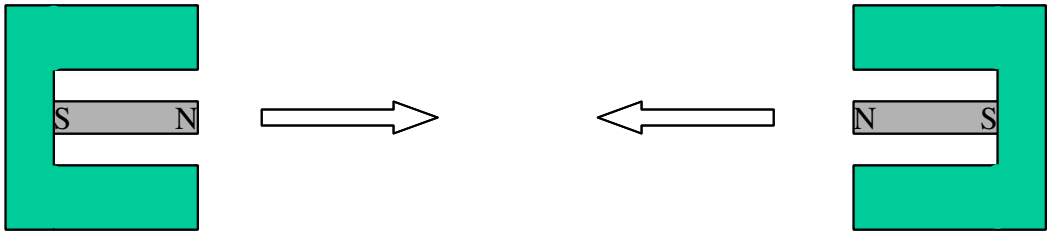
Ideas about Steorn's magnetic viscosity claims.

Having dismissed the eddy current decay as the reason for the Steorn so-called viscosity time delay I have come up with another suggestion. I would direct your attention to a slow motion film of a golf club hitting a golf ball (I'm sure there's one somewhere on the web but I can't find it, but I guess you've all seen it). The ball gets flattened, but if you look closely something remarkable takes place. The edge of the ball in contact with the club moves at club velocity, but the opposite surface doesn't start to move until later when the ball has deformed. This is because the cub is moving faster than forces can be transmitted through the material. There is a time delay between force arriving on one side of a body and that force reaching the other side. There is a compression wave travelling through the body at a velocity perhaps associated with the acoustic velocity in the material, and the far surface does not know that the front surface is moving until that wave reaches it.

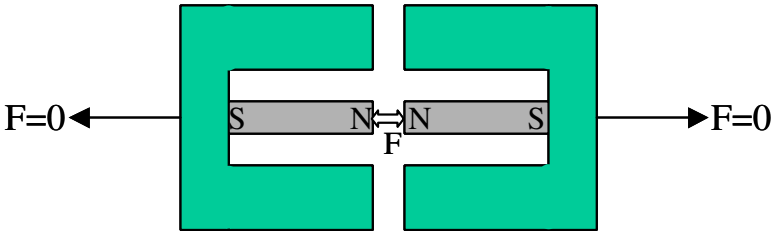
I know this from my work on weapon systems, in particular the use of sensors to explode a warhead on impact with a target. When the approach velocity exceeds the wave velocity of the weapon structure, the rear of the weapon doesn't know that the front has hit the target. Even a sensitive accelerometer there will not respond to initial impact, there is no force transmitted through the structure to decelerate that back end. The first thing that reaches any rear-mounted sensor is the crushed-up front debris that includes the now destroyed warhead and its firing chain. Rear mounted sensors are a no-no!!

It strikes me that the relatively slow rise of force in the Steorn experiment could be attributed, not to magnetic viscosity, but to this wave or particle velocity. Perhaps this is best illustrated in the following sequence of diagrams.

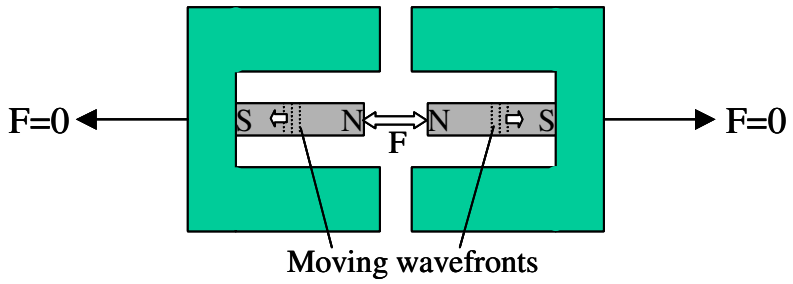
Take two widely separated magnets each affixed to its own ***non-magnetic*** structure. The magnets have a very low wave or particle velocity.



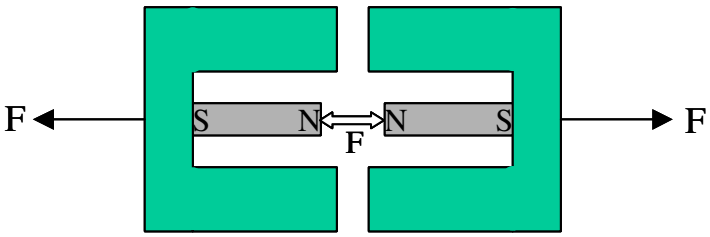
(The U shaped structures here are for illustrative purposes so that the eye can quickly see relative movement of the N poles.) Let the magnets be brought close together very quickly (the energy needed to accelerate then decelerate the structures' masses cancel out, so we can ignore those inertial effects).



The N poles of the magnets get a sudden repelling force, but this force has not had time to communicate itself to the structures. *Thus there has been no energy loss in bringing these magnets together.* The forces on the structures are zero. Now there is a dwell time while the force wave-fronts travel at particle velocity through the magnets.



Note the magnets are compressed, but the compression has not yet reached the structures, the forces there are still zero. When finally the wave-fronts reach the far end of each magnet, the structures now have repelling force.



We can now let the structures move apart slowly using the repelling forces to do useful work.

I think the above illustrates what Steorn have been saying on their forum, but they are of the opinion that the time delay is due to magnetic viscosity. I think it more likely to simply be particle velocity associated with the magnet's elasticity. If the above sequence rings true, then making a self-running PM motor should be quite simple. To get maximum delay time you need long magnets if used in longitudinal approach as illustrated. If flat disc magnets (pole faces on the flat surfaces) are used approaching side-by-side, then you want large diameter magnets. And they need fixing to the structure at one end/side only. Steorn have said that "bad" neos have a greater delay than the graph they posted, so what is "bad". Perhaps the bonded magnets are "bad" in this respect.