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LIMA, PERÚ - 29TH ANNUAL CONFERENCE
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IMPLEMENTING TAKT PRODUCTION IN RENOVATION PROJECTS

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AGENDA

- Introduction
- Research design
- Literature review
- Process model
- Implementation
- Discussion & Conclusions

INTRODUCTION

- The unique features of renovation projects make production control challenging
- The specific suitability and benefits of takt production in renovation projects have not been studied widely
- A design science study that examines the suitability of takt production in renovation projects
- The findings imply that takt production can benefit renovation projects

RESEARCH DESIGN

Design science research

Research questions:

- Is takt production suitable for renovation projects?
- If yes, what restrictions, preconditions and benefits are associated with the method?

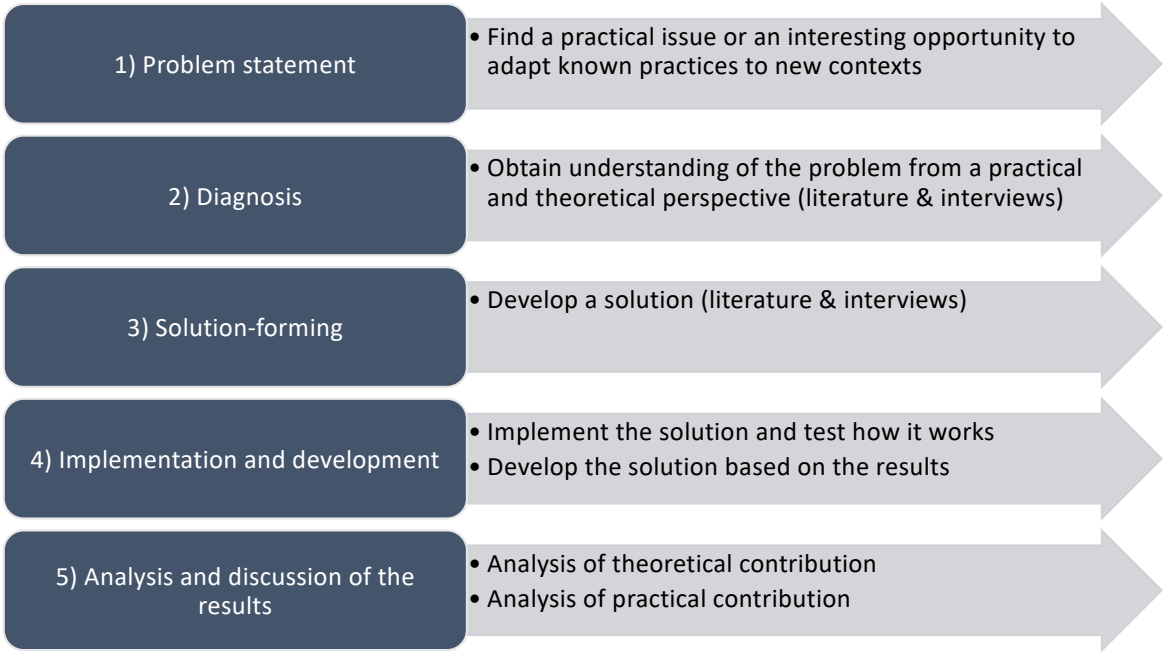


Figure 1. The structure of the research

LITERATURE REVIEW – TAKT PRODUCTION

- Three different takt production methods were studied:
  - Takt Planning and Takt Control (TPTC) (e.g., Binninger et al. 2017)
  - Takt Time Planning (TTP) (e.g., Frandson et al. 2013)
  - Ship Cabin Refurbishment (Heinonen and Seppänen 2016)
- There are various documented cases but not too many from renovation projects

LITERATURE REVIEW – RENOVATION PROJECTS

- Special work tasks, including e.g. demolition, abatement, preservation and conservation require particular professional knowledge
- The current condition and operating systems of an existing asset need to be fully understood and researched
- Future occupants often define the schedule and the sequence of renovation

SOLUTION – PROCESS MODEL

- Macro-norm-micro approach of TPTC supported with collaborative tools
- Macro-level standardization: work tasks split in three separate phases with different takt time and takt area

