Reden BV

Onze MrReves

Marco Ezendam

Inktjet-technologie

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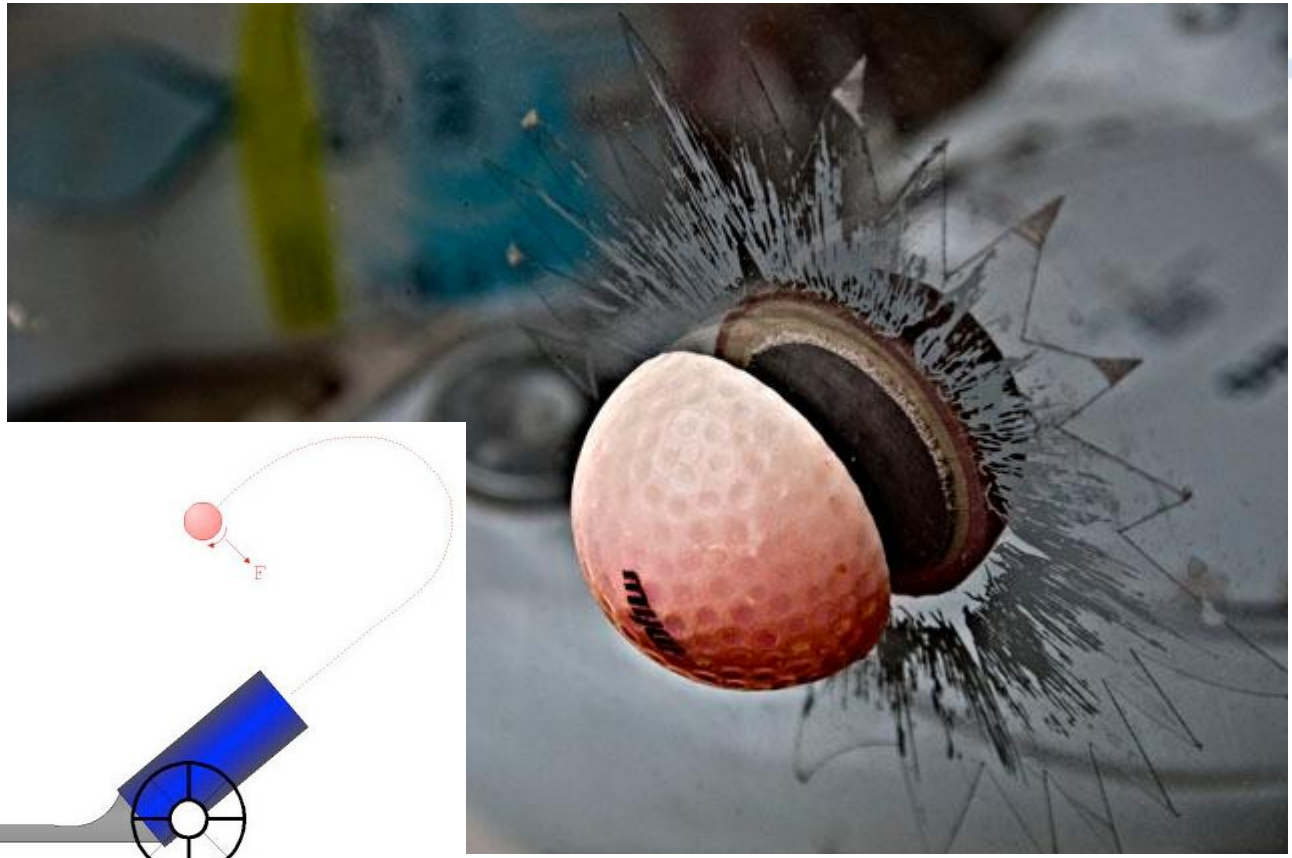
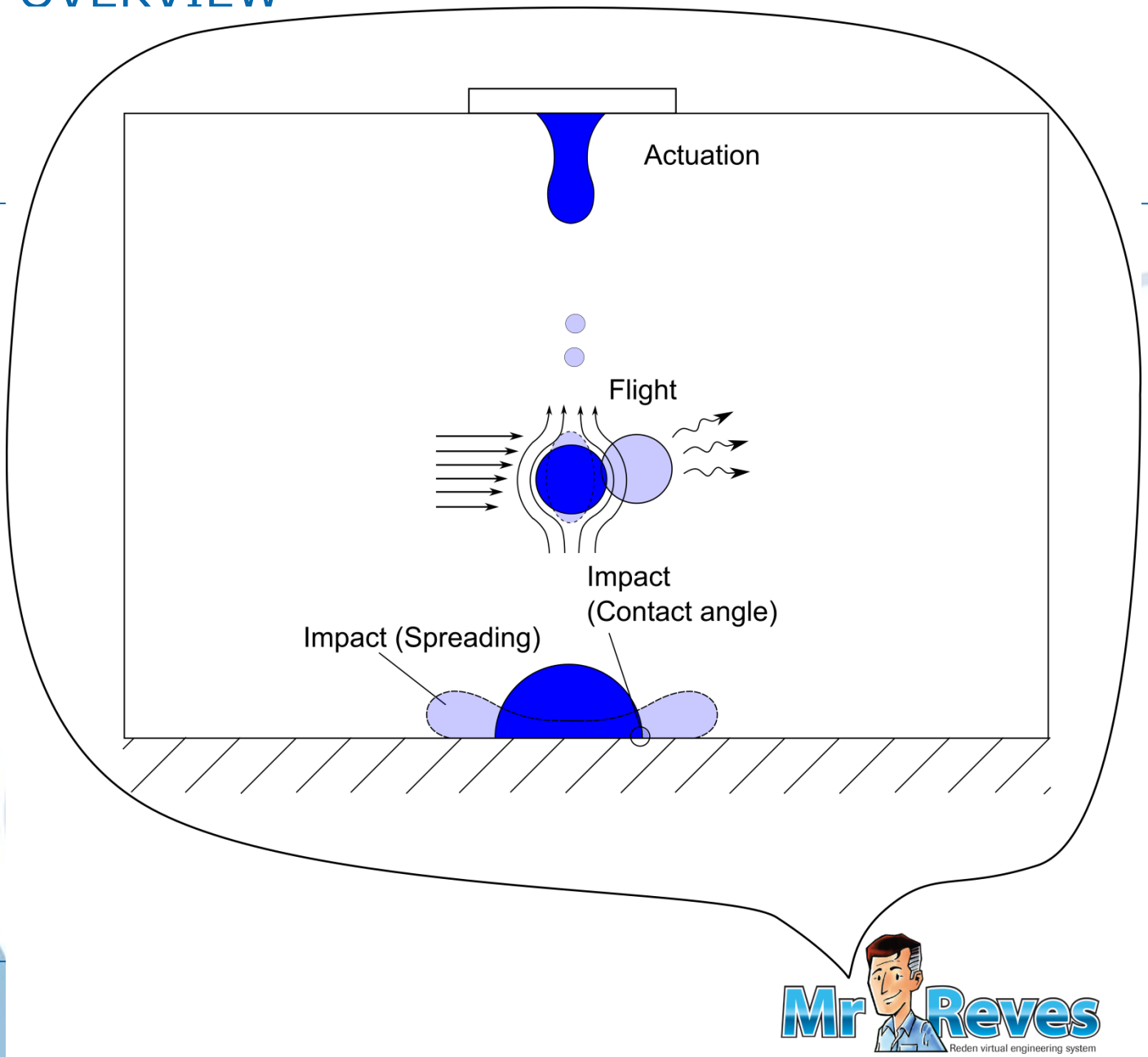
Inktjet-technologie



