

BER Building Energy Rating

- » Self Build
- » Developments
- » Existing Homes
- » Commercial Buildings New & Existing

Air Tightness Testing
Grant Applications
Thermal Imaging

First Rate Energy Services Ltd.





NATIONWIDE ENERGY RATING & CONSULTANCY SERVICE

COMPANY PROFILE

First Rate Energy Services Ltd was formed in 2007 to meet the needs of the emerging market of energy consulting and building energy rating. Since then we have established ourselves as one of Irelands leading energy consultancy companies.

We operate a nationwide service with branches in Galway, Mayo, Sligo, Limerick, Roscommon, Tipperary, Wexford, Kilkenny and Kerry.

In addition to our main role as energy assessors, we play a leading role in the design of heating systems for projects, employing our knowledge to make sure every project we are involved in meets a sustainable level in energy terms together with cost effectiveness for our client. We believe the foundation of our success lies in a commitment to understanding and meeting our client's requirements for safety, workmanship, on time delivery and value for money.

COMPANY SERVICES

Here we detail a brief account of the services that our company provides. We are an energy consultancy company who provide one on one consultation to our clients prior to the beginning of construction or up to a stage where significant development has not yet begun. There are over seventy factors which can affect the energy performance of any dwelling however some are more important than others for example the main areas being:

- Ventilation**
- Insulation of building elements**
- Window and door systems**
- Air tightness**
- Water and space heating systems**
- Lighting**
- Control of the heating systems**
- Thermal bridging of the dwelling**
- Use of renewable energy systems**

After consultation stage we provide a provisional report outlining the steps to be taken, the standards to be achieved and the ways to achieve them. At the completion stage of your home we provide a full certified Building Energy Rating from Sustainable Energy Ireland.

As you can imagine the cost to developers would be far less than a one off self build, we

give prices on a project to project basis usually giving a price in line with the number of units in the development; currently we have numerous developments on our books from small builders to large developers.

From the 1st of January 2009 all buildings that are to be sold or let are required by law to have a BER (Building Energy Rating) carried out. This applies to residential dwellings and to commercial units. The cost for an existing assessment varies, with a cluster of units in the one area getting the benefit of better prices due to less travel time costs etc. After January 1st we will be able to complete energy ratings in any area of the country and offer solutions to the numerous energy problems associated with existing homes nationwide.

I hope all the information above gives you an account of our company and if you have any further queries you can give us a call on 1890 622 226 or contact one of our branches nationwide.



NATIONWIDE ENERGY RATING & CONSULTANCY SERVICE



Here are samples of some of the projects we are involved in at present:

IGNATIUS FOY CONSTRUCTION:

Development consisting of 48 apartments at Straith Fhada, Doughiska, Galway



CBC LIMITED:

Development consisting of 15 houses at Na Stablaí, Monivea, Co. Galway.



PARKLAN DEVELOPMENTS LIMITED:

Development consisting of 30 houses at Glenntan na hAbhann, Craughwell, Co. Galway.



KELLY & MCDONNELL CONSTRUCTION LIMITED

Development consisting of 6 luxury homes at Carnfyan, Mount Temple, Co. Westmeath.



HAZELABBEY DEVELOPMENTS LIMITED

Development consisting of 86 houses at Ballinrobe, Co. Mayo



KILKISHEN HOMES LIMITED

Development consisting of 58 dwellings at Scramogue Manor Strokestown, Co. Roscommon.



BRIAN GALLIVAN DEVELOPMENTS LIMITED

Development consisting of 229 dwellings at Barraduff, Killarney, Co. Kerry.



BRIAN GALLIVAN DEVELOPMENTS LIMITED

Development consisting of 15 dwellings at Rosewood Manor, Innishannon, Co. Cork.



McInerney Homes:

Kapparho Homes:

Rudro Development:

An Driseog Development:

Mannion Construction:

Loughwell Development:

Loughwell Development:

Kilbride Development:

Parklan Development:

H&R Construction:

Consisting of a crèche at Drumaconn, Athlone, Co. Westmeath.

