Retraction

Retracted: Extraction Methods and Implementation Technologies of Fuel Injection Pump Cam Profile Characteristics

Mathematical Problems in Engineering

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Y. Liu, P. Chen, J. Ding et al., "Extraction Methods and Implementation Technologies of Fuel Injection Pump Cam Profile Characteristics," *Mathematical Problems in Engineering*, vol. 2021, Article ID 6657632, 7 pages, 2021.

Research Article

Extraction Methods and Implementation Technologies of Fuel Injection Pump Cam Profile Characteristics

Yangpeng Liu, Peng Chen, Jianjun Ding ⬤, Lin Sun, Tao Li, Changsheng Li, Jingyang Guo, Mingming Song, and Zhuangde Jiang

The State Key Laboratory for Manufacturing Systems Engineering, Xi'an Jiao Tong University, Xi'an 710049, China

Correspondence should be addressed to Jianjun Ding; dingjianjun@mail.xjtu.edu.cn

Because the traditional camshaft measurement methods cannot be applied to the injection pump cam, in order to improve the measurement automation of injection camshaft, an accurate extraction method of the characteristic parameters of the injection cam profile is proposed in this paper. In this method, the phase error optimization is realized by the angle precise rotation matching of the actual lift data. The optimization is realized by the Lagrangian polynomial interpolation algorithm based on the moving window. The goals of precise measurement of the peach point phase of single high point cam and accurate acquisition of the back dead point phase of high point arc segment cam are realized. Compared with the precision of high-precision measuring equipment, the method can extract the lift and phase angle error of the cam accurately and stably.

1. Introduction

In order to achieve energy saving and reduce emissions, electronic high-pressure injection technology has been widely used in diesel engines. The injection cam is an important part in the high-pressure injection system. It is the processing accuracy of the injection cam that directly affects the performance of the injector components and thus the combustion and emission performance of the engine [1–3]. The camshaft is a key part of the engine. The injection cam plays a decisive role in the starting and stopping time, pressure, rule, and capacity of the oil pump. The valve cam profile has a great influence on the working performance of the engine [4–6]. If the error of cam profile on the camshaft is too large, the characteristic curve of plunger speed will be changed and the fuel injection law will be changed. If the phase angle error is too large, it will destroy the technical state of the engine [7]. In order to ensure the machining quality of the cam profile, it is necessary to develop high-precision and stable measuring and data processing methods [8–10]. The contact

measuring method of the flat probe, disc probe, and knife edge probe is adopted [11, 12]. Machine vision, interference optics, and structured light are also used in camshaft profile accuracy detection [13–15]. Most of the researches are focused on the camshaft phase reference. Because of the cams with different tip phases on the same camshaft, the angle datum cannot be measured automatically. And the calculation of the lift error depends too much on the accuracy of the angle reference. The error of the reference will lead to the systematic error of all the lift data [16, 17]. At the same time, the present research of cam measurement is almost based on the symmetrical single peach point valve cam as the mathematical theoretical model. However, there is little research on the detection of injection cam. Because of the unsymmetrical profile and the circular arc of the peach tip, most of the research on the injection cams cannot be applied to the valve cam. An accurate extraction method of the characteristic parameters of the injection cam profile is proposed in this paper. The phase error optimization strategy is realized by the angle precise rotation matching of the actual lift data. The goals of precise

measurement of the peach point phase of single high point cam and accurate acquisition of the back dead point phase of high point arc segment cam are realized [18].

2. Methodology

2.1. Measuring Instruments.
In view of the above problems, a fully automatic method to extract the feature parameters of the cam profile is proposed in this paper. The following is an introduction to the cam automatic measuring instrument.

2.1.1. Mechanical Structure.
Horizontal structure, which is mainly composed of a base, dividing head, Abbe head, back center, precision circular grating, precision straight grating, stepping motor, and so forth is adopted by cam measuring instrument. As shown in Figure 1. The equipment adopts marble as the base. The precision tailstock guide rail equipped on the equipment can realize the axial high-precision movement of the probe system [19]. The rotary system is composed of a dividing head, circular grating, motor, and so forth. The dividing head and circular grating are connected by precision coupling. The circular grating adopts Renishaw circular grating with a resolution of $1.8''$. The whole rotary system is driven by a step motor, and the circular grating records the angle of the turntable. The probe system is composed of Abbe head, straight grating, and tail stepping motor. A precision sliding platform is adopted by the main shaft of Abbe head to realize radial measurement movement of equipment. Renishaw straight grating with a resolution of 0.0001 mm, which can measure the radial dimension of the cam, is adopted by the straight grating.

