

Modeling the cooling stage: The influence of geometrical and operating parameters

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A 3D numerical code, based on the finite volume method, able to model the cooling stage of an extrusion line is used for investigating the effect of various process and geometrical parameters onto the efficiency of calibration/cooling units. The code is able to tackle accurately various practical situations such as the presence of several individual cooling units, the presence of complex cooling channels layouts and the existence of a thermal resistance between the plastic profile and the cooling medium.

The effect of process and geometrical parameters on the cooling performance can be quite distinct. Often, when a reduction of the profile average temperature is imparted, lower temperature homogeneity is also obtained. The only exceptions are variations in the extrusion velocity and splitting the calibrator into several units.

Network Application Security Architecture

T. Shelling

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CAEFF's Integrated Model application will incorporate a Relational Database Management System (RDBMS). Application users will use this RDBMS to import into the application the rheological data, constraints, and attributes for selected polymers. Users will also use this RDBMS to maintain the associated data for the polymers, track simulation results for a given polymer, or create new polymer entries. The Center is developing a separate application to allow registered users, partners, and researchers the ability to add new polymers and maintain existing polymer entries. The polymer database management tool (PDMT) will run on a UNIX workstation in a wide variety of corporate, academic, and even home computer networks and will need to connect to the RDBMS, maintained by the Center at its computing facilities. This poster describes how the PDMT will connect to the RDBMS to ensure interoperability across a wide range of academic, corporate, and personal computer networks. It will also describe the architecture used by the Center in building its applications and tools to meet the various challenges in computer and network security, customer privacy, and data integrity.

Examples of CAEFF-Industry Interaction

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Interactions between CAEFF and industry take several forms, including directed (proprietary) research projects, short-term summer projects suitable for teams of undergraduates and honors high school students, student internships, and sabbaticals. Typically, these collaborations involve experimental characterization, simulation, and experimental verification. Highlights of five representative industry projects will be presented, along with a brief description of polymer characterization and on-line measurement equipment available at CAEFF.

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