specific polyalphaolefins (PAOs). Such lubricants are detailed, for example, in WO 2007/145924 A1. These lubricants generally comprise two base oils of different viscosity.

The known lubricants have a useable profile of properties. However, the provision of a lubricant with an improved profile of properties is a constant task.

In view of the prior art, it is thus an object of the present embodiments disclosed herein~~invention~~ to provide a lubricant for transmission systems with an improved profile of properties.

For example, the lubricant should have an improved seal compatibility, more particularly compared to polyalphaolefins. In addition, the lubricant should exhibit improved flow characteristics at low temperatures. Furthermore, the lubricant should have an enhanced viscosity index without any associated decrease in the service life of the lubricant.

Especially the lubricants detailed in WO 2007/145924 A1 comprise relatively large amounts of expensive PAOs, the preparation of which is complex and which have a high viscosity. The second base component of the lubricants described is a PAO grade with a lower viscosity and is much less expensive. It is therefore a particular task to substitute the amount or grade of the relatively more expensive component with less expensive alternatives.

In addition, the wear and fatigue of the transmission systems should be minimized as far as possible by the lubricant. At the same time, the lubricant should minimize

the power loss, i.e. lead to a low coefficient of friction, in order to increase the efficiency of the plant.

Furthermore, the lubricant should be compatible with many additives, although, to improve compatibility, if possible, only minor additives, and ideally no additional additives, should be necessary since they are associated with further costs.

These objects, and further objects which are not stated explicitly but are immediately derivable or discernible from the connections discussed herein by way of introduction, are achieved by a lubricant for a transmission system having all features of claim 1. Appropriate modifications of the inventive lubricants are protected in the dependent claims referring back to claim 1. With regard to the polyalkyl(meth)acrylates, processes for preparation thereof and use thereof and the wind power plants, claims 9, 20, 28 and 29 are a solution to the problems.

The present disclosure~~invention~~ accordingly provides a lubricant for a transmission system, which is characterized in that it comprises at least 30% by weight of polyalkyl(meth)acrylate.

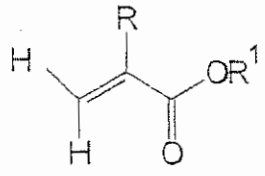
The present disclosure~~invention~~ further provides a polyalkyl(meth)acrylate for use in lubricants, comprising

a) 0 to 25% by weight of repeat units derived from (meth)acrylates of the formula (I)

In one aspect, there is provided a lubricant for a transmission system comprising polyalkyl(meth)acrylates, characterized in that the lubricant comprises at least 30% by weight of polyalkyl(meth)acrylate based on the total weight of lubricant, and

the polyalkyl(meth)acrylate comprising

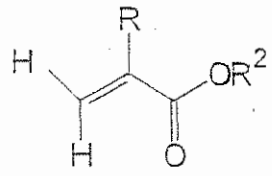
a) 0 to 25% by weight of repeat units derived from (meth)acrylates of the formula (I)



(I)

in which R is hydrogen or methyl and R^1 is an alkyl radical having 1 to 5 carbon atoms,

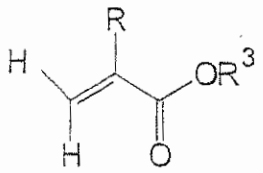
b) 50 to 100% by weight of repeat units derived from (meth)acrylates of the formula (II)



(II)

in which R is hydrogen or methyl and R^2 is an alkyl radical having 6 to 15 carbon atoms, wherein the repeat units of the formula (II) are a mixture of linear and branched radicals where 5 to 80% of the R^2 radicals are branched, based on the weight of the repeat units of the formula (II), and

c) 0 to 50% by weight of repeat units derived from (meth)acrylates of the formula (III)



(III)

in which R is hydrogen or methyl and R^3 is an alkyl radical having 16 to 40 carbon atoms,

has a weight-average molecular weight in the range from 3000 to 25 000 g/mol and a polydispersity in the range from 1.1 to 2.5.