The Capstone microturbine in a thermophil anaerobic digestion process

6th annual microturbine application workshop

San Francisco, January 18th 2006

Content

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the company

- founded 2001
- Offices in Bruxelles, Belgium and Aarau, Switzerland
- Total 10 full time employees
  4 freelancers
- Key markets:
  - Belgium
  - Switzerland
  - Austria
  - Spain
  - Germany

our projects: microturbine project list

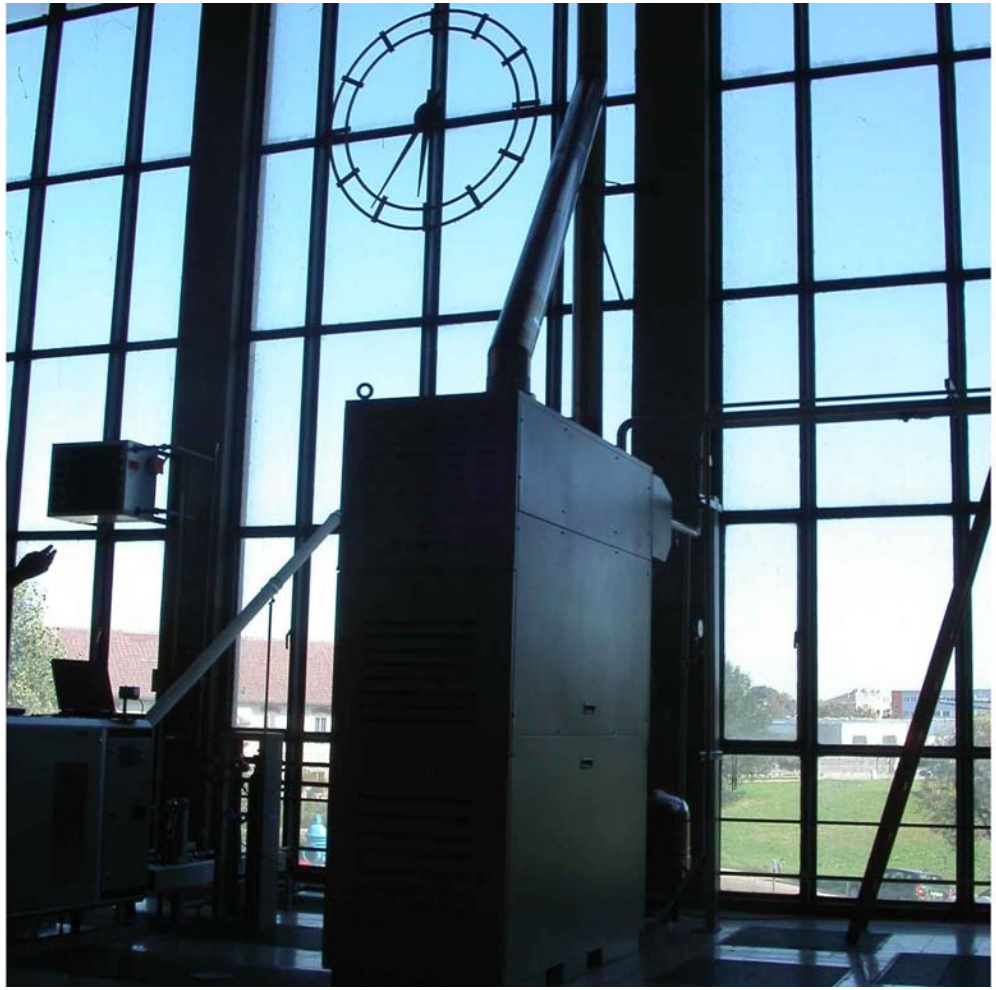
Name	Country	Fuel	Configuration	Commissioned
Frick	Switzerland	Sewage	1 x C30, Co-generation	2002
Spresiano	Italy	Landfill	1 x C30, Co-generation	2003
Reunion	France	Landfill	1 x C30	Feb 04
Marche en Famenne	Belgium	Sewage	1 x C30, Co-generation	Jun 04
Wels	Austria	Natural gas	1 x C60 CHP	Sep 04
Uttewil	Switzerland	Biogas	2 x C30, Co-geneartion	Nov 04
Biodrive	Switzerland	Diesel	1 x C30	Nov 04
Otelfingen	Switzerland	Biogas	1 x C30	Dez 04
Des Ignes	Belgium	Landfill	2 x C30	Jan 05
Morgental	Switzerland	Sewage	2 x C30, Co-geneartion	Mai 05
Rheinbischofsheim	Germany	Natural gas	1 x C30	Sep 05
Bad Goisern	Austria	Sewage	2 x C30, Co-geneartion	Sep 05
Bachen-Bülach	Switzerland	Biogas	1 x C30	Okt 05
Hannover	Germany	Natural gas	1 x C60 CHP	Dez 05
Leoben	Austria	Sewage	1 x C30, Co-generation	Dez 05
Ebelsberg	Austria	Natural gas	1 x C30, Co-generation	Feb 06
Osona	Spain	Landfill	1 x C30, extensible to 2 x C30	Feb 06
Cerdanya	Spain	Landfill	2 x C30, extensible to 2 x C30	Feb 06
Eichelbuck	Germany	Landfill	2 x C65	Apr 06
Femgas Linz	Austria	Natural gas	1 x C30, Co-generation	Apr 06
Obersee	Switzerland	Sewage	1 x C30, extensible to 2 x C30	Apr 06
Primagaz	Spain	Propane	1 x C30	Apr 06

