# Experience in Heat Pumps

Presented by:

Stan Johnston

**en***consult*

The Signature Building, Pitreavie Court

Dunfermline, Fife, KY11 8UU

t: 01383 741133

stanj@enconsult.co.uk

September 2008

# Background

- Enconsult formed in 1993 with specific intent of bringing low energy and renewable technologies into Scotland
- First CHP into residential project in Scotland
- First minewater heat pump community heating scheme in Scotland
- Pioneers of solar ventilation systems
- Experience in solar, hydro, wind, biomass, biogas, etc.

# Glenalmond Street Project

- 18 dwellings in Glasgow heated by central heat pumps
- Boreholes drilled into flooded mineworkings
- Off-peak tariff used
- Heat storage tank to cover off-peak periods
- Radiators used in dwelings
- CoP of 4.5
- Operational for 7 years
- Similar project in Fife operational 5 years

# Other Projects

- Nursing Home, Fife:
  - Borehole heat pumps with CHP to provide power for compressors.
  - Superb synergy between technologies.
- Farm, East Lothian
  - Borehole heat pumps with wind turbine to provide power
  - Heating via underfloor heating.

# Other Projects (cont.)

- House with Swimming Pool
  - Two heat pumps: one with ground loop + one for heat recovery from pool hall.
  - Controls allow use of one for heating and one for cooling with heat exchange.
- Golf Club, Inverness
  - Heat pump with ground loop to provide base load. Gas boiler back-up.
  - Heat pump provides heating & cooling via underfloor heating system.

# Procurement

- Skills needed:
  - Geotechnical desk study
  - Driller
  - Thermal testing
  - Design of boreholes (no's; depths, etc.)
  - Design of ground loops
  - Pipework and pumps
  - Heat pump selection and connection

# Challenges

- Overall responsibility for effectiveness of system.
- Ensuring sufficient heat exchanger size
- Knowledge of main and ancillary systems and plant interactions
- Maintenance