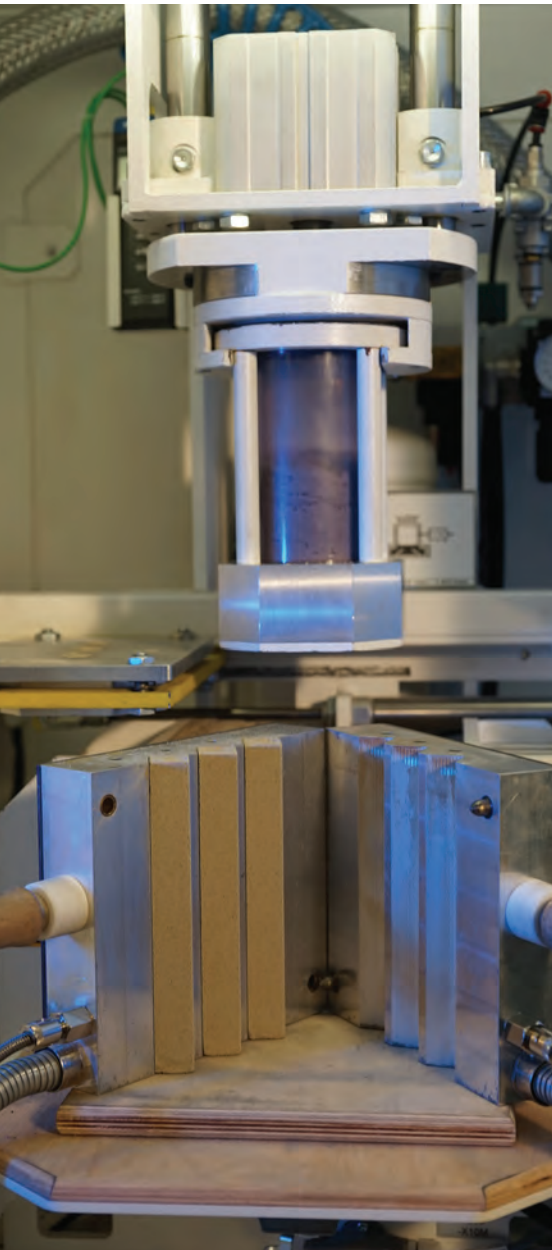




## SOLOSIL\* TX - Inorganic warm set binders

NON-FERROUS FOUNDRIES - MASS PRODUCTION

- + Eco-friendly, inorganic binder system
- + Suitable for the large-scale production of cores for non-ferrous castings
- + High binder reactivity allows short core-making cycle times
- + Cores reach the strength level of PUCB and can be stored easily
- + No pollution and odour emissions during core production, storage and during casting



# SOLOSIL TX – Inorganic binder for cores

For environment-friendly core production without hazardous emissions

SOLOSIL TX is a binder that can be used to produce complex cores for the automotive industry.

Cores made with SOLOSIL TX are completely inorganic and therefore emit only water vapour during core storage and the casting process.

The core-making process as well as cores produced from SOLOSIL TX are completely odourless.

Thanks to intensive research, Foseco succeeded to develop a binder with which it is possible to achieve core strengths reached by conventional cold box binders.

Curing of SOLOSIL TX bonded sand takes place by moisture extraction by means of warm core box tools which are temperature-controlled at 150° C in combination with a warm air purge.

## Cores made with SOLOSIL TX show many benefits:

- + High core strengths, equal to Coldbox
- + Good sand flowability
- + Sharply contoured and high dimensional accuracy
- + Easy dosing of the binder
- + Free of harmful substances
- + Trouble free processing
- + Fast operational availability
- + High storage stability over several months under controlled conditions
- + Completely odourless during core-making, storage and casting
- + No formation of fume during casting
- + Free of Phenol, Formaldehyde, Isocyanate and Amines

## The inorganic binder SOLOSIL TX is characterized by:

- + Free of any organic compound
- + Low addition rate to the sand
- + Long binder shelf life
- + Easy dosing of the binder
- + Free of harmful substances
- + Trouble free processing



Section from water jacket core 03HD

# SOLOSIL TX – Inorganic binders for cores

In practical use

## Processing of SOLOSIL TX

SOLOSIL TX can be mixed with any sand using batch or continuous mixers. The sand mixtures produced with SOLOSIL TX provide a bench life of several hours and are characterized by excellent sand flow, therefore even small segments within core boxes can be filled completely and tightly during the core-blowing process.

Thanks to the high reactivity of the binder system total production cycles can be set corresponding to those of traditional organic binder systems.

Due to the absence of solvents, cores made with SOLOSIL TX can be cast immediately after core-making. However if needed cores can also be stored without any quality loss for several weeks.

## Computer simulation of the core production for SOLOSIL TX

The processing of inorganic, thermosetting core binder materials like SOLOSIL TX takes place in heated metal core boxes. The removal of water from the binder is effected by temperature increase of the moulding material due to heat input from the core box plus additional hot air purging.

