

## **Summary**

The purpose of this thesis is to address the issue of carbon dioxide emissions in the production of Portland cement. CO<sub>2</sub> emissions are generated during the production of this hydraulic binder not only by burning fuels needed for the firing of cement clinker, but primarily during the process called calcination. Alternatives to Portland cement could be Roman cement and/or natural hydraulic lime, which are fired at lower temperatures than Portland cement. Firing at lower temperatures saves fuel needed for firing the raw material mixture, and particularly prevents the mixture from being heated above the sintering temperature.

This bachelor's thesis also analyses the use of biomass fuels, solid municipal waste, etc., which are widely used for clinker firing instead of fossil fuels in the Czech Republic. Graphs, based on data from the Czech Cement Industry Association, were created to demonstrate the relationship between the increasing proportion of alternative fuels and the rising consumption of heat required for clinker firing.

In the final part of the thesis, three geological areas in the Czech Republic, where a long history of hydraulic binder production continues until the present, are examined. These locations are described, and three rock formations are identified based on previous analyses, which offer potential for limestone mining to produce natural hydraulic lime and natural hydraulic cement.