REMOTE Retrofit

Case Study

Residential Exterior Membrane Outside-insulation Technique aka OIT

Mike Musick
Cold Climate Housing Research Center
Residential Energy Rating
1804 Caribou Way
Fairbanks, AK

Energy rating before retrofit: 3 Star
Air tightness as is: 7.3ACH @ 50 pa

Recommendations:
– Install R-14 rigid foam to exterior
– Install 2’ rigid foam around foundation
– Caulk and Seal Home
– Install R-19 loose-fill insulation in attic
– Replace Furnace w/ AFUE 83%
– Replace Electric H2O Heater w/ .96 EF
Energy Rating after Retrofit

- Five Star (+)
- Air tightness 6.1 ACH @ 50 pa
Old forced air furnace
Forced Air Wars
Electric water heater
Time for replacement
New demand water heater for heat and domestic hot water

Toyotami OM180 demand water heater ~90% Efficiency
Burns #2 fuel oil
Air over hot water + filtration
Using existing FA ducting
Cost ~$8,000
Southeast corner before retrofit
East wall before retrofit
Northeast corner before
South wall before retrofit
Particle board under cedar siding
2" EPS B.G. R&R w/ 4"EPS
Replacing particle board with OSB
East End Rip Wrap
East wall 4” EPS ( 2 layers of 2”)
All seams staggered
Base coat east end
Northwest corner base coat
North wall Rip Wrap air barrier and drainage plane
New windows North wall
North wall penetrations
North wall 4” EPS foam
Rhino Mesh at window
South wall 4” EPS foam
Rhino Mesh around openings
Smoothing base coat
Finishing returns on windows
South wall finished
New continuous rain gutters
Finished wall with color coat
Return on Investment

- Exterior Retrofit ~$9,000 includes:
  - New Low-E, Ar gas, triple pane windows
  - New fiberglass door w/ Low-E glazing
  - Plus $8,000 heat, hot H2O & filtration
  - Still need to finish attic air sealing
  - Still need to blow in attic insulation
  - Anticipate 40% to 50% energy savings with ~$18,000 investment
  - ROI to be determined
  - 4 step Energy Rating increase = .75 interest rate reduction