

Technical Paper

Upgrade of Mid-size Hydraulic Excavator Operator Cabin Features

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In order to meet the diverse requirements of European users and to enhance the value of our existing models, we have upgraded the PC-11 Operator Cabin features to maintain and strengthen the competitiveness of our PC-11 mid-size hydraulic excavators in Europe. This document reports the development process and key improvements.

Key Words: PC-11, Operator cabin upgrade, Europe, Rapid development, Styling improvement, Ergonomics, Visibility improvement

1. Introduction

Before we started this project, competition in the European market was intensifying due to the introduction of new model series by competitors. In order to meet the diverse requirements of European users and to enhance the value of our existing models, the project 'Revive & Thrive' was conceived.

2. Project overview

2.1 Target

For the PC-11 hydraulic excavator series, including the PC210-11, we identified functions that could be introduced by local development and made them available to distributors to promote sales.

To maximize the benefits of development, these features have been introduced in a short timescale.

2.2 Design concept

The improvement concept was rapidly developed through strong collaboration with KEISA (Komatsu Europe International n.v.) Marketing and also with key distributors. This process was able to identify key requests which could be used to enhance marketing activity and improve sales. Reports from previous trade show events were also used to identify possible improvements.

As a result, many improvement points were identified. Each was studied from SVC, producibility and development schedule points of view. Finally 17 items were agreed for development. Refer to **Section 4** for details of the improvement points.

3. Project implementation

The project members recognized that introducing improvement points to the product early was essential to maximize the benefits of development.

For this reason a high level of Collaboration was arranged throughout the project :

- (1) With KEISA Marketing and Distributors, to verify the project concept.
- (2) With KLtd (Komatsu Ltd.) Design group to ensure the proposed changes were acceptable from a styling / model lineup point of view.
- (3) With internal KUK (Komatsu UK Ltd.) functions to engage rapidly with suppliers and achieve quick prototype completion.
- (4) With Japanese suppliers to identify new colour specification of cab panels and ensure producibility.
- (5) With KUK production departments to successfully introduce the changes ahead of original schedule by reworking long lead time components in house.
- (6) With KEISA to arrange highly visible promotion of the new features at the international construction machinery exhibition. Many visitors commented that the improvements were dramatic and would be well received.

Due to the very high level of engagement and collaboration across all divisions, quality confirmation and evaluation were completed early, enabling production to begin in a very short time.

4. Detail of improvement points

- (1) Cab exterior colour. Introduce a modern scheme, showing progression towards the next generation appearance.



Fig. 1 Cab exterior colour

- (2) Handrail colour. Improve visibility of cab handrails.

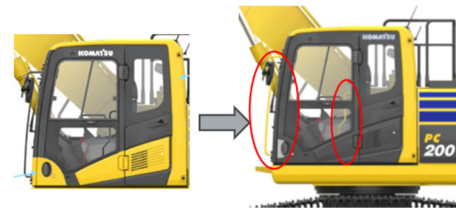


Fig. 2 Handrail colour

- (3) Cab interior colour. Striking change to the cab interior feeling.



Fig. 3 Cab interior colour

- (4) Addition of new Komatsu branding decal. Enhance brand identity.

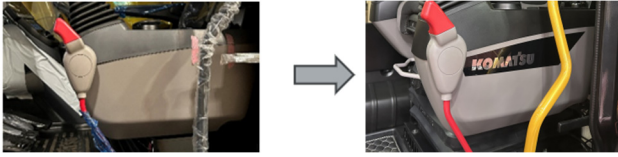


Fig. 4 Branding decal

- (5) New high spec premium operator seat and adjustable armrests (Option).



Fig. 5 Premium operator seat

- (6) Accessory rail with USB charger. Improve operator convenience.



Fig. 6 Accessory rail with USB charger

- (7) Super ergonomic work lever (Option). Improve comfort and add additional control functionality.

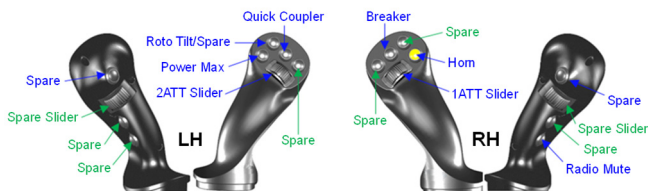


Fig. 7 Super ergonomic work lever

- (8) DAB Radio mute button. Improve operator convenience (easy to silence the radio without releasing work lever).



