



Fig. 9: Dependence of the input power of stirring device required to reach the desired reactor hydrodynamic mode.

4 Conclusion

The proposed mathematical model of the hydrolysis unit includes the basic processes for the preparation of the resulting hydrolyzate, i.e. the chemical reaction itself, filtration of the reaction mixture and concentration of the filtrate, which is the final product. The mathematical model can be used for description of multiple technology variants, both for the "refining" technology and for "extraction" hydrolysis for which most simulation calculations have been performed.

The proposed mathematical model of the batch hydrolytic reactor, which forms the main part of the overall model, takes into account the reaction kinetics, the basic rheological parameters of the batch and the construction of the apparatus. As a result, it is possible to economically optimize the technology not only to find optimal operating conditions under which the specific costs of preparing the final product are minimal but also to assess their technological and technical availability and practical feasibility. The modelling has shown that in most of tested cases the economic optimum exists and thus the application of the model is valuable for the practical purposes.

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