28 Houses, Roosky Co. Roscommom.

58 Houses, Newcastle West, Co Limerick.

11 Houses Brieffield, Moylough Co. Galway.

20 Houses Cricket Court, Tuam, Co Galway.

15 Houses, Spiddal, Co Galway.

12 Houses Moycullen Co. Galway.

10 Houses Tuam, Co. Galway.

28 Houses, Gort Co. Galway.

10 Houses Tuam, Co.Galway



NATIONWIDE ENERGY RATING & CONSULTANCY SERVICE

HOUSE TYPE 1 (EXAMPLE 1)

BER (Building Energy Rating)

HOUSE TYPE: Semi Detached
60m² Ground Floor
60m² First Floor

INSULATION SPECIFICATION:

100mm Platinum Bead/65mm Polyiso in Cavity
300mm Fibreglass/250mm Cellulose in horizontal attics
50mm Polyiso/70mm Platinum EPS

WINDOWS AND EXTERNAL DOOR:

Windows double glazed PVC 16mm argon filled low-E en = 0.15 hard coat 1.9W/m2K
Solid timber external door 3W/m2K

VENTILATION:

Natural ventilation with one chimney and mechanical immersion heating used in summer

WATER HEATING:

78% efficient oil boiler

LIGHTING:

CFL bulbs used in kitchen & bathrooms so this dwelling has 30% low energy fixed lighting

SPACE HEATING:

78% efficient oil boiler
30% efficient solid multi fuel open boiler

BER = B3 139.05kWh/m²/yr

CO₂ Compliance

CDER 35.60KgCO₂/m²/yr

MPCDER 37.59KgCO₂/m²/yr

HOUSE TYPE 1 (EXAMPLE 2)

BER (Building Energy Rating)

HOUSE TYPE: Semi Detached
60m² Ground Floor
60m² First Floor

INSULATION SPECIFICATION:

100mm Platinum Bead/65mm Polyiso in Cavity
300mm Fibreglass/250mm Cellulose in horizontal attics
80mm Polyiso/110mm Platinum EPS

WINDOWS AND EXTERNAL DOOR:

Windows double glazed PVC 16mm argon filled low-E en = 0.05 soft coat 1.7W/m2K
Solid timber external door 3W/m2K

VENTILATION:

Natural ventilation with one chimney and mechanical immersion heating used in summer

WATER HEATING:

93% efficient oil boiler

LIGHTING:

CFL bulbs used in kitchen & bathrooms so this dwelling has 30% low energy fixed lighting

SPACE HEATING:

93% efficient oil boiler
60% efficient wood pellet stove

BER = B2 112.77kWh/m²/yr

CO₂ Compliance

CDER 29.01KgCO₂/m²/yr

MPCDER 34.48KgCO₂/m²/yr

CHANGES

- Floor insulation Upgraded.
- Boiler Upgraded to 93% efficient.
- Windows upgraded to 0.05 soft coat 1.7W/ m2 K.
- Open Fire Upgraded to wood pellet stove.



NATIONWIDE ENERGY RATING & CONSULTANCY SERVICE

HOUSE TYPE 1 (EXAMPLE 3)

BER (Building Energy Rating)

HOUSE TYPE: Semi Detached
60m² Ground Floor
60m² First Floor

INSULATION SPECIFICATION:

100mm Platinum Bead/65mm Polyiso in Cavity
300mm Fibreglass/250mm Cellulose in horizontal attics
80mm Polyiso/110mm Platinum EPS

WINDOWS AND EXTERNAL DOOR:

Windows double glazed PVC 16mm argon filled low-E en = 0.05 hard coat 1.7W/m²K
Solid timber external door 3W/m²K

VENTILATION:

Natural ventilation with one chimney and mechanical immersion heating used in summer
Air permeability test 0.3Ac/h

WATER HEATING:

93% efficient oil boiler with 5m² flat plated solar panel system

LIGHTING:

CFL bulbs used in kitchen & bathrooms so this dwelling has 30% low energy fixed lighting

SPACE HEATING:

93% efficient oil boiler
60% efficient wood pellet stove

BER = B1 91.56kWh/m²/yr

CO₂ Compliance

CDER 23.01KgCO₂/m²/yr

MPCDER 34.45KgCO₂/m²/yr

CHANGES {
• Air permeability Test of 0.3 Ac/h.
• Insulation Upgraded in Walls.
• 5 m² Flat Solar panels added.

