This work presents study of magnetocaloric properties of compounds exhibiting unusual magnetic characteristics. Several systems were studied: TbNiAl, (Tb,Y)NiAl, TbNi(Al,In), TbFeAl, GdFeAl, Ni_2MnGa based compounds and amorphous metallic alloy Gd-Co-Al-Y. Influence of magneto-crystalline anisotropy on magnetocaloric effect was studied on singlecrystalline sample of TbNiAl compound. The maximum of entropy change was measured with orientation of magnetic field along *c* axis and compared to polycrystalline sample a 100% increase was observed. Substitutions of Y and In in TbNiAl led to a change of magnetic ordering. Both substitution led to increase of *RCP* values of studied material. TbFeAl and GdFeAl compounds, characterized by partial disorder of Fe and Al atoms, showed magnetocaloric effect in wide temperature region which led to interesting values of *RCP*~350 J kg^{-1}. Very broad region of magnetocaloric effect was also observed on amorphous metallic material of Gd-Co-Al-Y. The effect of Er substitution in Ni_2MnGa based compound on its magneto-structural transition, connected with inverse magnetocaloric effect, was studied. The direct measurement method of adiabatic temperature change is described and instrument for such measurement, developed in collaboration with FZU AVČR, v.v.i., is presented.