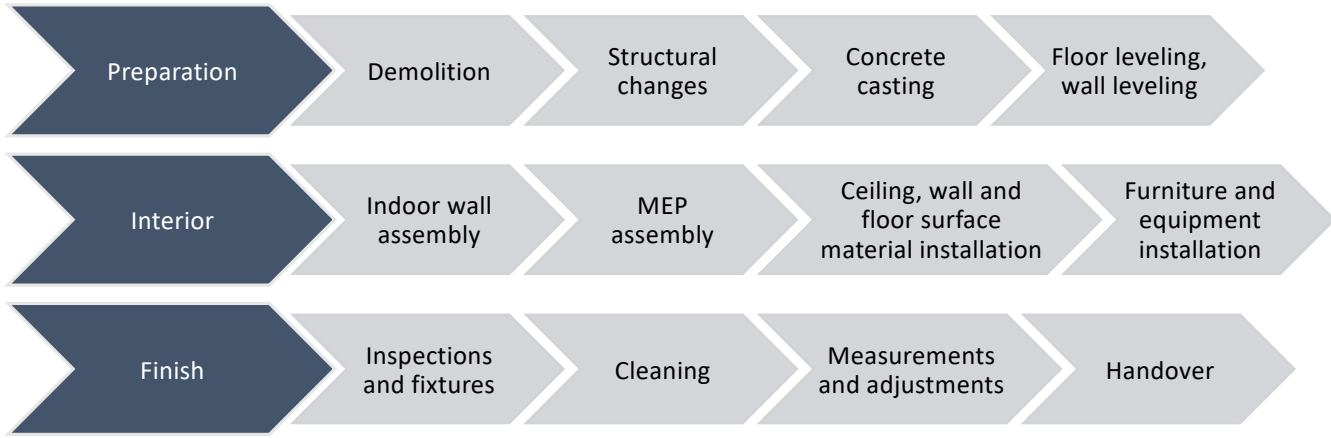


Figure 2. Three-phase takt production in renovation projects

IMPLEMENTATION – CASE PROJECT

- 20 000 sqm office building (1994)
- Full interior & MEP renovation
- Risks included
  - Unaccomplished design
  - Unexposed structures
  - A short production planning time
  - A customer-defined overall duration
- Implementation in two office floors
- Four ~780 sqm takt areas / floor
- Takt time 5 days

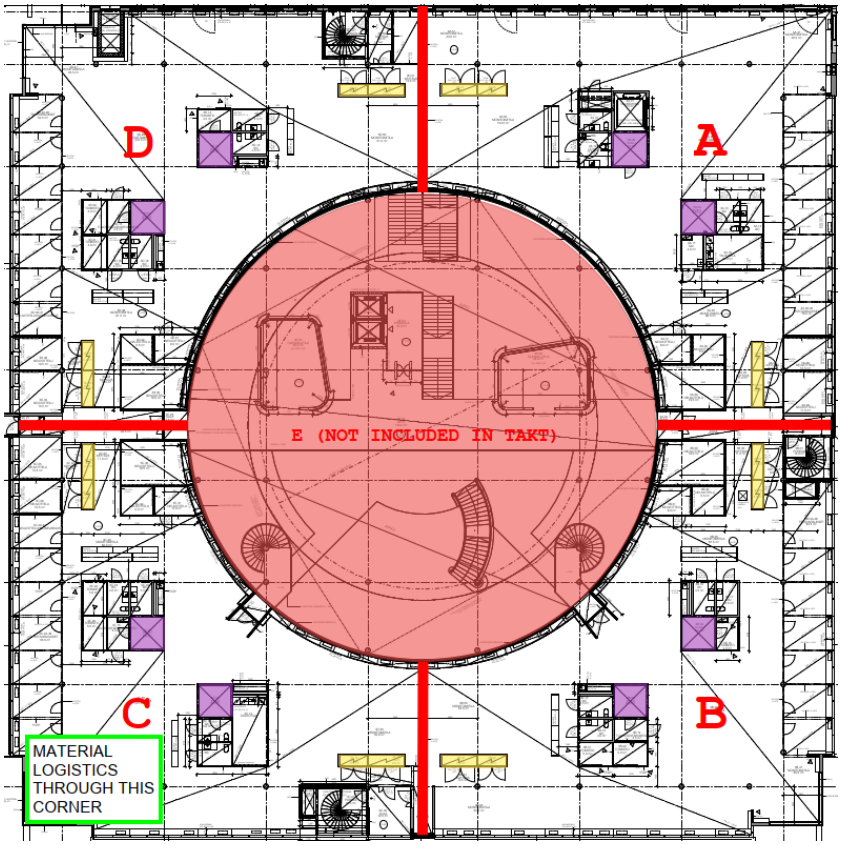


Figure 3. The takt area division of the case project

IMPLEMENTATION – TAKT SCHEDULE

- The preliminary takt plan was planned by the general contractor
- The MEP contractor participated in detailed planning through several comment rounds and LPS meetings
- Other contractors agreed the plan and resources in contract negotiations