our projects: WWTP of Frick

our projects: biogas site Switzerland

our projects: WWTP in Austria

our projects: C60 CHP in Austria



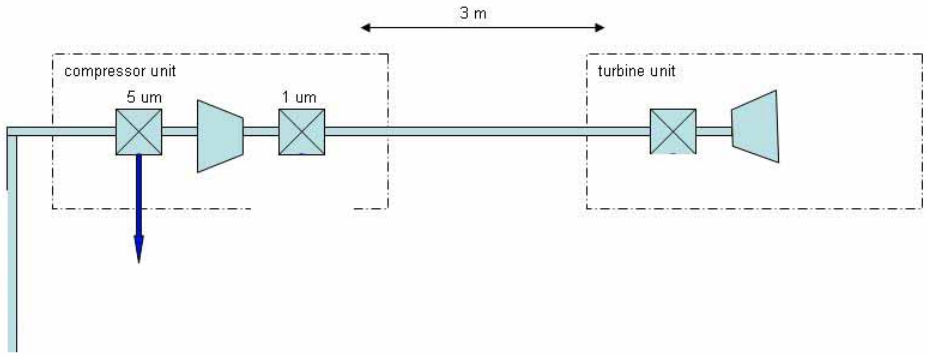
gas compressing unit for C60 CHP in Germany

gas compressing and treatment unit for two C30 in Austria

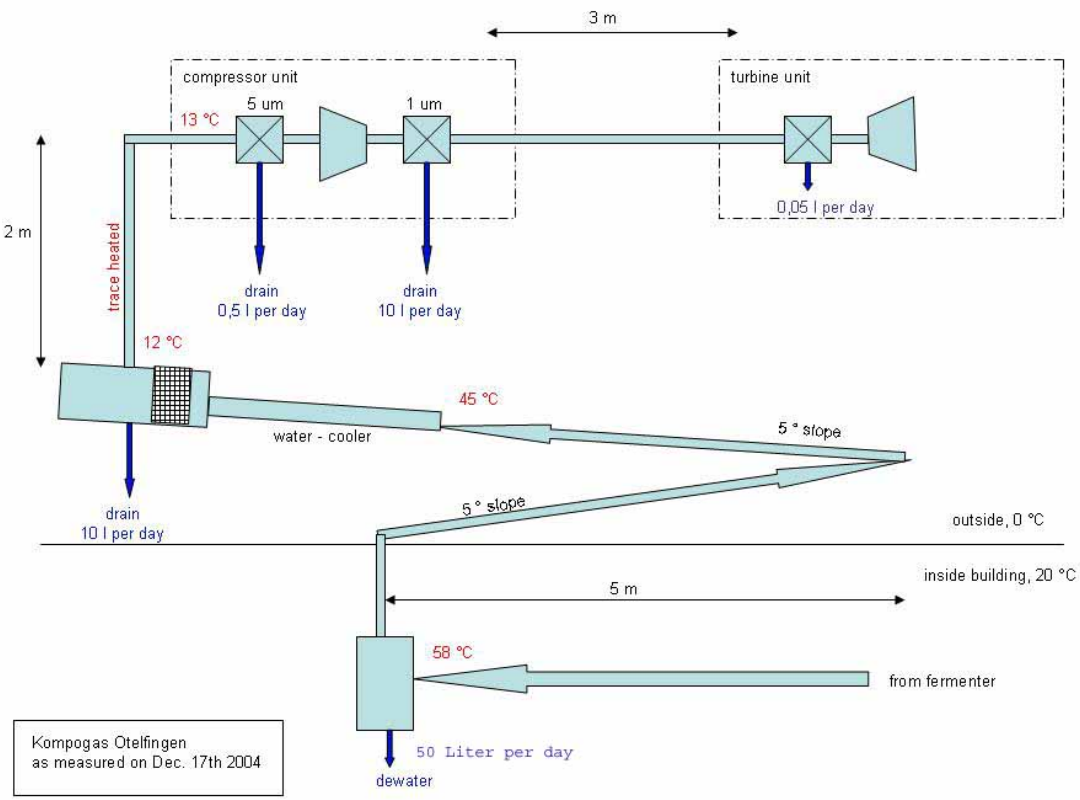
gas compressing and treatment unit for two C30 in Austria

