Simulation tests showed that the design of a three-stage potato soil separation device was effective in reducing damage to potato tubers. Numerical values indicate that the normal contact force can be reduced by 29.4 %.

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DEVELOPMENT STATUS OF POTATO HARVESTER IN CHINA

Liu Zhixin, Ma Shikuan, Shang Shuqi, Hou Yaxiu, He Xiaoning
College of Electromechanical Engineering, Qingdao Agricultural University
e-mail: lzxyffs1997@163.com

Summary. *A late start has slowed the development of potato harvesters in China. Although research and development by companies such as MENOW and Hongzhu have raised the level of equipment in this field, problems remain.*

The delayed start of the potato harvesting machine in China has also led to a delay in the development of the potato harvesting handover lifting and conveying device. Several domestic institutions and enterprises are currently researching and enhancing this device. For example, Lin Jinxiang from Chiayi Agricultural Experiment and Analysis Institute in Taiwan Province of China developed the first potato harvester with a complete conveying and lifting mechanism, incorporating multiple conveyor chains. MENOW focuses on potato harvesting machinery research, particularly highlighting the 1710 B potato harvester's significant innovation in the secondary lifting and conveying device. To minimize potato damage during conveying, they reduced the slope of the first level of the potato and soil separation conveying mechanism and used lateral conveying to transport separated potatoes to the secondary lifting device. Qingdao Hongzhu Agricultural Machinery Co., Ltd. independently developed the 4U-170LH potato combine harvester, primarily comprising a frame, depth limiting wheel, potato soil separating device, soil removing device, conveying device, non-equal spacing potato collecting device, and hydraulic system. The harvester employs a two-stage conveying mechanism and utilizes a contracting conveying arm at the conveying end, positioning itself at the forefront of the conveying and lifting device field in China.

Figure 1 – CIMC MENOW 1600B potato harvester

Figure 2 – Hongzhu 4U-90LH potato combine harvester

At present, the pace of R&D and innovation of domestic potato harvester is accelerating, with an increasing number of models and constantly optimized equipment. However, the following problems remain:

1. Research on the potato conveying and lifting device needs deeper exploration of the mechanical-potato interaction and soil sieving mechanism.
2. Issues include incomplete handover, dropping during lifting, and suboptimal speed and angle.
3. The harvester's device targets low damage, smoother operation, and complete soil separation.
4. Advanced technology transformation for practical application.

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ENGINEERING CONSTRUCTION COST CONTROL BASED ON BIM TECHNOLOGY

Yuhao Jiang, Holubava Volha
Belarusian National Technical University
e-mail: yuhaoj88@gmail.com

Summary. *The construction industry is a pillar industry of the national economy, and the scale of the construction industry has expanded rapidly in recent years. However, there is a problem of poor profitability in the construction industry. It was found that the main reason for the poor profitability of the construction industry is the problem of project cost management, and the main expenditure of project costs lies in the construction phase of the project. Therefore, cost management during the construction phase of the project will effectively improve the profitability of the construction industry. level. Using building information model BIM and through the three stages of pre-construction control, in-process control, and post-construction control, we can effectively detect the construction design plan, conduct construction collisions, and simulate the entire construction process. This will shorten the construction period, save project construction costs, optimize the design and construction plan, and improve the efficiency of construction cost management.*

The role of BIM technology in construction cost management: Construction cost management is to use various means such as technology, informatization, and