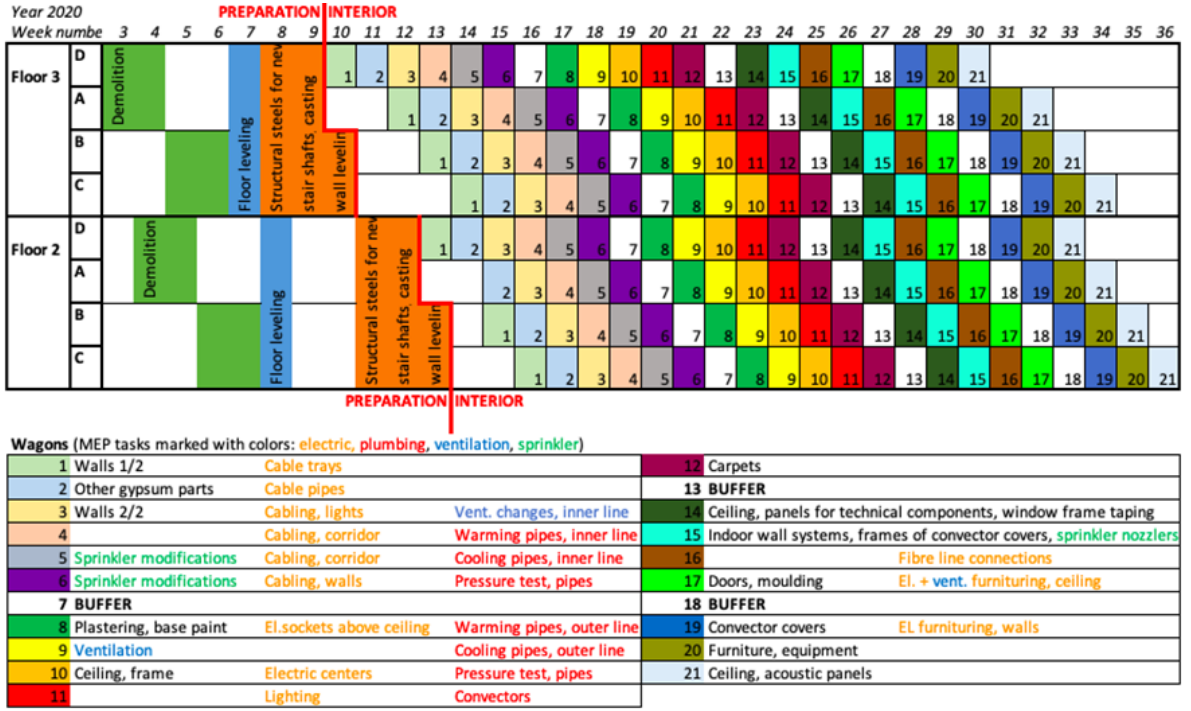
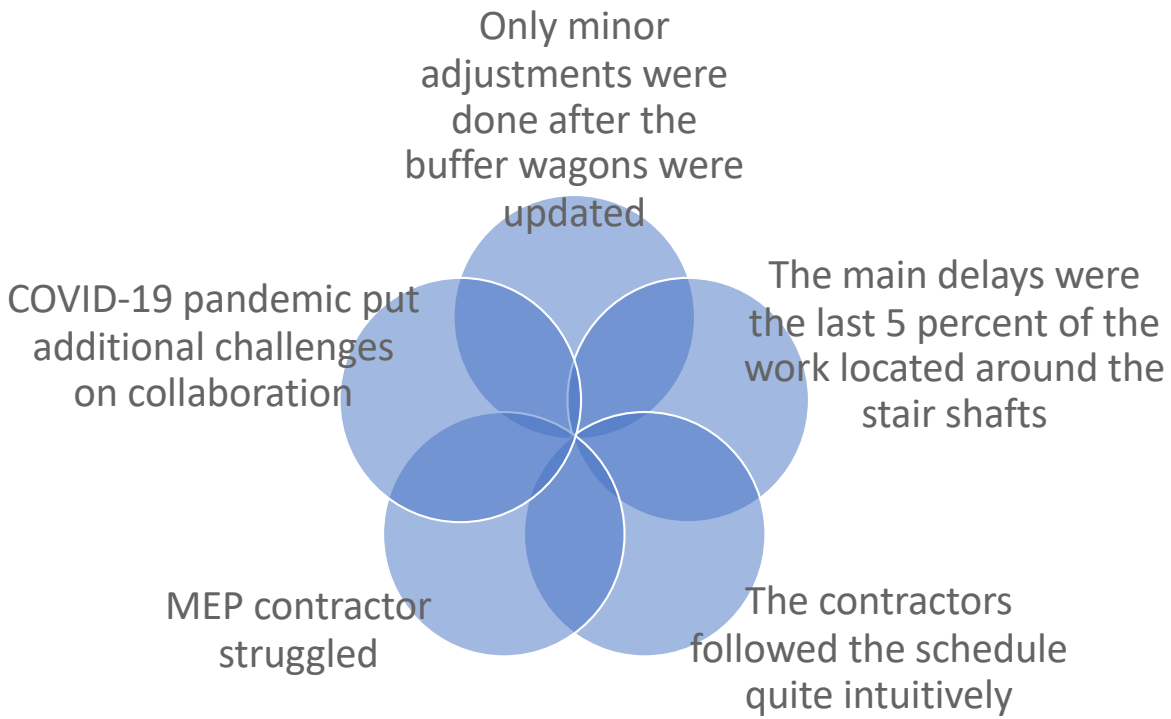


Figure 4. The final takt plan of the case project

IMPLEMENTATION – KEY RESULTS



Key results of the interviews:

- Three-phase model was supported
- The level of participation of the partners was supported

DISCUSSION & CONCLUSIONS

Takt production can be a suitable method for renovation projects, even if the prerequisites are not fully accomplished.

Phasing of the production was seen as effective in managing deviations that are common in renovation projects.

Future research possibilities: takt production in different kind of renovation projects, focusing also on less repetitive production that includes more renovation specific work phases.

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THANK YOU!

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