Many control and diagnostic tasks are naturally formalized in terms of Object-Oriented Design (OOD) and programming (OOP). There are several problems with practical implementation of this approach. Software are often is not reusable. In particular, many designed C++ classes are so specific to a particular manufacturing process and/or control method that reuse of them is hardly possible. Our overall goal is to develop prototypes of reusable C++ classes for intelligent control tasks. These classes incorporate several members to set components, to tune and optimize control functions, and to arrange sensor input and output control signals to be executed by external devices.

What is the main reason that software is too specific? OOD can be implemented presenting a manufacturing process as a composition of C++ classes for physical components such as platens, heaters, presses, tubes, motors, and so on. An operator is familiar with these components. Often they are shown on operator’s control screen. These convenient classes cause software reusability problem. Physical components and their number vary very significantly for manufacturing processes. The next source of the reusability problem is the specific terminology of a particular process. How to recognize identical or similar control structures having unmatched biochemical, mechanical and electrical engineering terminology transferred into C++ classes.

The third source of the reusability problem is related to control methods. For example, switching from the use of classical interpolation to fuzzy control functions in designing control functions seems to be a move to a completely different area, where C++ classes should be completely new. We developed an approach and prototype C++ classes to resolve the problem of reusability for intelligent control related to fuzzy logic. This is based on multiresolution approach combined with object-oriented programming and discovered relations between fuzzy control and classical interpolation [Kovalerchuk et al, 1994, 1996]. We illustrate effectiveness of this approach with one of the manufacturing processes.