Abstract: We consider positive semidefinite kernels that are invariant under an action of a $*$-semigroup and valued in the continuous and continuously adjointable operators of VH (Vector Hilbert)-spaces in the sense of Loynes. The main theorem gives two necessary and sufficient boundedness conditions for the existence of an invariant Kolmogorov decomposition of the kernel, or equivalently, $*$-representations of the $*$-semigroup on a reproducing kernel VH-space. We discuss several cases in which the latter boundedness condition follows automatically. This is a joint work with A. Gheondea.