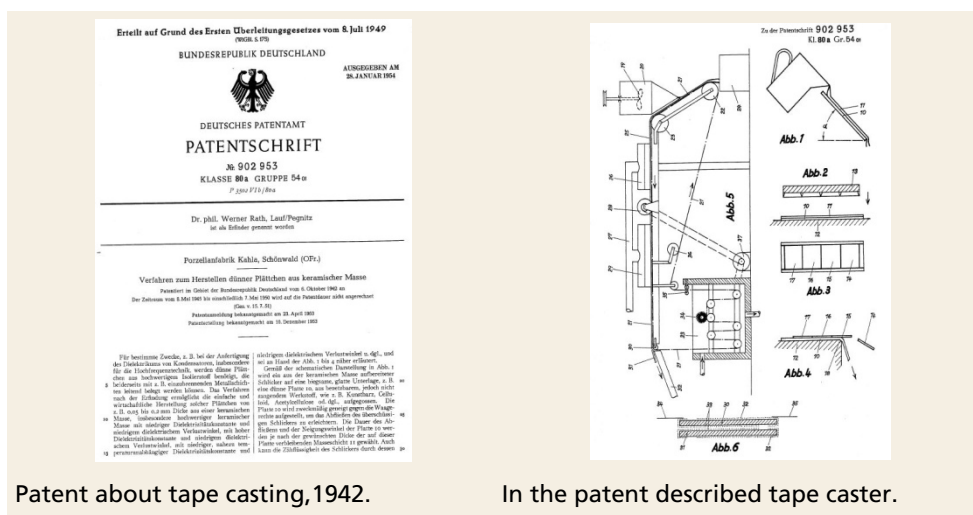


TAPE CASTING – MORE THAN 70 YEARS OF PRACTICAL EXPERIENCE IN HERMSDORF

Beate Capraro, Stefan Barth, Michael Hofmann
Fraunhofer Institute for Ceramic Technologies and Systems IKTS

HISTORY



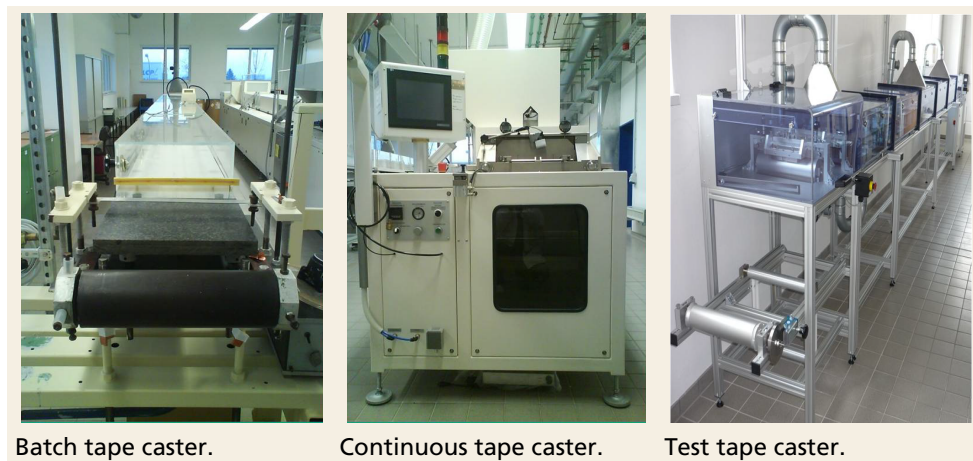
Patent about tape casting, 1942.

In the patent described tape caster.

MOTIVATION

The tape casting process is a modern ceramic shaping technology. It is predestined for the production of thin and plane ceramic parts. Fine grained ceramic powders or other materials are dispersed in special mixtures of solvents with suitable deflocculants. Subsequently they are converted into viscous casting slips through the addition of binders and plasticizers. The shaping by the doctor blade method is realized in a casting machine with a stationary doctor blade and a slowly moving casting carrier tape. After drying, where the solvent is completely removed, the green tape is flexible and can be cut and punched. Depending on material and technological requirements the tape contains 10-20 % organic compounds, which can be removed by controlled sintering. The result of the sintering is a plane and thin ceramic tape.

TECHNICAL EQUIPMENT



Batch tape caster.

Continuous tape caster.

Test tape caster.

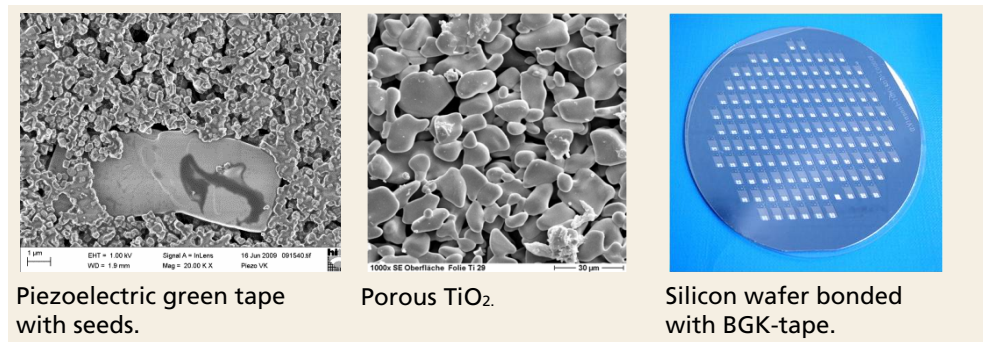
KNOW-HOW

Development and production of:

- Tapes with defined porous ceramic flat membranes with a thickness about 100-2000 μm
- Basic and functional LTCC tapes (low temperature cofired ceramics) and other functional tapes
- Piezoelectric tapes
- Hard and soft magnetic tapes
- Metal-powder tapes based on Ag, W, Mo, MoSi and others with a content of metal about 80 wt %
- Joining tapes
- UV-curable tapes

Characteristics of LTCC and other functional tapes

Specification	Designation	Characteristics	Sintering temperature [°C]
Basic tape	GK	Thickness 120 and 190 μm	875
Anodic bondable tape	BGK	LTCC tape with an adapted TCE to silicon	875
Soft ferrite tape	magnetic	μ up to 800	900
High dielectric tape	high-k	ϵ up to 2000	950



Piezoelectric green tape with seeds.

Porous TiO_2 .

Silicon wafer bonded with BGK-tape.

SERVICES OFFERED

- Processing of powders and preparing of slurries for tape casting process
- Small series production
- Processing of tapes by
 - cutting
 - punching
 - laminating
 - thermal treatment
- Development, production and processing of ceramic tapes with thicknesses from 50 μm to 2 mm and widths up to 30 cm with your material for your special application.