

# Residential Solar Thermal Homer, Alaska

## A Buderus Solar System Case Study



Photo by Lanny Simpson, www.alaskahighmountain.com

Dear Buderus,

We have been in operation for over 20 years. A big portion of our work is in higher end homes, with high efficiency boiler systems, radiant heated floors, etc. We installed our first Buderus panels in 2008. Since then, we have installed 10 systems, and are currently involved in 3 more at this time. Most are 3-panel systems, with a couple of 2-panel, one 6-panel, and one 8-panel system.

Obviously we do not have a long history of operation of these systems, or recorded data. However we are estimating projected savings of around \$1200 to \$1500 per year for 3-panel systems with the PL750 and heating both dhw and space heating (radiant floors). Sorry for not having more firm data. By this time next year we will. We started installing btu meters on current installs, and think they will prove to be helpful.

The total installed cost (before 30% tax credits) of these systems starts around \$14,000 for a system that is only producing dhw. The average system designed for space heating, (3 panels plus a PL750 tank), costs about \$22,000. Of course these prices exclude the boiler and basic boiler system components.

Projected pay back for adding solar? After deducting the 30% tax credit, these will likely range from 6 to 12 years, at current fuel prices. The shortest payback is for systems that do dhw only and cost less to install, but have an extra large dhw consumption. (We have many Bed and Breakfast businesses in this area, with very large dhw needs.)

The average new house here is well built, and has gone through an energy audit, and usually surpasses the highest energy ratings, so heat loads are a lot lower than one might expect for a cold climate. The average heat load in these houses is about 50% dhw and 50% space heating. We have found the year-round average we are able to supply is 70-80% of the dhw load and around 30% of the space heating load. This means we are able to reduce the overall fuel consumption by about 50%.

Our standard install is normally Buderus SKS 4.0 solar panels in either a 2 or 3 panel package, which includes the pump station, solar tubing, storage tank, and controls. Since we are at about 60 degrees latitude and most roofs are not that steep, we use your flat roof mounting brackets so that the panels can be mounted at a steeper angle.

We love your PL750 tank. It is big (almost 200 gal.), has a good design for stratification, and the extra ports in the boiler jacket allow for more versatility. I believe the PL750 tank is a big reason we are able to achieve decent solar output for low temperature space heating. The SM300 and 400 also work great but we use them mainly for dhw production only.

For boilers we use either the G125BE, GB125BE, or the GB142. The RC35/SM10 control package for the GB142 boiler is a first class setup. The variable speed pumping appears to be a key element for obtaining the most output from the solar panels. There are lots of panels on the market, but the system is only as good as the control strategy and the other components. I believe Buderus excels at it all.

Thanks,  
Steve Eayrs  
Eayrs Plumbing and Heating  
Homer, Alaska

### Project Quick Facts

#### Project Partners

- Eayrs Plumbing and Heating – Contractor  
Contact: Steve Eayrs, 907-235-2333
- Ferguson Enterprises, Soldatna Branch - Distributor  
Contact: Mark Shinn, 907-262-5990

#### Project Equipment

- Buderus SKS 4.0 Flat Plate Collectors with flat-roof mounting kit
- Buderus PL750/2S Thermosiphon Combi-Storage Tank
- Buderus GB142 Wall-Hung Condensing Gas Boiler
- RC35/SM10 Control

#### Other Eayrs P&H Preferred Equipment

- Buderus Logalux SM400 Dual Coil Indirect Storage Tanks
- Buderus G125BE Low-NOx Oil Boilers
- Buderus GB125BE Low-NOx Condensing Oil Boilers
- Logalux 2107 Controls

#### Typical Costs (for addition of solar, does not include boiler and its components)

- \$14,000 typical for residential DHW
- \$22,000 typical for residential DHW plus space heating

#### Typical Projected Payback

- 6-12 years, at current fuel prices
- Approx. 50% reduction in fuel usage



Buderus SKS 4.0  
Flat Plate Collector

Buderus PL750/2S  
Thermosiphon  
Combi-Storage Tank



Buderus GB142  
Wall-Hung Condensing  
Gas Boiler



50 Wentworth Ave., Londonderry, NH 03053  
1-800-Buderus  
www.buderus.net  
www.buderussolar.com

**Buderus**  
Bosch Group

**Comfortable. Efficient. Intelligent Heating.**