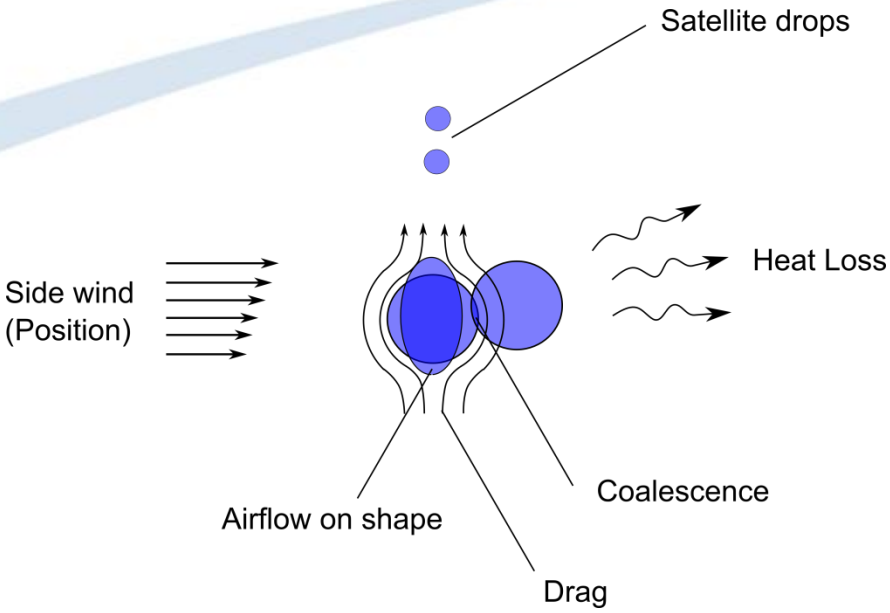
OVERVIEW



DROPLET FLIGHT

Estimation of influence of parameters during flight, analytical approach of:

- Influence drag
- Influence airflow on position
- Influence airflow on shape
- Behaviour satelite drops
- Coalescence with drops before impact
- Gravity
- Heat transfer (Evaporation?!)



