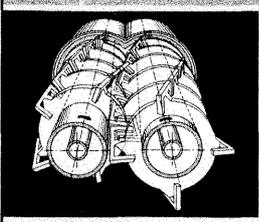
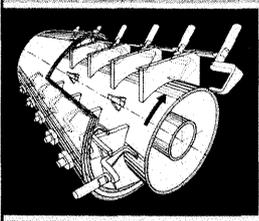


new

PROCESSING TECHNOLOGIES

- Liquid/solid reactions
- Bulk polymerization
- Direct desolventizing
- Sublimation
- Integrated reactions/drying



LIST

kneaders/reactors are the solution

EUROPE
++41 61 815 30 00

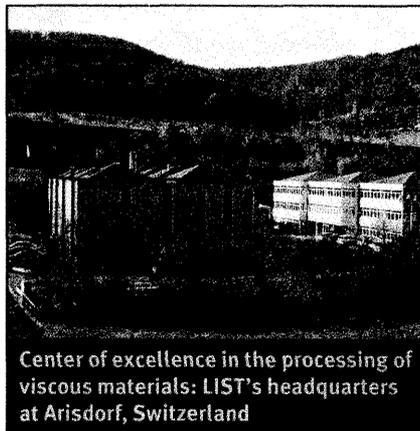
ASIA
++65 6338 78 76

USA
WWW.LISTGRP.COM
++1 704 423 5478

Circle 42 or che.com/adlinks

Viscous materials? No problem!

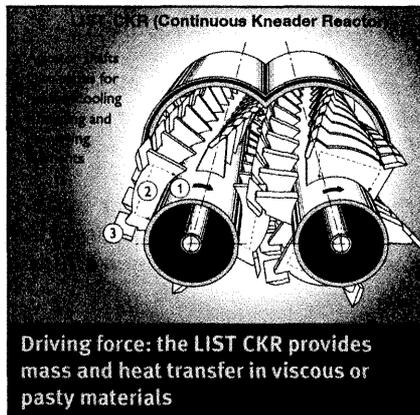
LIST is a specialist supplier of continuous processing equipment for polymerization and other applications involving viscous materials



Center of excellence in the processing of viscous materials: LIST's headquarters at Arisdorf, Switzerland

LIST is a world-leading supplier of solutions for high-viscosity processing technology. The company has more than 35 years' experience in the thermal processing of pasty, sticky and crust-forming products, and over 300 industrial installations worldwide in the polymer, chemical, fiber, food and environmental industries.

LIST develops and implements with its clients complete solutions in the field of high-viscosity processing technology, ranging from process concept, lab and pilot testing, scale-up and process calculations, all the way to installation, commissioning, startup



Driving force: the LIST CKR provides mass and heat transfer in viscous or pasty materials

and servicing. The company has an experienced team of process, design and system engineers, extensive testing facilities and a complete life-cycle management program. Solutions take the form of either individual equipment items or complete processing systems.

LIST products are designed and manufactured according to DIN, ASME or other international codes and regulations. The company is ISO 9001 certified. All LIST prod-

ucts are manufactured in accordance with stringent quality control procedures.

LIST has Tech Centers strategically located around the world to provide services including technical, spare parts, emergency, field service and preventive maintenance. The company's headquarters is in Switzerland, with subsidiaries in Charlotte, N.C., and Singapore.

New solutions for polymers

At the heart of LIST's business is a device designed for optimal processing of polymers and other highly-viscous materials: the LIST-CKR (Continuous Kneader Reactor).

The LIST-CKR has two shafts rotating in the same direction and at the same speed. Kneading elements attached to the shafts intermesh to give intensive product surface renewal, narrow residence time distribution and nearly 100% self-cleaning.

Many polymerization processes can be carried out entirely within a LIST-CKR. During polymerisation, which can be carried out at low solvent concentrations, the material being processed changes from a liquid, through a highly-viscous phase, to a free-flowing final polymer.

The geometry of the kneading elements is application-specific, and chosen from a range of patented solutions. A version known as the CKR CONTI is available for processes including polymerisation and polycondensation, polymer devolatilisation and degassing, heterogeneous reactions, drying, evaporation, crystallization and combinations of these processes.

The LIST-Main Evaporator, in contrast to the LIST-CKR, uses a special mixing technology to reproduce the behavior of a continuous stirred-tank reactor (CSTR) for viscous products. Its principal use is in removing solvent from polymer mixtures, operating at atmospheric pressure.

During the main stage of solvent removal, before diffusion becomes the critical factor, the rate-limiting step is heat transfer. The LIST-Main Evaporator increases heat transfer rates thanks to its excellent mixing, both radial and axial. It also reduces the need for external heat sources, because much of the energy needed to evaporate the solvent is generated through the dissipation of shaft power within the material being mixed.

Large free cross-sectional areas allow the removal of large amount of solvent vapours at low gas velocities. The net result is to significantly reduce the time needed for devolatilization.

list.ch