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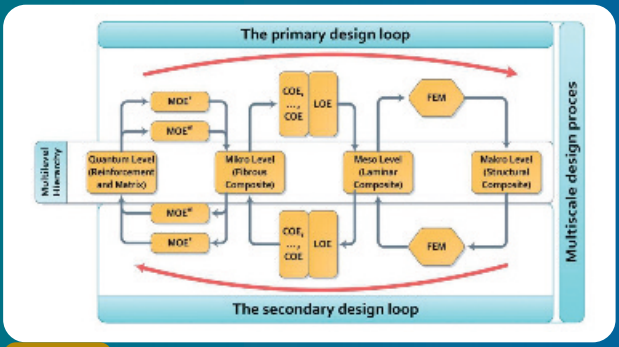

30 The Materials section represented by A Baier and M. Majzner on "Application of feature method to the modelling of composite structural elements" on a **page 30** the paper describes the use of object-oriented methods in modelling and analysis of components made of fibre-based composites. Which is a defined and specified method for creating fibre primitives. An algorithm for the design of composite structures using object-oriented methods is presented. A research direction is to create tools to support the work of the constructor during the construction of composite components. Material created a database of individual components of laminates, allows to build optimal in terms of established criteria of composite elements. The basic tool is an algorithm to build fibre facilities. Material properties can be found in the previously created databases of material objects. The whole is linked to the relevant formulas and diagrams. The basis for the introduction of object-oriented method was to systematize the processes of modelling and analysis of composite materials. Application issue features the final form of composite structure possible to determine. The paper presents a new approach to modelling of composites by defining a new elementary objects forming the basis for during the composite design process. Algorithms used in the work are particularly important for designers of new technical components made on the basis of fibre composites.

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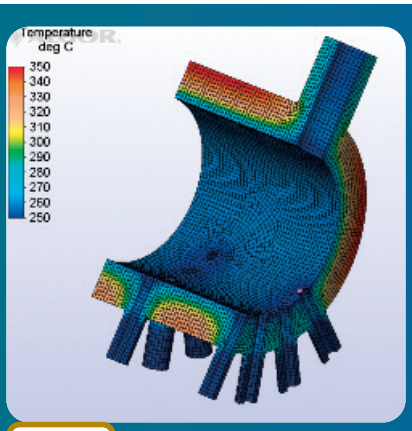
The paper entitled "The concept of interactive rehabilitation device for children under the age of three" by I. Chuchnowska and A. Sękala on a **page 45** informs about a concept of an interactive rehabilitation equipment designed for children under 3 years of age with dysfunction of the lower limbs. Through the use of interactive play-boards and games not only will the children learn faster, but the whole process of rehabilitation will be really fun. Furthermore, the device can be connected to a computer or a special synoptic screen mounted on a special rack. Thanks to an interactive combination of the function of movement rehabilitation with mental stimulation of a child it will be possible to support the development of cognitive functions, cause-effect thinking, stimulation of the senses and to improve coordination and spatial orientation of the young patient. The researches from the broadly understood biomechanics that are carried out shall lead to a construction of a rehabilitation device designed for children under the age of three. The proposed device should be very effective in the rehabilitation process, even for the youngest children, and due to its relatively simple modular construction and the possibility of cooperation with many plays and games, it should also be a market success by contributing to the effective rehabilitation of the considerable population of children who require such rehabilitation. Combination of the traditional cycle-therapy with music therapy or Glenn Doman's method in rehabilitation of small patients will help to maximize the children's activity and their involvement, which at this stage of development is possible only by giving rehabilitation exercises an attractive form of plays and games. The device being developed will include all the most important factors that may affect the physical structure of children and their psyche, which can directly affect the improvement of their health.



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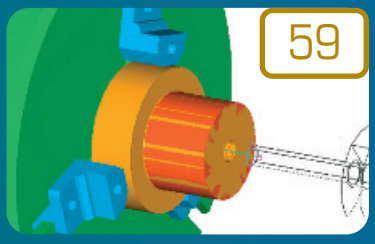
The paper from Methodology of research area made by J. Okrajni on "Fatigue aspects of an evaluation of the operational safety of components working in creep conditions" on a **page 51** describes the method of the description of the thermo-mechanical fatigue process of power plant components working under mechanical and thermal loading. The work focuses on the chosen component strain-stress characteristics and their strength. The paper discusses the issue of modelling of the heating and cooling processes of components in a power plants in the start-up and shut-down conditions of a boiler. The calculations of stress distribution on the chosen component surface show that the internal pressure induces considerably smaller values of stresses and strains in comparison with the same stresses specified for thermal loads. However, it should be noted that the impact of temperature gradients and thermal stresses is usually short-lived, therefore, its influence on creep processes is less significant in comparison to pressure load. Material fatigue is mainly the effect of thermal stresses. Thus, thermal impacts are responsible for cracks initiation and growth in areas of the greatest intensity of damage accumulation. The presented analysis is the part of the complex investigation method which main purpose is to increase the accuracy of the TMF process description and thermo-mechanical life assessment. The possibility of applying the fatigue durability criteria currently assumed in standards still requires justification and confirmation in laboratory and industrial conditions to be closer to the real components behaviour. In such a situation the industrial investigations carried out in the work give the model approach and data for the comparison the real behaviour with the predictions. The main value of this paper is the own of method of the mechanical behaviour analysis of the power plant component. This method includes the temperature fields analysis taking into account the boundary conditions based on the operation parameter data and the thermo-plastic material model. The material stress-strain behaviour was treated as the local phenomenon that could be modelled by FEM.



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The paper written by R. Rząsiński and P. Gendarz on "Construction and technology similarity" on a **page 59** presents the theory of construction similarity and technology. The theory of similarity is based on the theory of physical similarity. A model in the theory of similarity of construction and technology is construction and technology standard. The essence of this theory is to choose such constructional features of the new designed construction to obtain the identical states: physical, stereo mechanical or simple like in the standard construction. However, in creating new technologies to obtain the same technological conditions: cutting power, cutting forces and cutting performance as standard technology are used. A method of the constructional similarity, technological similarity presented in the paper are a basis of selection of design features in the process of series of types and module systems of constructions and technology creating. All of these methods support intensive development of the types of technical features and affect on their competitive on the ready market. Described methods were being developed on practical examples of creating the series of types of hydraulic cylinders used in mining. Elaborated methodology aim to identify similarities in the way of semi-automated construction and technology. Features are determined for the items stored in the form of series of construction and technology types.

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