Kennisregels

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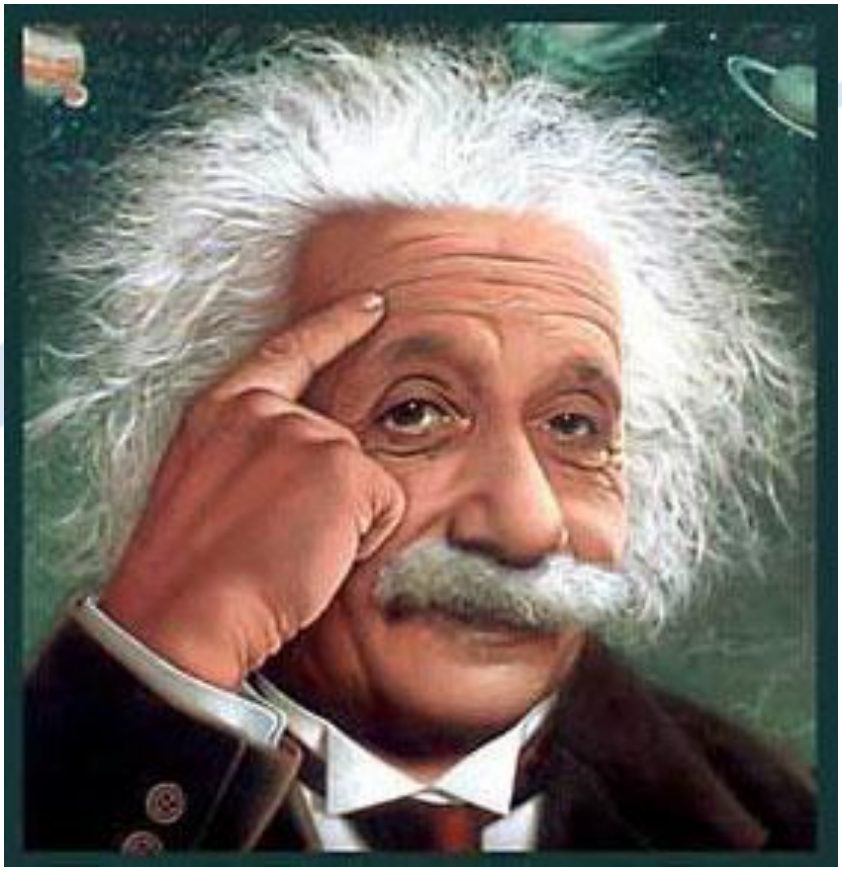

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Kennisregels

- $E=mc^2$
- F=m.a (Newton)
- y=Fl3/3EI (“vergeet mij nietje”)
- IF..THEN...ELSE....
- ……..

Performance = f(x,y,z,..ontwerpparameters)

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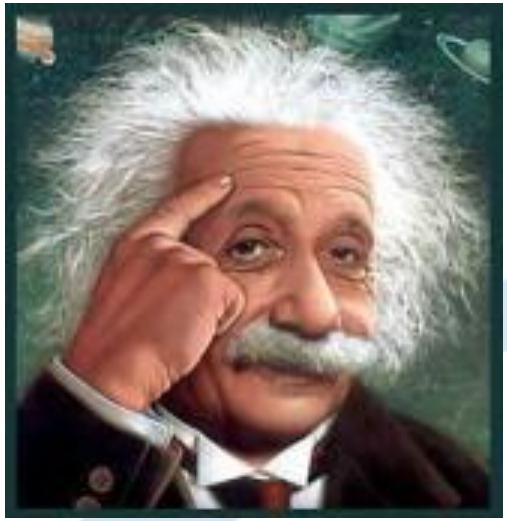
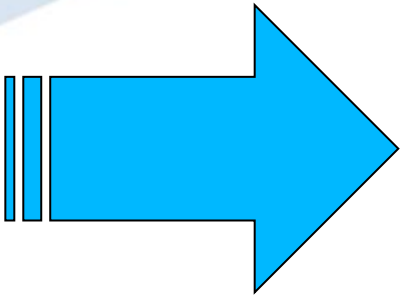
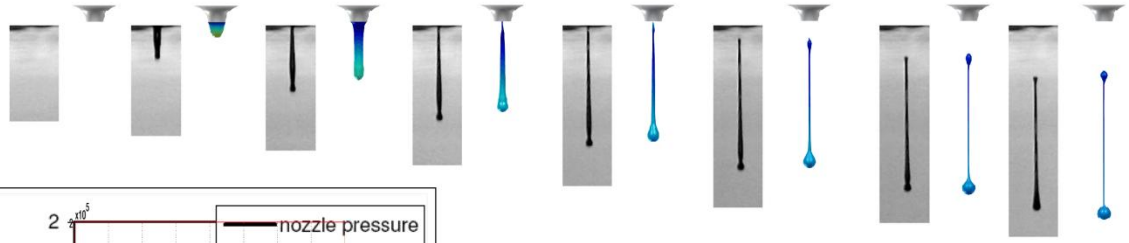
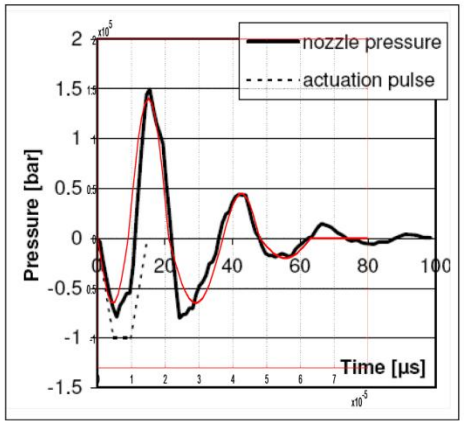