HOUSE TYPE 1 (EXAMPLE 4)

BER (Building Energy Rating)

HOUSE TYPE: Semi Detached
60m² Ground Floor
60m² First Floor

INSULATION SPECIFICATION:

100mm Platinum Bead/65mm Polyiso in Cavity
300mm Fibreglass/250mm Cellulose in horizontal attics
125mm Polyiso/160mm Platinum EPS

WINDOWS AND EXTERNAL DOOR:

Windows double glazed PVC 16mm argon filled low-E en = 0.05 soft coat 1.7W/m²K
Solid timber external door 3W/m²K

VENTILATION:

Natural ventilation with one chimney and mechanical immersion heating used in summer.
Air Permeability Test 0.15 Ac/h

WATER HEATING:

93% efficient oil boiler

LIGHTING:

CFL bulbs used in all fixed outlets so this dwelling has 100% low energy fixed lighting

SPACE HEATING:

320% efficient Heat Pump
60% efficient wood pellet stove

BER = A3 65.9kWh/m²/yr

CO₂ Compliance

CDER 14.35KgCO₂/m²/yr

MPCDER 38.79KgCO₂/m²/yr

CHANGES {
• Air permeability Test of 0.15 Ac/h.
• Oil Boiler replaced with heat pump.
• Insulation Upgraded in all areas.
• 100% low energy fixed lighting.



NATIONWIDE ENERGY RATING & CONSULTANCY SERVICE

EXISTING DWELLING

Here are some pointers on how to improve the efficiency of an existing dwelling:

1. INSULATION

Attic insulation is the cheapest way to improve the energy rating of the dwelling the following materials can be used:

- Cellulose fibre
- Fibreglass
- Rockwool
- Sheepswool

If you have a house with a cavity wall construction you may pump insulation into the cavity through a drilling pattern in the external leaf. The U-value of an empty cavity width of 75mm (1980's construction) is 1.64W/m²K so for example by pumping the cavity with a bonded bead the thermal U-value of 0.37W/m²K can be achieved which is a vast improvement and will improve the heat losses through the external walls.

Products that may be used include:

- Bonded polystyrene bead
- Polyiso/Polystyrene board insulation
- Icenene
- Fibreglass
- Rockwool
- Drylined insulated plasterboard

2. WINDOWS AND DOORS

Windows on existing dwellings are mainly single glazed or older double glazing. The standard window U-value of the moment is 1.7W/m²K so anything better than that is a major improvement (Remember the lower the U-value the lower the heat loss thus leading to a greater energy efficiency). Solid timber doors have a U-value of 3.00W/m²K so anything with a lower U-value can only have a positive effect.

3. VENTILATION

Ventilation is very important in a dwelling but too much ventilation can lead to energy wastage. Controlled vents could be installed in every room. Draught proofing may be applied to doors and windows to minimise air leakage.

4. SPACE & WATER HEATING

BOILERS

The changing of the boiler whether it be gas or oil to condensing technology would dramatically improve the efficiency of the dwelling. Condensing boilers can be up to 97% efficient compared to a normal boiler being around 70% efficient.

RENEWABLE

SOLAR

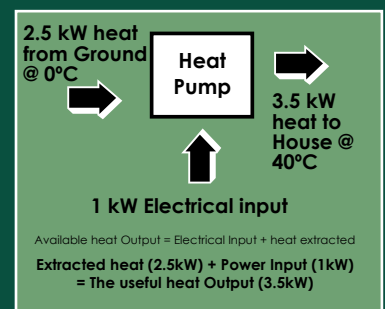
The use of solar panels again can have a major impact in improving the dwellings energy efficiency. The use of solar will provide your water heating needs for the summer and boost your hot water for the rest of the year thus leading to longer boiler life span.

HEAT RECOVERY

Also could be used under the ventilation heading. This system continuously extracts warm air from the wet rooms of the house such as the bathrooms or kitchen the heat from this air warms the incoming fresh air which is delivered which is then delivered to the liveable rooms of the house i.e. Sitting room, living room and bedrooms.

