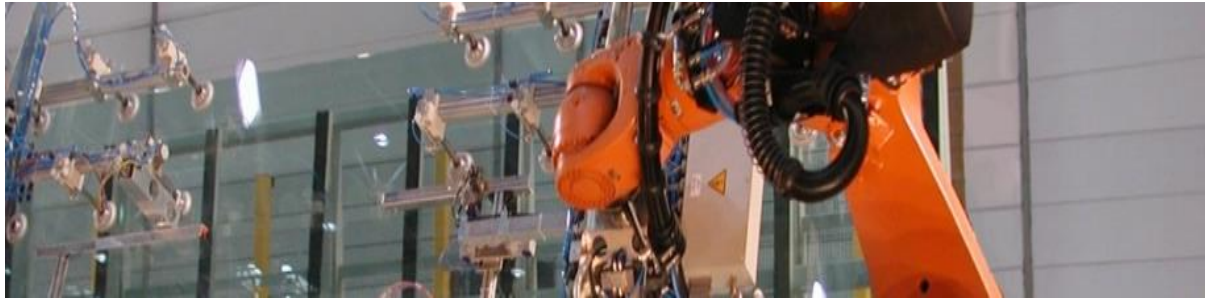


## *Research program*

### **GLASS MACHINES FOR 21<sup>ST</sup> CENTURY**

Research and development of glass machines, parts of automatic lines, construction nodes and quality control equipment. Research in the field of detection of transparent materials and development of equipment for industrial use. Basic research in the area of additive technologies for the production of glass products followed by applied research for application of knowledge in industrial practice.



## *Research activities*

### **ADVANCED TECHNOLOGIES AND MACHINES FOR PRODUCTION, PROCESSING, REFINEMENT AND NEW PRODUCTS**

- ▶ Research and optimization of technology and production of brand new glass products.
- ▶ Research of advanced technologies regarding glass production, new technologies of processing and refining of glass products with emphasis on reducing energy intensity and ecological impacts of production, increasing utility value.
- ▶ Research and development of machines and equipment for advanced technologies of glass production, processing and processing under conditions of Industry 4.0. Utilization of numerical simulations for their design, development and optimization.

### **CONTACTLESS DETECTION AND CONTROL OF OBJECT SHAPE FROM TRANSPARENT MATERIALS AND DESCRIPTION OF DESCRIPTION OF THE SURFACE**

- ▶ Research methods on object detection from transparent materials for obtaining their 2D and 3D images, detection of defects and defects in glass products.
- ▶ Research and development of equipment with application of methods of object detection from transparent material, defects and failures inside these objects.
- ▶ Basic research of application of fractal geometry for description of surface layers and application of algorithms to data from industrial practice including introduction of new data evaluation methodologies (based on fractal geometry tools, statistics, Fourier transformation, etc.) into industrial practice.

### **ADDITIVE TECHNOLOGY IN GLASS PRODUCTION**

- ▶ Basic research in the field of additive technologies of glass production.
- ▶ Basic research of micro-melting glass batches and principles of heating of micro-nan batches to softening temperatures to melting temperatures. Study of dependence of boundary conditions change on final properties of doses.
- ▶ Development of experimental facilities supporting basic research in this area.
- ▶ Applied research in the field of 3D glass printing equipment.