2.1.2. Electrical Control.
Electrical control is used to realize the motion control of industrial PC to the lower computer (turntable system and probe system), reading the circular grating and straight grating in real time to send them to PC.

Mpc08, a high integration and high reliability pulse motion control card based on PCI bus, is selected for the control of industrial PC. It can control 4-way stepping motor or digital servo motor and output pulses and direction signals for each axis to control the rotation of motor. Mpc08 control card is an open platform for developing a motion control system, which can directly use the resources of PC and open interface protocol to develop a motion control system [20].

Pci2300 data acquisition card is selected for data acquisition, which has a 32-bit PCI bus and 100 kHz 12-bit a/D converter. The specific use is that pci2300 card can collect the digital signal of the circular grating ruler (straight grating ruler) in the process of movement, counts the digital signal, and sends it to PC. PC calculates the actual angular displacement or displacement of grating through the resolution of the grating ruler itself, to accurately record the information of angle and displacement. The above control and data acquisition methods are reasonable for the application of the Internet of things and cloud computing technology under the current information technology [21–24].

FIGURE 1: Cam measuring instrument.

2.2. Accurate Extraction of Lift Error and Phase Error Information

2.2.1. Lift Error.
From the formula point of view, the functional relationship among cam position, shape, and lift is as follows:

$$h = f(\alpha, \rho). \tag{1}$$

On the total differential of the previous equation,

$$\Delta \mathbf{h} = \frac{\partial \mathbf{h}}{\partial \boldsymbol{\alpha}} \Delta \boldsymbol{\alpha} + \frac{\partial \mathbf{h}}{\partial \boldsymbol{\rho}} \Delta \boldsymbol{\rho}. \tag{2}$$

In the previous equation, $(\partial h / \partial \alpha)$ is the function transfer coefficient between the cam position error and lift error and $(\partial h / \partial \rho)$ is the function transfer coefficient between the cam shape error and lift error.

According to equation (2), the first term is the lift error caused by the position (angle) error $\Delta \alpha$ of the cam and the second term is the lift error caused by the shape error $\Delta \rho$ of the cam.

The shape error of the cam should not be affected by the position error. A method is proposed to transform the actual lift data into the position of angle rotation and obtain the optimal lift data matching the theoretical lift data. The optimal lift data is used to calculate the lift error of the cam. The evaluation of the optimal lift is based on the minimum distance between the actual shape and the theoretical shape of the cam. In this paper, the way to find the optimal lift is to determine the optimal lift with the smallest sum of the square error between the actual lift and the theoretical lift by rotation matching.

In the above solution, the key is how to obtain accurately the measured lift value at the theoretical phase angle during the data rotation. The general solution is increasing the number of sampling points. This is the most intuitive and realistic solution. When the sampling step is equal to the angular rotation step of rotation matching, the lift values at all theoretical phases can be directly extracted from the measured data. However, there are problems with this

solution. In order to ensure the accuracy of lift error, the angle rotation step should be as small as possible in rotation matching. When the rotation step is equal to 0.01°, the number of sampling points $n = 360/0.01 = 36000$. On the one hand, the number of sampling points is large and the amount of data collected and calculated is large. So, it is easy to make mistakes. On the other hand, in the practical application, in order to ensure the measurement efficiency, the data sampling frequency is put forward higher requirements.

In order to solve the problems of large amount of data and strict requirements of sampling accuracy, the method of a moving window Lagrangian polynomial interpolation is proposed to calculate the measured lift value at the

theoretical phase angle [25]. Evenly distribute appropriate measuring points around the cam are achieved. The phase relationship between the highest point and the theoretically highest point in the measured polar diameter data is used to make a rough rotation matching for all the measured data. Then, for all the measured data in a certain angle range with a fixed rotation step, the lift value at the theoretical angle after each angle rotation is approximated by Lagrangian interpolation polynomial. The sum of the lift error squares of all points after each rotation is calculated. The moving window is used to ensure that the target lift to be interpolated is only affected by the local measured accurate data:

$$L(x) = \sum_{j=k-n}^{k+n-1} y_j l_j(x),$$ (3)

$$l_j(x) = \prod_{k-n \ll m \ll k+n-1, \quad m \neq j} \frac{x - x_m}{x_j - x_m} = \frac{(x - x_{k-n}) \dots (x - x_{j-1})(x - x_{j+1}) \dots (x - x_{k+n-1})}{(x_j - x_{k-n}) \dots (x_j - x_{j-1})(x_j - x_{j+1}) \dots (x_j - x_{k+n-1})}.$$ (4)

In the previous equations, x_i is the phase angle after rotation, y_i is the measured polar diameter value corresponding to the phase angle, k point is the known point larger than the phase to be interpolated and closest to the interpolation phase of the band; and n is the measured point selected on both sides of k point.