Fig. 8 Radio mute button

- (9) Door close grip. Improve operator convenience by reducing effort to close the cab door.

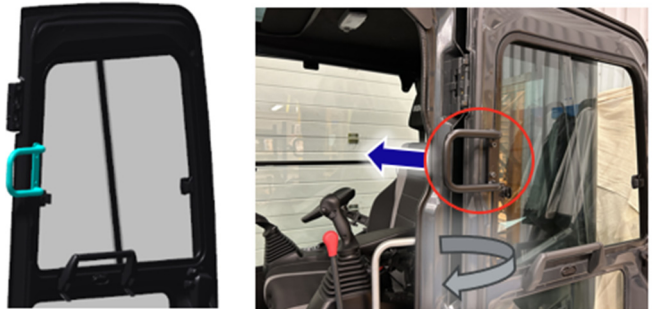


Fig. 9 Door close grip

- (10) Rear window film. Improve operator comfort, especially in hot areas.

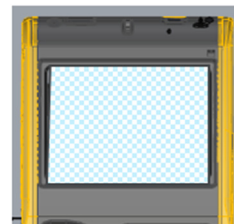


Fig. 10 Rear window film

- (11) Improvement to front visibility. Operability and safety improvement.



Fig. 11 Front visibility improvement

- (12) Document holder. Improve operator convenience for handling paperwork.



Fig. 12 Document holder

- (13) Improved cab interior lighting. Operator convenience for reading etc.



Fig. 13 Cab interior lighting

- (14) Additional floor mat. Allows easy removal for cleaning.



Fig. 14 Additional floor mat

- (15) Tool less folding mirror. Improve convenience for machine transportation.

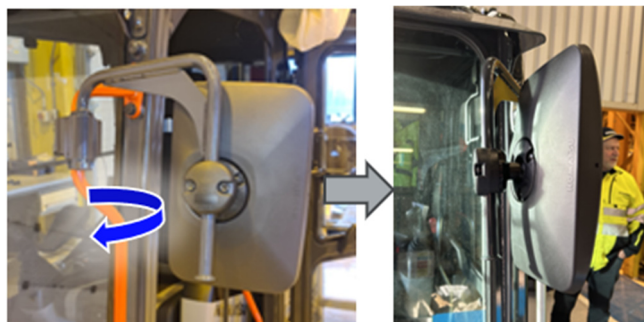


Fig. 15 Tool less folding mirror

- (16) Coming home lights. Improve site safety.

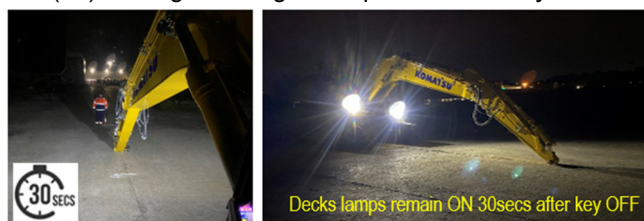


Fig. 16 Coming home lights

- (17) Human Detection System (Option). Factory installation of market leading system.



Fig. 17 Human detection system

5. Conclusion

Overall, the implementation of these improvement points successfully enhanced the perceived quality and usability of the PC-11 operator cabin and contributed to improving user satisfaction.

Acknowledgments

We would like to express our gratitude to all those who contributed to the development of these cab improvements. Significant effort was made by many at KUK, KEISA, KLtd and KUK's suppliers globally to deliver this urgent project in a rapid timeframe. Without the commitment and dedication of the Komatsu team and its stakeholders this project would not have succeeded.

Introduction of the authors



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Joined Komatsu UK in 1998.
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[A comment from the authors]

This project has shown that success can be gained through clear S L Q D C targets combined with the application of the values of Komatsu :

Collaboration – strong collaboration between Development, Manufacturing, Purchasing & Marketing resulted in exceptionally swift introduction to market.

Ambition – Positive attitude and desire to succeed from involved members resulted in obstacles being overcome.

Perseverance – Problems found during both quality confirmation and preparation for mass production were overcome through hard work and dedication.