25 - 27 October / Ekim 2018
TÜYAP Fair, Convention & Congress Center, İstanbul
Tüdöksad Akademi 10. Uluslararası Döküm Kongresi / 10th International Foundry Congress by Tudoksad Academy
In conjuction with ANKIROS / ANNOFER / TURKCAST fairs

«The Green Sand Foundry: Embracing Technology, Today and Tomorrow»

«Yaş Kum Kalıplamanın Bugünü ve Yarını, Son Gelişmeler»

Lars Olsen
(DISA Industries A/S, Meta-Mak Metalurji)

6.Oturum / 6th Session
Oturum Başkanı / Session Chairman: Prof. Dr. Ali Kalkanlı (ODTÜ)

The Green Sand Foundry of Tomorrow

By Lars A. Olsen, OEM Sales Manager, DISA

Norican Group
Shaping Industry

Agenda

1 Introduction

2 Sustainability

3 Industry 4.0

4 Productivity

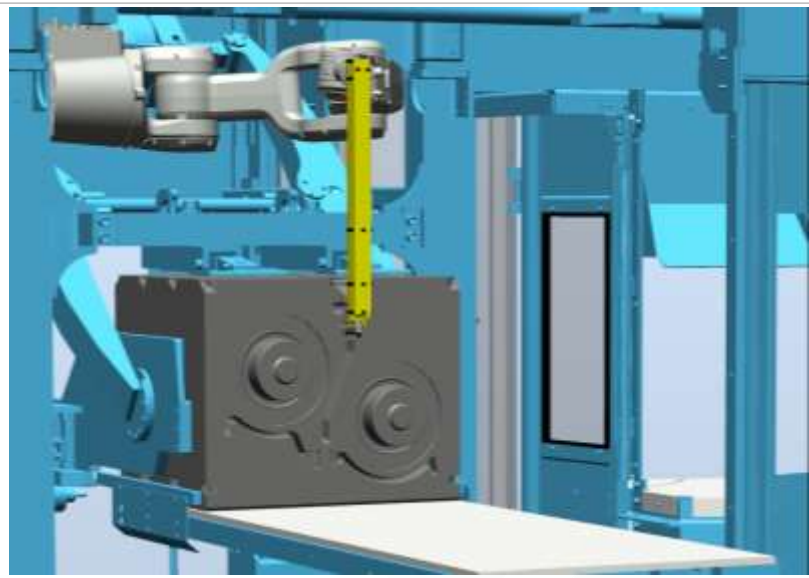
5 Conclusion

Introduction

- Clay bound moulding has been used since the 3rd millennium BC
- The clay bound sand moulds as we know them today have been used industrially for many years
- However there is still a huge potential for further development
- Historically a strong focus has been on productivity
- Today many other dimensions exist for developing the technology
- This presentation will highlight some examples of the areas, that will bring the green sand moulding into the future:
  - ✓ Sustainability
  - ✓ Industry 4.0
  - ✓ Productivity
- Only a few examples will be presented today due to time limitation

Sustainability

Sustainability comes in many forms - some examples:



<u>Less strain on the operators:</u>

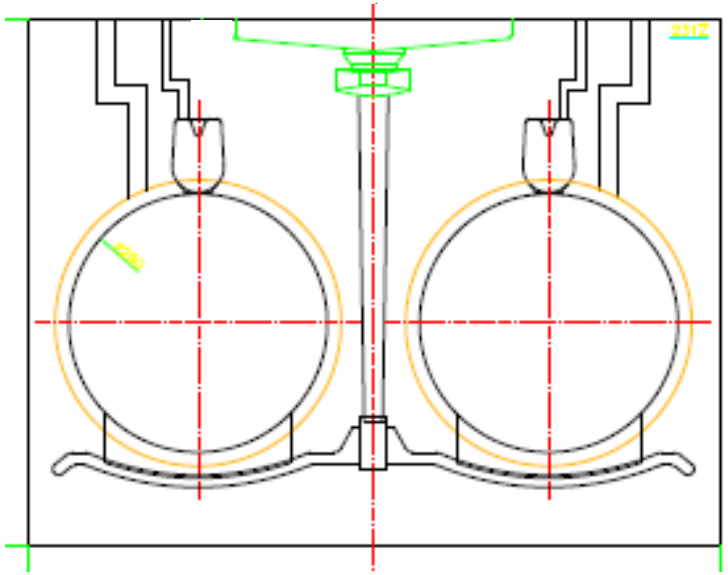
- Highly repetitive movements are carried out in foundries
- Setting of filters in un-cored moulds is one example
- Up to 400 – 500 repetitions of the same manual movement per hour
- New inventions have removed these highly repeated movements

Sustainability

Sustainability comes in many forms - some examples:

<u>Reduce use of material and energy - Example 1:</u>

- Draining of the pouring cup – Fast Pour
- Example:
  - Average saving of iron per mould: 1.4 kg
  - At 1,000,000 moulds per year: 1,400,000 kg melted iron saved
- Extra mould height is needed (<100 % utilisation is still interesting)