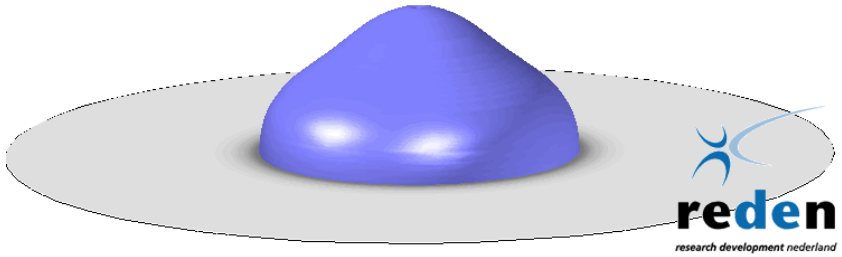


Jetting

DROPLET ACTUATION

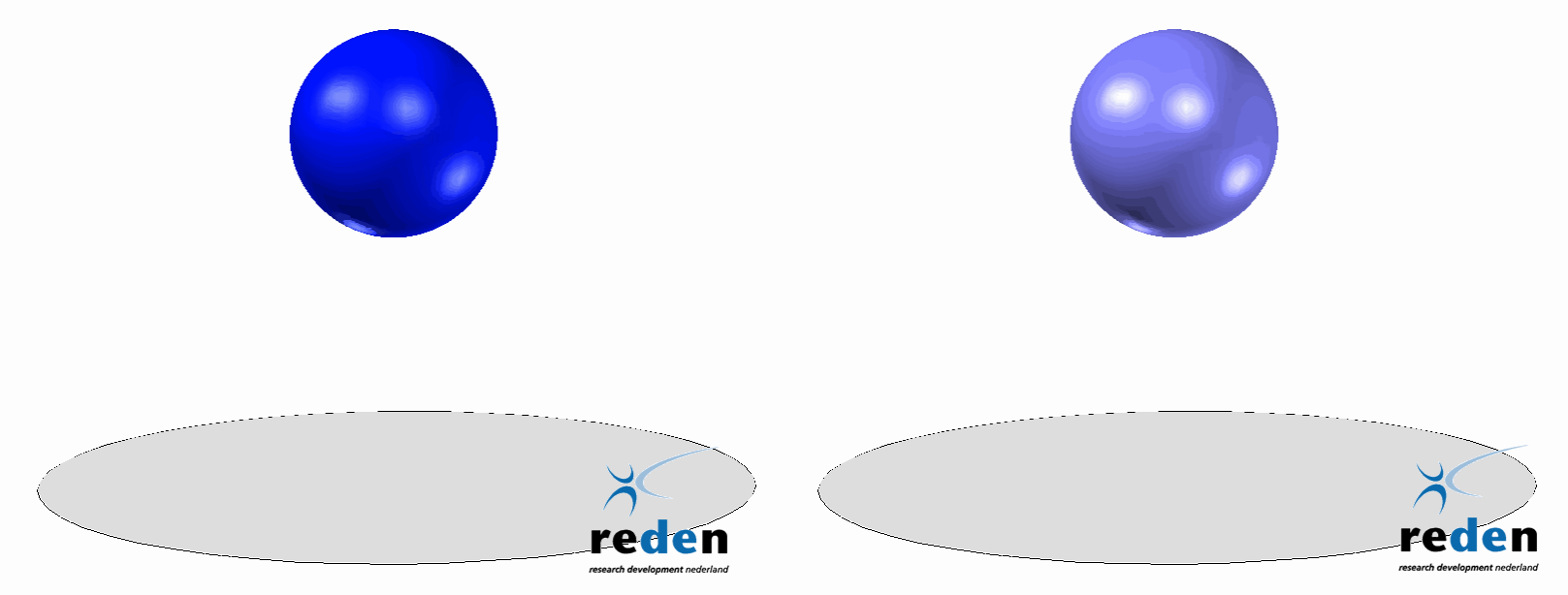




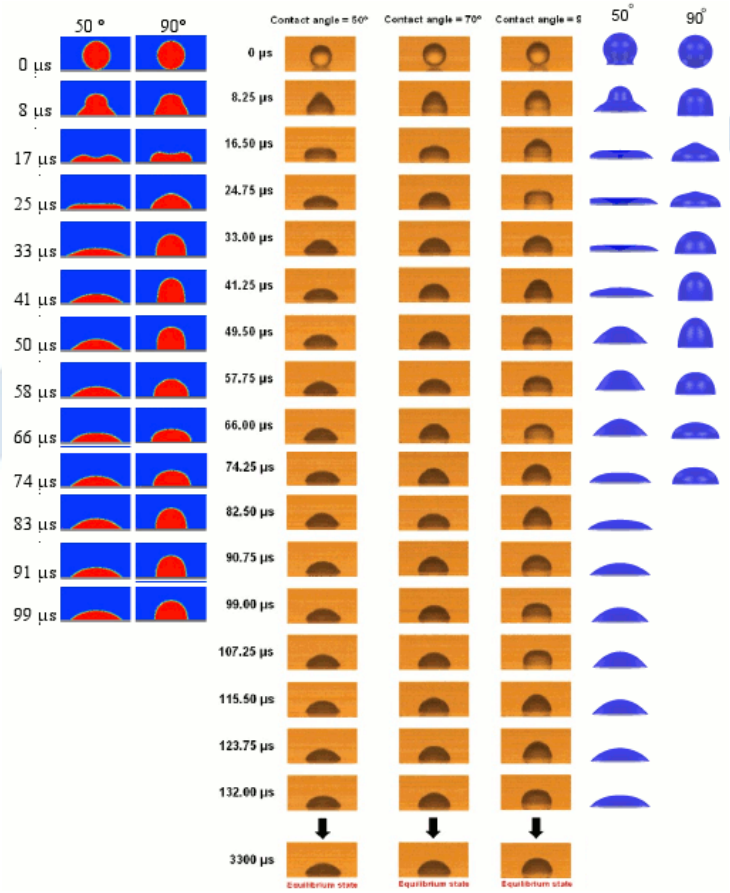


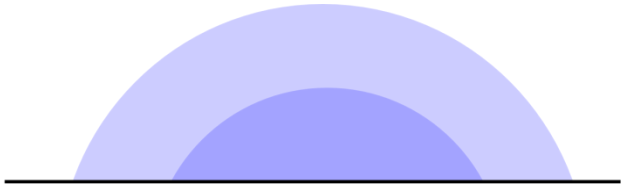
IMPACT & SPREADING

IMPACT & SPREADING
Difference in spreading due to different contact angle.



IMPACT & SPREADING





(DROPLET) SOLIDIFICATION

