

**LEGALETT AIR-HEATED FLOORS AND FROST PROTECTED SHALLOW FOUNDATIONS (GEO-Slab)
 LEGALETT is much more than just floor heating.**

- LEGALETT is a building system.
- LEGALETT follows the building process from design to installation.
- In contrast to other heating systems, we design both the foundation and the heating system as a whole. The migration of dampness and the effects of frost heave are eliminated through proper design.
- Due to the unique ability of the LEGALETT System to eliminate frost walls, construction time and costs are reduced.
- LEGALETT is suitable for detached houses, row houses, townhouses, pre-schools and nursery schools, assembly buildings, industrial buildings – indeed for almost all types of heated floors and foundations.
- LEGALETT can be easily adapted for continuous and semi-continuous permafrost areas.

Design/Planning The LEGALETT system includes coordinated design of the foundation and heating system.

Function The pipe system is custom designed for each individual building with regard to loop distribution and heating output requirements. Warm air circulates in the closed loop system in the concrete slab. After releasing its heat, the air is returned to the heating unit for re-heating and recirculation in the concrete slab.

LEGALETT STANDARDS

Design is 30 W/m² (10 Btu/hr/sq.ft.) with up to 60 W/m² (20 Btu/hr/sq.ft.) available. 2" pipe layout is 250mm - 600mm (10"-24") spacing or 300mm-1,000mm (12"-40") spacing for 4" pipe, with 11-20m (36'-66') of pipe length per loop (2") or 15-26m (49'-85') of pipe length per loop (4"). Design is flow balanced based on equivalent pipe length.

2" piping material: PVC

4" piping material: 26 gauge galvanized type G-90

Minimum recommended insulation under suspended floor is:

R12 for tile or equivalent

R16 for thin hardwood or carpet (<1")

R20 for thick hardwood or carpet (>1")

The concrete slab acts as a large heat storage medium where the heat is released as required based on the temperature difference between the floor and the rooms and required heat flux. The average temperature of the floor is approximately 21 - 27°C (70°F - 80°F). The room temperature is controlled using a wall-mounted thermostat.

Power Outage The heat storage system is advantageous in the event of a power outage. Due to the slab's ability to store energy, it can release its large store of heat over a long period of time, typically losing only 1-2°C (2-4°F) per day during typical winter operating conditions in a power outage.

Efficient Installation The LEGALETT system provides for a faster and more efficient site preparation due to the use of a flat gravel bed. The simple installation of the components in the slab also increases installation efficiency. The pre-cut permanent edge elements units, which are the stay-in-place formwork, allow a short construction time.

Poor Ground Conditions The LEGALETT system is very suitable for poor ground conditions. In these cases there are easy and effective solutions which utilize the low soil bearing pressure of the LEGALETT system. If needed, piling can be easily incorporated into the design of the slab.

Construction As soon as concrete pouring is complete, a LEGALETT construction heater may be connected to the heating system for cold weather pours. Once the building is closed in, the LEGALETT construction heater should be used, effectively drying out the slab, a process which can continue throughout the construction period. This has advantages for the entire building process. Painting and floor laying can be carried out at an earlier stage than with conventional construction methods. (Traditional building heaters need not be used.)

Damp and Mould	<p>The LEGALETT design eliminates the physical conditions necessary for dampness and growth of mould in the foundation.</p> <p>A LEGALETT construction heater is to be used for a minimum of 2 weeks so that the slab reaches a temperature of 27°C (80°F) (non-insulative floor coverings) or 30°C (85°F) (insulative floor coverings).</p> <p>150mm (6") of EPS is a positive capillary break to keep moisture out of the slab in the summer when the ground may get close to (or exceed) the slab temperature.</p>
Radon Protection	<p>The reinforced 125 - 200 mm (5-8") concrete slab provides for very good protection against radon. Additional measures in the case of radon can be taken, such as the sealing of inlets for plumbing fixtures, electrical conduits and gas lines that penetrate the slab.</p>
Operating Costs	<p>The excellent R-value of the LEGALETT system, R24 (RSI 4.2) through the use of 150 mm (6") EPS insulation more than halves the energy loss through the slab compared with a traditional slab on grade, coupled with the ability to lower room temperatures while maintaining comfort assures low operating costs.</p>
24-Hour Energy Storage	<p>With LEGALETT, the foundation can be used for 24-hour heat storage. A reduced energy cost during off-peak periods can be exploited to store heat in the slab. This heat is then released during on peak periods. This means lower overall energy costs.</p>
Low Maintenance Cost	<p>The closed loop pipe system does not require cleaning or maintenance. The air pipes do not have the leakage risks of a water system. There is no limit to the lifetime of the pipe system. The fan and the heating unit are installed in the closed system with easy access. This allows for ideal operating conditions during the lifespan of the heating unit. Should there be a need for servicing, the unit can be easily repaired or replaced.</p>
Comfort	<p>Due to the LEGALETT foundation's heat-storage properties, an even, stable indoor climate is maintained even when there is a sudden change in the weather.</p> <p>LEGALETT ensures warm and comfortable floors while meeting heating needs (building transmission losses).</p> <p>The quality of building construction and air changes affect building heating requirements. Modern construction practices together with a heat recovery ventilator (HRV) system and integral in-duct touch-up heater offer a very pleasant indoor climate with the LEGALETT system.</p>
Low Energy Consumption	<p>Since the radiant heat is supplied through the floor, room temperature can be lowered on average by up to 3°C (6°F) with a retained level of comfort. The LEGALETT foundation's advantageous R-value provides for low energy consumption.</p>
Convenient for the Physically Challenged and Infants	<p>The low entry height of a slab on grade and the heated floor make the LEGALETT system very convenient for the physically challenged as well as for small children.</p>