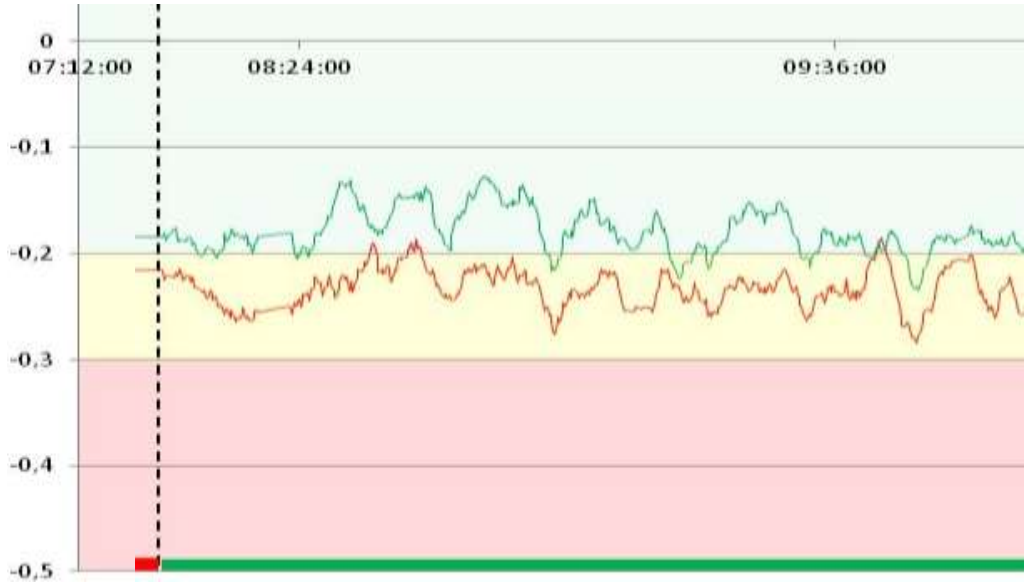


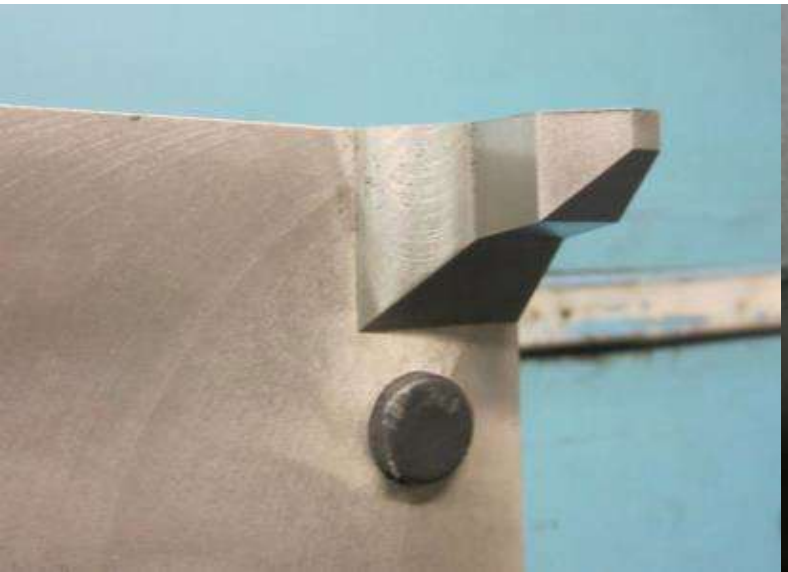
Sustainability

Sustainability comes in many forms - some examples:

<u>Reduce use of material and energy – Example 2:</u>

- Reduce scrap and rework due to geometrical issues
- Real time scanning of moulds measuring:
  - Mismatch, Parallelism, Steps and Mould gaps (<± 0.05 mm)
- Prevents pouring moulds out of tolerance
- Example - Vertical mismatch Left and Right:





Industry 4.0

Industry 4.0 comes in many forms - some examples:

<u>First step - Data availability:</u>

- Optimization is often based on unstructured data
- Unstructured data ⟶ Structured data
- Problem solving becomes much more efficient
- A lot of possibilities is seen with data availability

Productivity

Improving productivity is still an important factor:

<u>Some productivity enhancing examples:</u>

- High capacity moulding lines
  - Up to 555 un-cored and 485 cored moulds per hour
- Automatic setting of cores at un-cored moulds
  - Up to +70 moulds per hour
- Improved pouring system like Fast Pour or Double Index system
  - 20 % or more increase in productivity
- At the end of the day, inline monitoring will increase productivity

Conclusion

- Clay bound sand moulding still has great potential for further development
- Today some examples have been highlighted addressing areas like:
  - Sustainability
  - Industry 4.0
  - Productivity
- Of course a lot other possibilities exists
- **A positive outlook for The Green Sand Foundry of Tomorrow is seen**