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8. Uluslararası Döküm Kongresi / 8th International Foundry Congress by TUDOKSAD Academy In conjuction with Ankiros / Annofer / Turkcast fairs

# «KW-TWINPRESS 4.0-Otonom Kalıplama Uygulaması»

#### «KW-TWINPRESS 4.0-Self Regulating Mould Production»

#### Luca Gervasoni (Künkel Wagner, LMA)



#### 2.Oturum: Döküm Teknolojileri Demir&Çelik

2nd Session: Casting Technologies Iron&Steel

Oturum Başkanı/Session Chairman: Gürolhan Yaşar (Demisaş Döküm Emaye Mam. San. A.Ş.)

Oturumlarda yer alan sunumlar 3 Ekim 2016 Pazartesi tarihinde akademi web sayfasına (akademi.tudoksad.org.tr) yüklenecektir.



FORMANLAGEN



# The power to shape: Twinpress<sup>®</sup> 4.0



### KW – Your one-stop shop

#### Since 1907 cross-process expert knowledge in GREEN SAND FOUNDRY

- **MOULDING LINES:** innovative technologies and robust machinery concepts for small or large lines
- **SAND PREPARATION:** pioneering ideas and flexible solutions for optimal moulded sand quality
- **POURING MACHINES:** state-of-the-art machinery for cost effectiveness and process assurance

SERVICE: customer tailored response for maximum support

MADE IN GERMANY









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#### Squeezing with Multi-piston squeezing head – only 50% of the answer



- The squeezing pressure applied FROM THE TOP to the sand on the back of the mold gets diverted towards the flask and upper pattern walls.
- Only a limited part of the pressure applied reaches the lower part of the pattern plate.
- Consequence is a variation in mold strength: higher mold strength on the back and lower mold strength on the pattern side. This is a disadvantage ...







# **<u>DIRECT MOLDING</u>**: the Twinpress<sup>®</sup> pattern bolster







## **<u>DIRECT MOLDING</u>**: the movement of the Twinpress<sup>®</sup> frame





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## **<u>DIRECT MOLDING</u>**: the Twinpress<sup>®</sup> pattern bolster function



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### Twinpress<sup>®</sup> – the DIRECT MOLDING process

#### 1. Adaptation to pattern contours

- Sand has been loaded into the flask and filling frame
- **Twinpress**<sup>®</sup> cylinders are in extended position > frame raised
- Pattern bolster moves upward into position
- Multiple squeeze pistons press into the sand from top

#### 2. Twinpress® cylinders retract

- **Twinpress**<sup>®</sup> cylinders retract, therefore the frame is lowered
- Pattern moves upwards into the sand, inside the Twinpress<sup>®</sup> frame (DIRECT MOLDING)
- Multiple squeeze pistons extend into the sand

#### 3. Final squeezing

• Multiple squeeze pistons end compaction with defined squeezing







## Introducing Twinpress 4.0<sup>®</sup> – The sand variable: Sand "A"







#### Introducing Twinpress 4.0<sup>®</sup> – The sand variable: Sand "B"



The different reaction forces of the moulding sand are due to variations in sand properties: compactability – sediments – grain size distribution (not all controlled automatically)

Different Forces = DIFFERENT MOLD STRENGHT







### **Twinpress 4.0<sup>®</sup> revolution:** keeps the mold strength contsant even with sand variation











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## **Twinpress 4.0<sup>®</sup> displacement curve for varying sand properties**







### Twinpress 4.0<sup>®</sup> - Conclusions

- Twinpress > DIRECT MOLDING > pattern squeezed inside the sand
- **Twinpress 4.0**<sup>®</sup> > the smart machine, **adaptive** according to sand conditions
- Extra cost for Twinpress pattern bolster and some extra maintenance
- Uniform compaction, even near the pattern edge > more patterns on the plate > higher productivity
- Mold complex patterns and deep pockets > less fettling, less cores
- No use of compressed air > saving in daily operation, no air vents on patterns
- Optimized squeezing pressure (energy savings up to 30%, compared non-Twinpress 4.0)



#### For further information: LMA booth, Hall 3-C110



KÜNKEL WAGNER Germany GmbH Hannoversche Straße 59 31061 Alfeld Tel.: +49 (0) 5181 78-0 Fax: +49 (0) 5181 78-306 info@kuenkel-wagner.com kuenkel-wagner.com 24/7 KW-SUPPORT-HOTLINE for technical support: +49 (0) 5181 78-800 WEITER DENKEN.

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