SOLIDIFICATION

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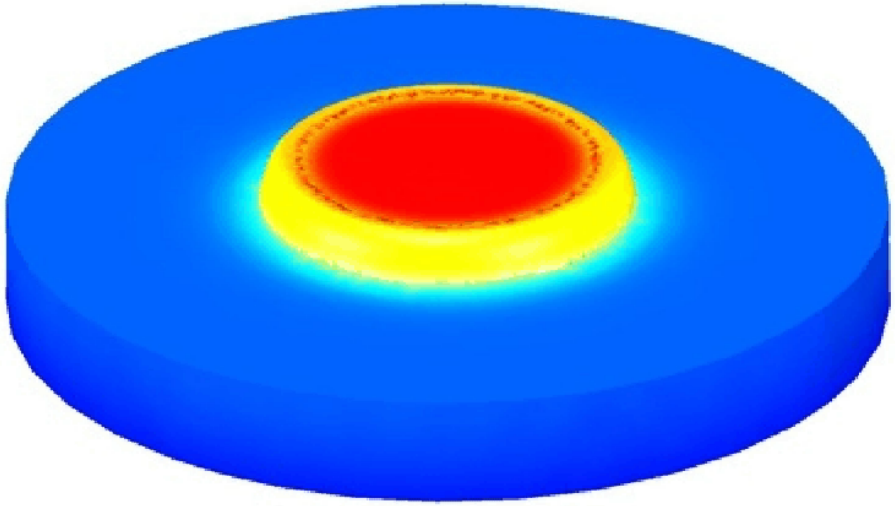
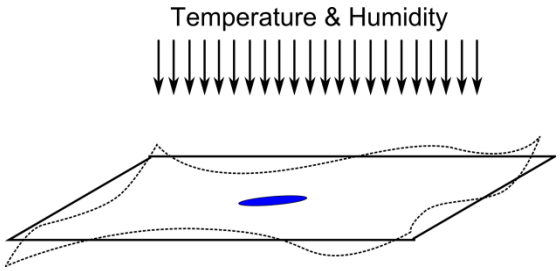
Solidification of a Molten Aluminum Droplet on a Cold Surface

The combination of multiphase and free-surface flows with interfacial phenomena commonly occurs in the production of metals.

