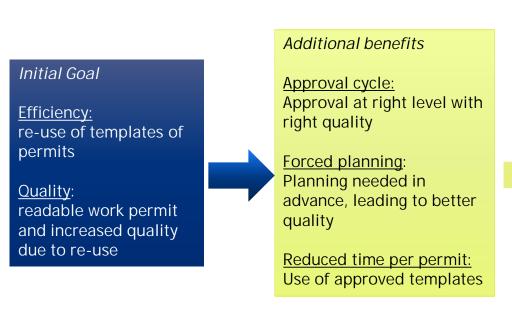


Why digitization of work permits?

- Digitization of work permits started as a local initiative of several sites in DSM.
- Best practice of sites was copied to other sites and resulted finally in a corporate project.



Spin off

<u>DSM standard:</u> 1 format as minimum

1 format as minimum requirement for all plants

Life saving rules:

LSR embedded in standard

Forced rules
(Mandatory) rules on
activities, hazards and
measures

LMRA and checklists
Harmonization of hand out
in field and last minute
risk assessment

New initiatives

SAP connection Work orders copied to

Work orders copied to work permit system

Data analytics:

Dashboarding on process and quality.

Review DSM trending

Example: how many CSE entry in DSM, where can we reduce

Work permit audits

Review WP digitally in the field and analyze

Digital:

Online tools in the plant for release WP

Lock out Tag out Try out: Digital LoToTo system

Approach of DSM

- Vendor selection was done, based on positive experience of several units
- Corporate contract and project organizing the implementation
- Co-operation between corporate and Business groups to define minimum standard of a work permit
- Responsibility of execution and adherence to the standard in the Business groups

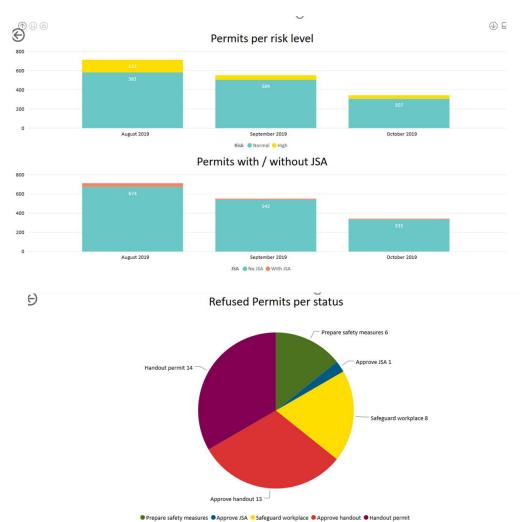


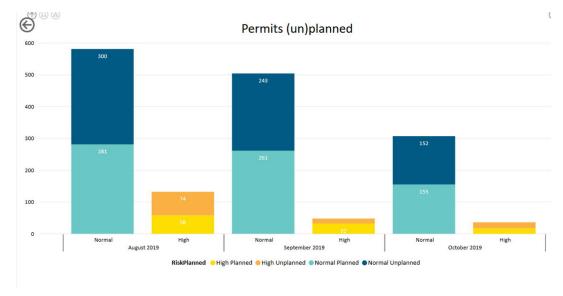
Challenges

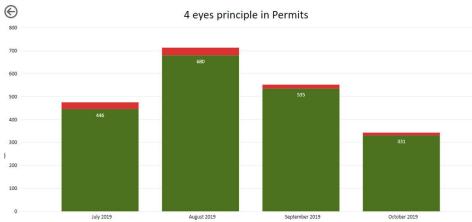
- Cultural differences:
 - Who is responsible for hand out?
 - Support needs per region are different
- Maturity in work permit is essential before starting with digitization
- Local legislation is different for all countries, so standard needs to be adapted for that
- Change control needed on standard:
 - Learnings from incidents
 - Updates of requirements and Life Saving Rule Standards
- Balance between enforcing and responsibility at site:
 - No 100% standard at site, only minimum standard
 - Tools needed to compare configuration with DSM standard



Dashboarding (Examples)







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