In the process of rotation matching, the minimum value of the objective function is calculated as follows:

$$\min\left\{ F(\theta_k) = \sum_{i=0}^{N-1} (L(i + \theta_k) - X_i)^2, \quad k = 0, 1, \dots, M \right\},$$ (5)

$$\theta_k = k\Delta\theta.$$ (6)

In equation (5), θ_k is the rotation angle, N is the number of theoretical lift points, M is the number of rotation matching; X_i is the theoretical lift value corresponding to each theoretical phase angle, $L(i + \theta_k)$ is the measured lift value corresponding to each theoretical phase angle after rotation θ, θ_k is the rotation angle of the k-th angular rotation, and $\Delta\theta$ is the angular rotation step.

When $F(\theta) = \min\{F(\theta_k)\}$, after the original data is rotated by θ, the lift at each theoretical phase angle interpolated is the optimal lift, and the error of the optimal lift can reflect the shape error of the cam.

2.2.2. Phase Angle Error

Phase Reference. The phase angle error refers to the difference between the design angle and the actual angle of the feature point on the cam relative to the phase reference in the circumferential direction. The variation of the measured element relative to the ideal element of the determined

position is the positioning error [25]. The position of the ideal element is determined by the datum and the theoretical correct size. In the measurement of the phase angle error, it is necessary to determine the phase datum and the theoretical phase angle of each cam.

In practice, the cam phase is based on the key slot center of the camshaft to design the theoretical angle of each cam tip relative to the phase reference. The theoretical included angle of each cam tip relative to the phase reference is known, so the key to determining the error of the cam phase angle is to determine the phase reference.

In order to solve the above problems, the pin positioning is used to determine the phase reference. A cylindrical pin with the same width as the keyway is inserted in the keyway to ensure the close fit between the keyway and the cylindrical pin. The phase position of the highest point of the cylindrical pin relative to the rotation center is measured and determined in the matching mechanism and is used as the phase reference. Therefore, the problem is transformed into how to extract the phase position of the highest point in the measurement data of the matching mechanism. The model is similar to a symmetrical single point cam, as long as the theoretical lift value of the "cam" is determined. Then, the method of middle rotation matching is used in the calculation of lift error to determine the optimal lift of measured data. So, the phase of the "sensitive point" in the optimal lift can be used as the phase reference. The theoretical lift calculation model is shown in Figure 2.

When the angle of the lift table is 0 and the angle is 0, the distance between the center of the probe and the center of rotation is $L + r1 + r2$.

When the connecting line between the probe and the turning center is turned by θ, and the probe is only tangent to the cylindrical pin, the distance between the center of the probe and the turning center is calculated as follows:
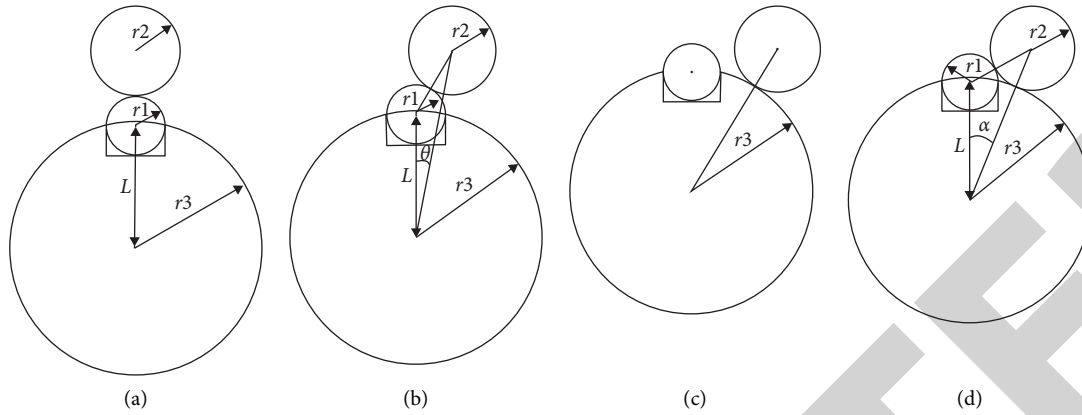
(a)   (b)   (c)   (d)

FIGURE 2: Theoretical lift calculation model of pin positioning.

$$L \cdot \cos \theta + \sqrt[2]{(r1 + r2)^2 - (L \cdot \sin \theta)^2}. \qquad (7)$$

When the probe is tangent to the locating circle section, the distance between the probe center and the rotation center is $r3$.