In this model, a molten aluminum droplet flows over a colder surface whilst solidifying. The animation shows the droplet as it flows over the surface; the color plot shows the temperature distribution.



SUBSTRATE DEFLECTION



PAPER DEFLECTION

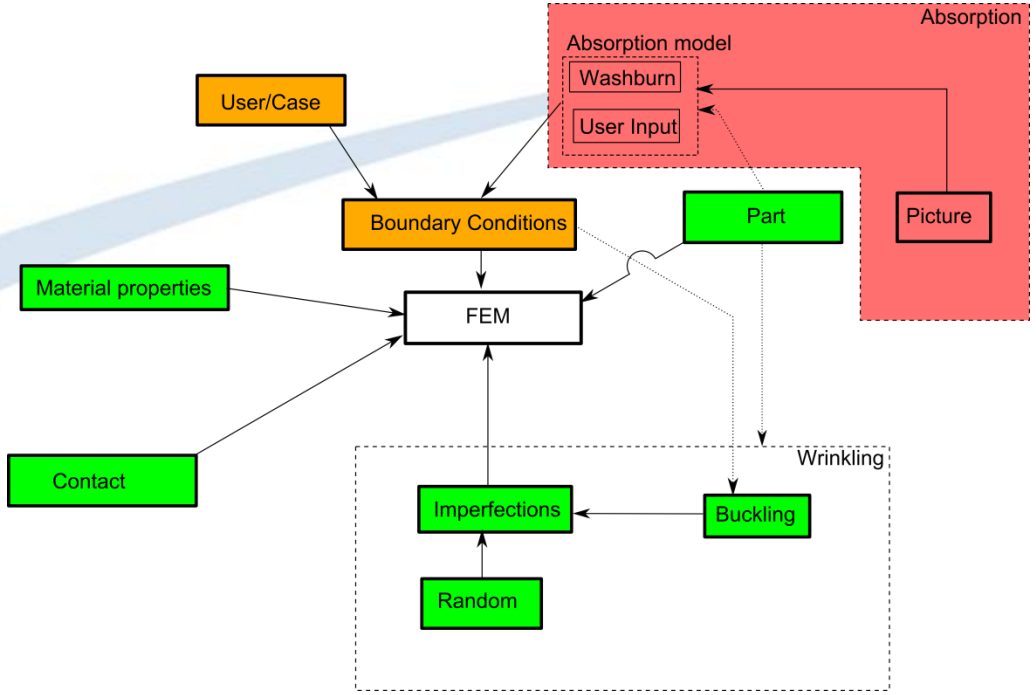
Change in paper properties due to the wetting.

Swelling of the fibres causes paper to deflect.

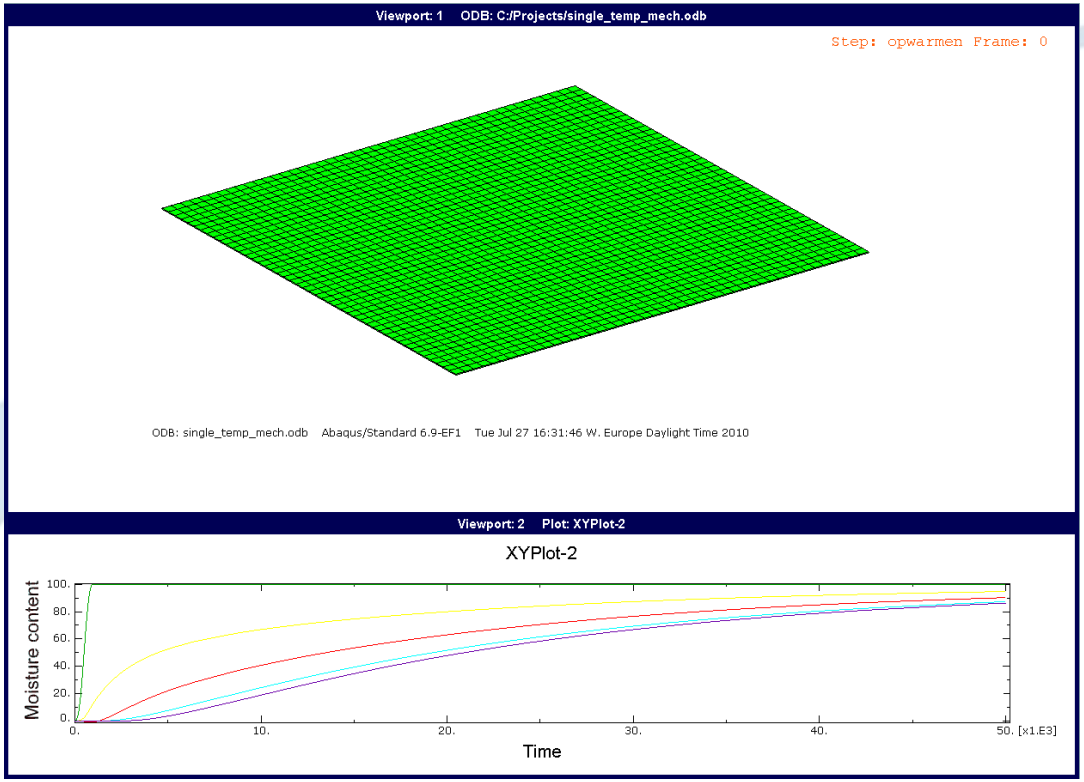
Paper material estimated using simple experiments.

