat from the condenser is pumped to the reboiler.
- Reboiler duty is saved.

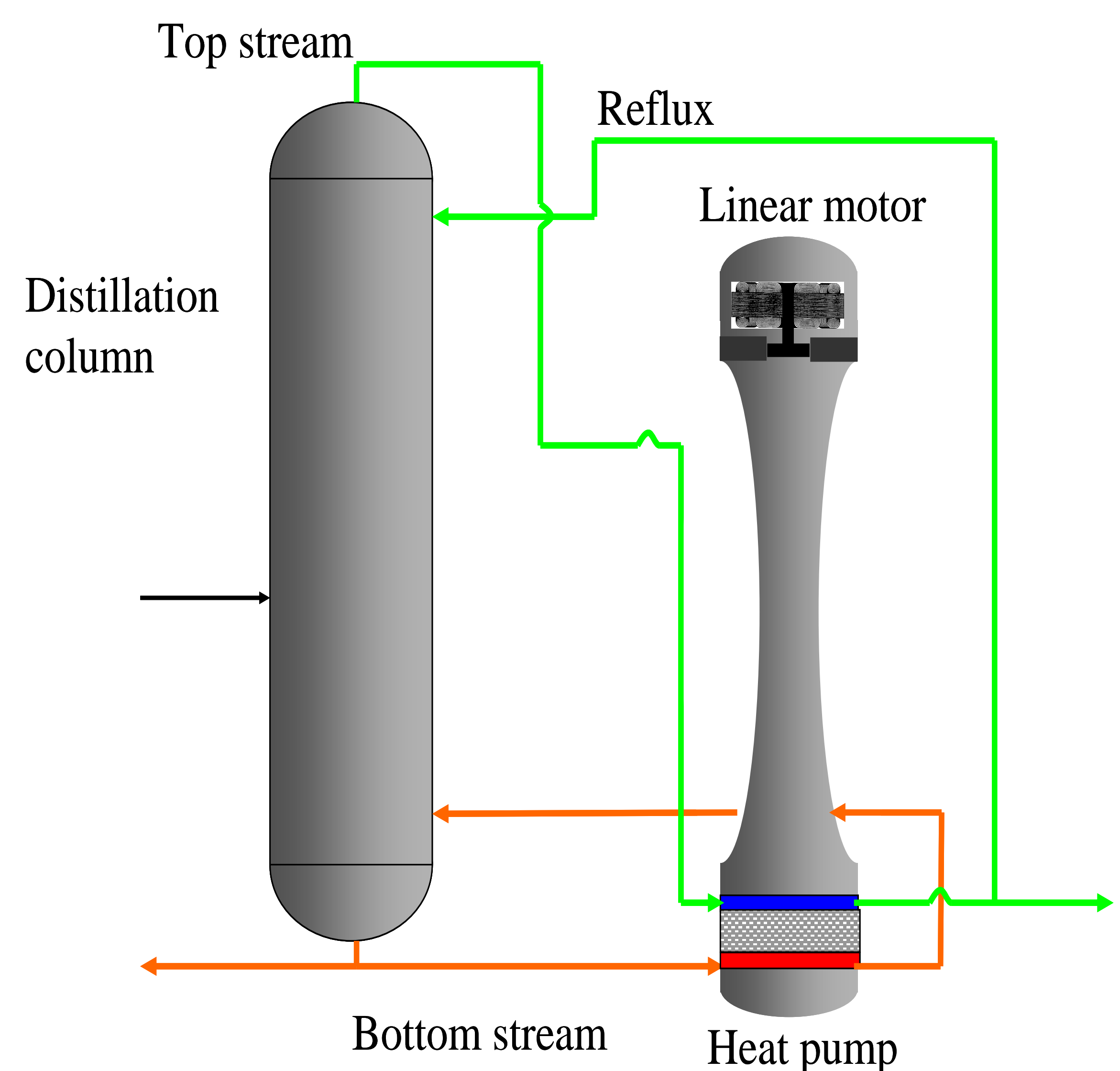


Project scope:

- Feasibility piston compressor with electrical driven rotary motor (lab. scale testing).
- Onsite demo of bench scale TA HP.

Applicability

- Add-on to existing distillation columns up to 1-5 MW reboiler thermal duty.
- Temperature difference condenser/reboiler up to 70-100 degrees.



Status

Development

- 10 kW bench scale thermo acoustic design finished (BC-00-02)
- Mechanical design in progress by Bronswerk b.v.
- Testing bench scale Q1 2012

AITADis is Bridge to pilot test

AITADis bridges running project BC-00-02 and follow-up project (pilot scale).

| ISPT program | < 2011 | 2011 | 2012 | 2013 | 2014 |
|--------------|---------------------------------|------------------|----------------------------------|--------------------------------------|------|
| Second phase | | Laboratory tests | | Pilot scale TAHP (piston compressor) | |
| Fast track | | | Bench scale TAHP (piston compr.) | | |
| First phase | Bench scale TAHP (Linear motor) | BC-00-002 | | Onsite tests | |

AITADis

ISPT Fast track program accelerates development of the TA HP.