For cost-effective core production the shortest possible cycle times should be aimed at. The cycle time is determined by the process stage of drying the core material. The computer simulation of the core production process can be a valuable aid for optimising the flow of the air into the core box, necessary for removal of the moisture.

For this, it is necessary, however, to know numerous product and process quantities to input the program with the parameters required for the calculation.

The execution of calculations of this kind can, in the initial stage of core box development and positioning of heating elements in the core box, save expensive test series which become necessary when the core production tool does not perform as required in foundry practice for achieving the desired core quality or production cycle time.

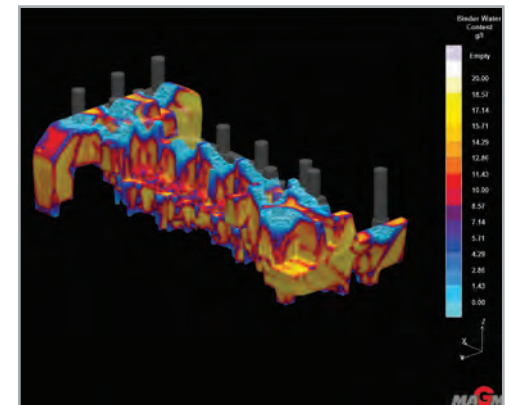
Completely compacted core bridges of a water jacket core produced with SOLOSIL TX for an aluminium cylinder head for a passenger car



By successful development of the SOLOSIL TX additive it was possible to eliminate the metal-sand reaction completely



Water content of an oil gallery core after 5 seconds





# Inorganic binders - Research & Development

Focus on Product development

## Modification of existing binder systems

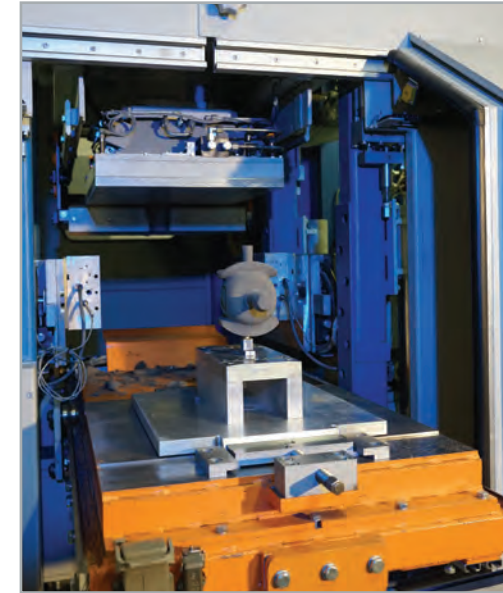
SOLOSIL TX binder systems are under continuous development and will be modified according to the customer needs.

In this context it is of particular importance to test new raw materials in order to improve both the strength characteristics of cores bonded with SOLOSIL TX and the thermal breakdown after casting.

## Development target: SOLOSIL TX inorganic binder systems for ferrous castings

Another focus of the ongoing research activities is the development of inorganic SOLOSIL TX systems for the mass production of ferrous castings.

These new inorganic binders have to provide at least equivalent technical performance to conventional PUCB binder systems and on top superior characteristics in respect to environmental aspects.



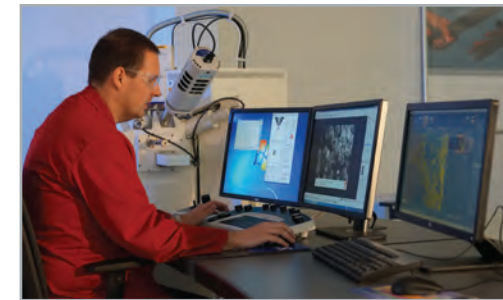
Core blower with inorganic SOLOSIL TX core



Powder Flow Tester for the determination of the sand flowability



Product development team



Analyses of raw materials by SEM



\*FOSECO, the Logo and SOLOSIL are trade marks of the Vesuvius Group, registered in certain countries, used under licence. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system of any nature or transmitted in any form or by any means, including photocopying and recording, without the written permission of the copyright holder or as expressly permitted by law. Applications for permission shall be made to the publisher at the address mentioned.  
Warning: The doing of an unauthorised act in relation to a copyright work may result in both a civil claim for damages and criminal prosecution. All statement, information and data contained herein are published as a guide and although believed to be accurate and reliable (having regard to the manufacturer's practical experience) neither the manufacturer, licensor, seller nor publisher represents nor warrants, expressly or impliedly: (1) their accuracy/reliability, (2) that the use of the product(s) will not infringe third party rights, (3) that no further safety measures are required to meet local legislation. The seller is not authorised to make representations nor contract on behalf of the manufacturer/licensor. All sales by the manufacturer/seller are based on their respective conditions of sale available on request.  
© Foseco International Limited 03/15.

COMMITTED TO FOUNDRIES

**Foseco International Limited**  
Drayton Manor Business Park,  
Tamworth, Staffordshire,  
England B78 3TL  
Phone: +44 (0)1827 262021  
Fax: +44 (0)1827 283725  
[www.foseco.com](http://www.foseco.com)  
Please contact your local Foseco team