Model capable of describing paper deflections due to humidity, ink load and temperature.

Possibility to include simulation of wrinkling due to temperature, ink load or/and humidity changes.



PAPER DEFLECTION
Simple experiment and FEA



PAPER DEFLECTION
Wrinkling due to ink load/ humidity

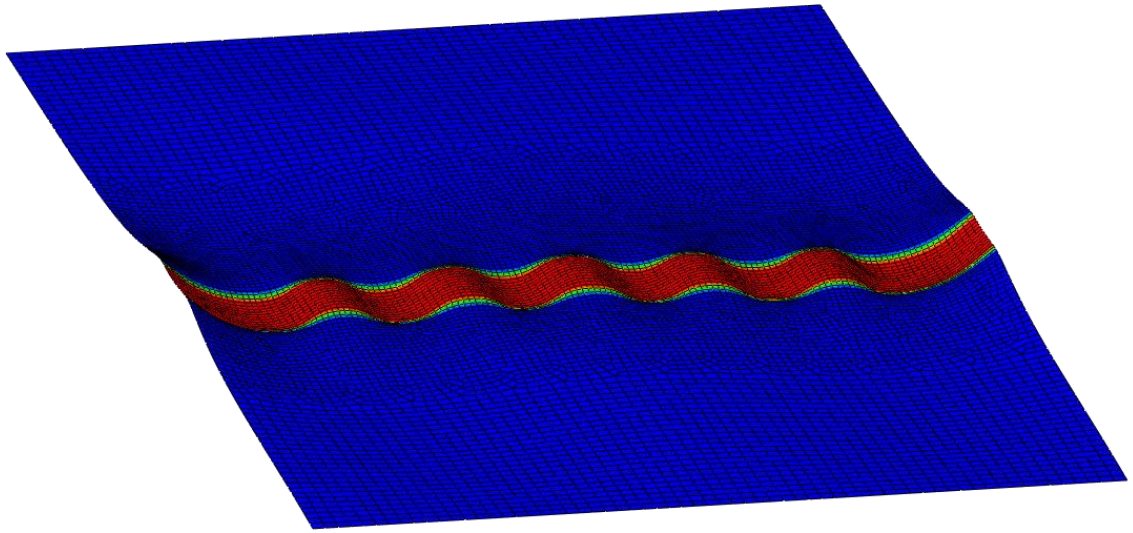
Wrinkling due to wetting

(Blue is dry, red is wetted paper).

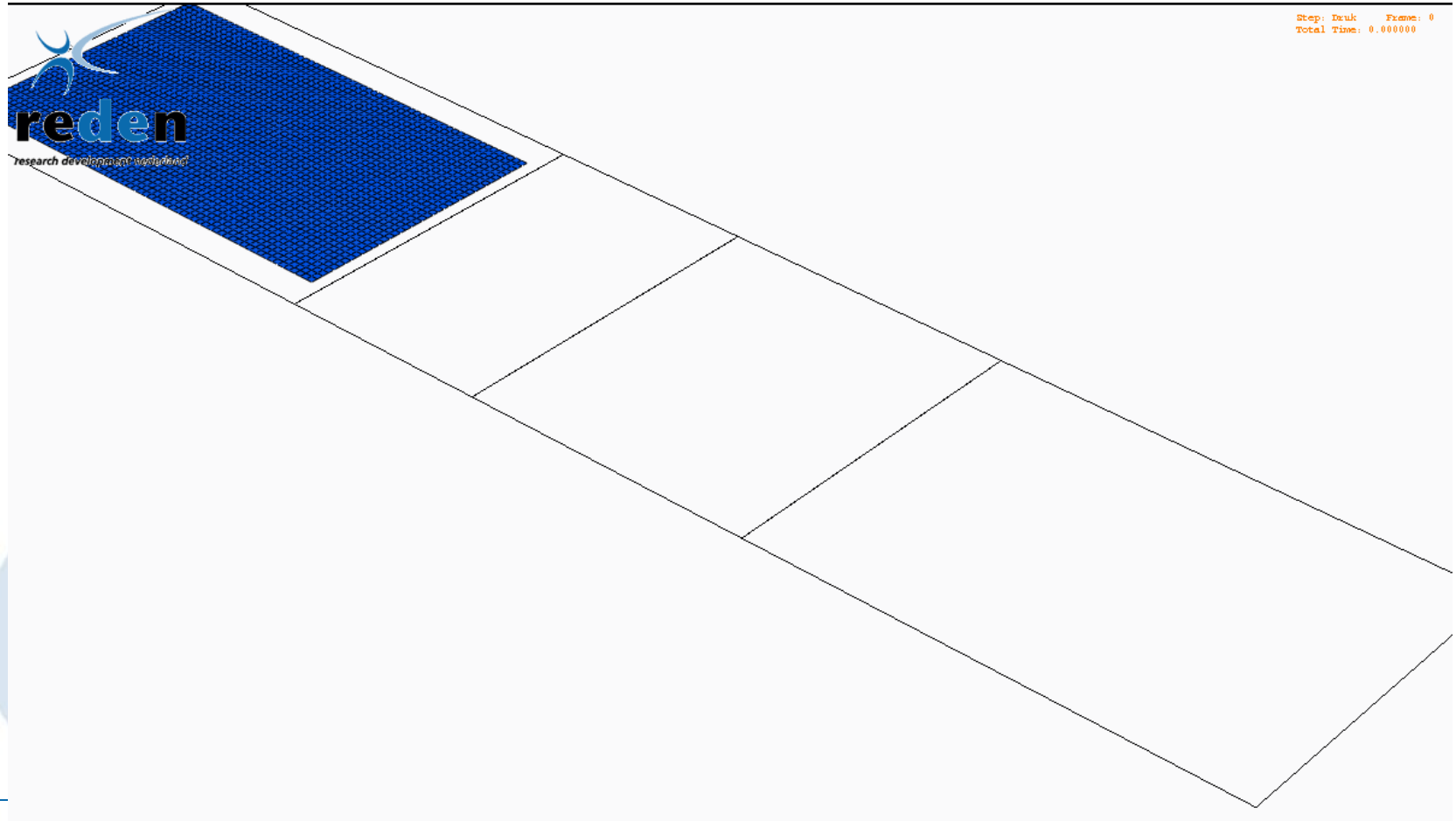
The deformations are scaled with a factor 5.