The Otelfingen experience

how we started …



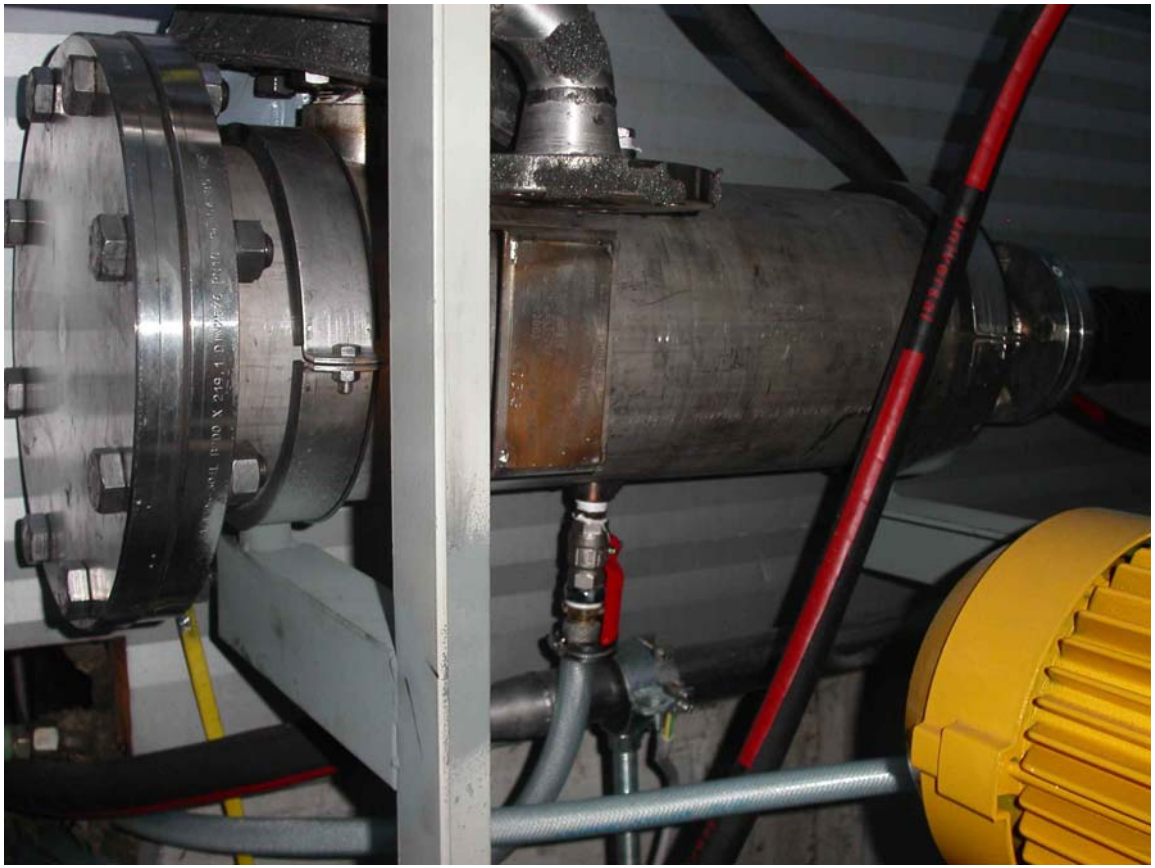
the final design …



The Otelfingen experience: … during the tests

The Otelfingen experience: three drains

The Otelfingen experience: dewater drum



Lessons learnt

- Multiple de-watering required
- Design for handling large volume of water needed
- Gas inlet temperature control needed (compressor)
- High H2S peaks to be observed

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