HEAT PUMPS

The most familiar form of heat pump is the domestic refrigerator. Here, heat is extracted from the cabinet to keep food fresh and the extracted heat is expelled through the radiator grill at the back of the unit. In this case the heat is merely a waste product. In the heat pump, we utilise this heat, and put the "cold part" outside. To make this more understandable, imagine that the "ice box" of your refrigerator is immersed in a small garden stream and the hot grid from the back is placed inside a house. The "ice box" will attempt to freeze the stream and, if we stopped the stream from flowing, freezing of the water would actually occur. But the passing water will constantly warm up the very cold "ice box". The temperature of the flowing stream will actually be reduced very slightly. So we are extracting heat from the stream which ends up as heat in the radiator grill, available to warm the house. In every case, the useful heat delivered to the house will be greater than the energy required to drive the heat pump itself. So we have extracted "free" heat from the stream. Extracted heat (2.5kW) + Power input (1kW) = The useful heat output (3.5kW).



LIGHTING

The use of low energy CFL bulbs throughout the house is a relatively cheap and effective way of improving the energy rating of the house.

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AIR TIGHTNESS TESTING

WHAT IS AIR TIGHTNESS TESTING?

Air tightness testing is a method of quantifying actual amount of air changes which occur in a building as opposed to the number of air changes for which the building actually requires or in other words testing a building for uninvited air.

WHAT BUILDINGS REQUIRE AIR TIGHTNESS TESTING?

- 1) All developments/ one off dwellings which apply for planning from the 1st of July 2008 will be required to carry out an air tightness test on a proportion of the dwellings the following table from TGD Part L 2007 gives the requires testing regime.

NUMBER OF PRESSURE TEST	PER DWELLING TYPES
Number of Units	Number of Test
4 or less	One Test
Greater than 4, but equal or less than 40	Two Tests
Greater than 40, but equal or less than 100	At least 5% of the dwelling type
More than 100	At least 2% (for dwellings in excess of first 100 units)
(a) where the first five tests achieve the design air permeability	At least 5% of units, until 5 successful consecutive tests are achieved, 2% thereafter
(b) Where one or more of first five tests do not achieve the design air permeability	

- 2) Any dwelling which wishes to use test results in DEAP for the calculation of Building Energy Ratings
- 3) Any dwelling which is fitted with mechanical ventilation which does not have an air tightness test carried out on it will be penalised on the BER thereby removing the benefits of the mechanical ventilation with heat recovery on the dwelling.

HOW DOES AIR TIGHTNESS EFFECT A BUILDING ENERGY RATING?

The DEAP Software for calculating BER contains a default value for air permeability depending on the structure type e.g Timber/ steel frame or masonry. Where a building receives a better result than this default value it improves the BER of the building. Example a typical 3 bedroom semi – detached house could improve its ratings by around 9kW/m²/yr with a good air tightness test as opposed to the default values. This is equivalent to the addition of about 2m² of solar panels at a lower cost.

HOW CAN I ENSURE AIR TIGHTNESS ON MY DWELLING?

- 1) Air tightness can be improved by following the guidelines for reduced thermal bridging for your building system. During our consultancy process we will advise you on how to limit the amount of thermal

bridging resulting in better air tightness.

- 2) A good attention to detail on building construction ensuring any penetrations of the building fabric are sealed properly.

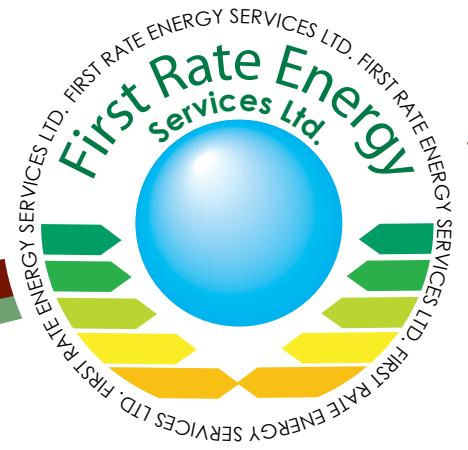


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