The wrinkling can be initiated using a buckling analysis or random imperfections.

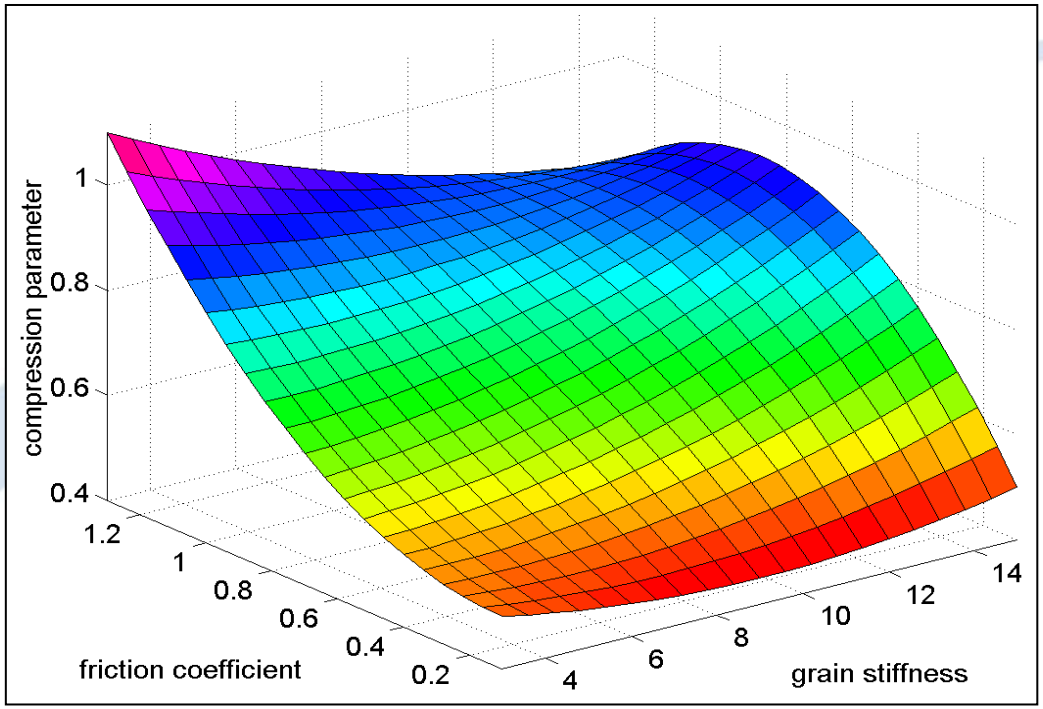
(Quasi-) static analysis



PAPER DEFLECTION
Wrinkling during paper transport in printer due to temperature/humidity



En nu naar kennisregels....



3D-respons DoE

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MrReves

Samenvatting

Reden is een dienstverlener

Gebied is : modelvorming & simulatie

Resultaat is kennisregels (hoe en waarom)

MrReves is het door ons ontwikkelde expertsysteem