The critical phase of the probe tangent to the cylinder pin and the locating circle section can be seen from the cosine theorem:

$$\alpha = \arccos\left(\frac{L^2 + (r3 + r2)^2 - (r1 + r2)^2}{2 \cdot L \cdot r3}\right). \qquad (8)$$

When $0 \ll \theta \ll \alpha$ or $360 - \alpha \ll \theta \ll 360$, the distance between the center of the probe and the center of rotation is calculated according to the formula given in (8), and the distance between the center of the probe and the center of rotation in other phase positions is r3.

Single High Point Cam. Because the phase position of the tip is unique and has certain characteristics, the highest point of the measured data is used to determine the position of the tip. A method of full angle lift matching to eliminate the angle error between the highest point of polar diameter and the actual peach tip is proposed to reduce the single point sensitivity of the highest point method and improve the stability of measurement results [26]. Firstly, the phase value α_1 of the highest point of the measured data should be determined. The rotation angle of the measured lift data to the optimal lift data as θ and the theoretical phase angle as α_0 in the lift error matching should be recorded. So, the measured phase angle error of the peach tip is calculated as follows:

$$\varepsilon = \alpha_1 - \alpha_0 + \theta. \qquad (9)$$

High Point Arc Segment Cam. Because the tip of some injection cam profile is a section of arc, that is to say, in the measurement, the highest point of measured polar diameter data is not unique. Even though the highest point is unique, it is also impossible to determine the theoretical phase position of the highest point, as shown in Figure 3.

Based on the characteristic of the top dead center profile [27, 28], a method of determining the top dead center phase is proposed. The optimal lift can be obtained by the rotation
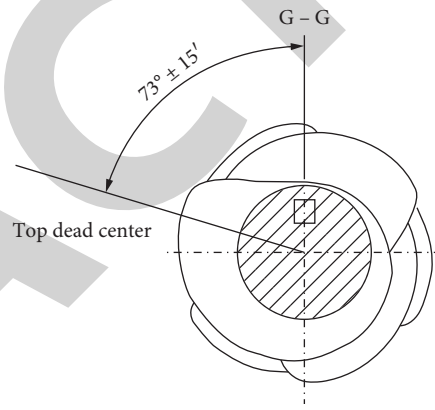

FIGURE 3: Injection cam.

matching method. At the same time as obtaining the optimal lift, the required rotation angle of all measured data to the optimal data can be calculated. So long as the phase information of the optimal lift, where the top dead center is located, is calculated, the actual phase information of the top dead center can be calculated. So, in a certain angle range of the optimal lift data with a fixed rotation step, the lift value at the theoretical angle after each angle rotation is approached by Lagrange interpolation polynomial, and an objective function is established [29]. The objective function consists of the sum of the squares of the lift errors at the theoretical phase of the top dead center and some points near its two sides. The actual phase position of the top dead center can be obtained by calculating the rotation angle of the minimum objective function and the rotation angle of the optimal lift.

3. Application

Horizontal cam full-automatic measuring instrument with 360 equal angle sampling 2400 points is adopted. When the optimal lift is determined by rotation matching [30], in the range of (−5°, 5°), the lift is calculated by eight Lagrangian interpolation polynomials with 0.01° as the rotation step. The angle rotation range is (−5°, 5°), the rotation step is 0.01°, and the lift error of 20 points on the left and right of the theoretical phase angle is taken as the objective function.
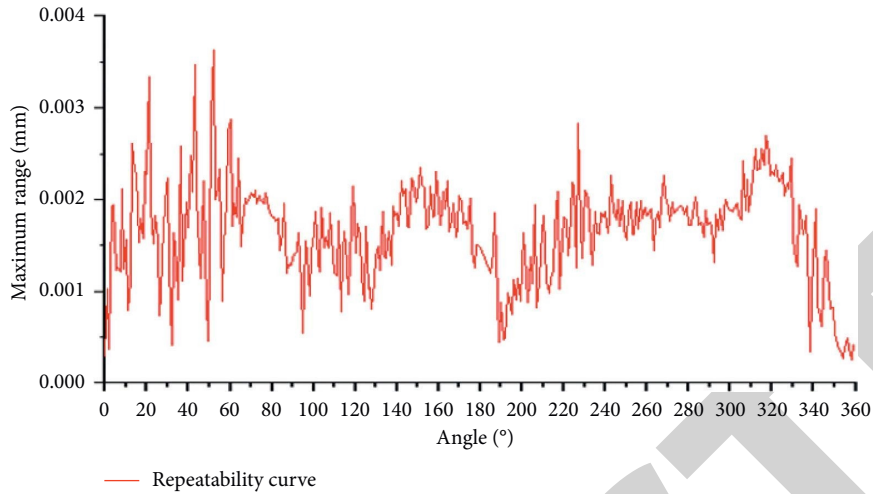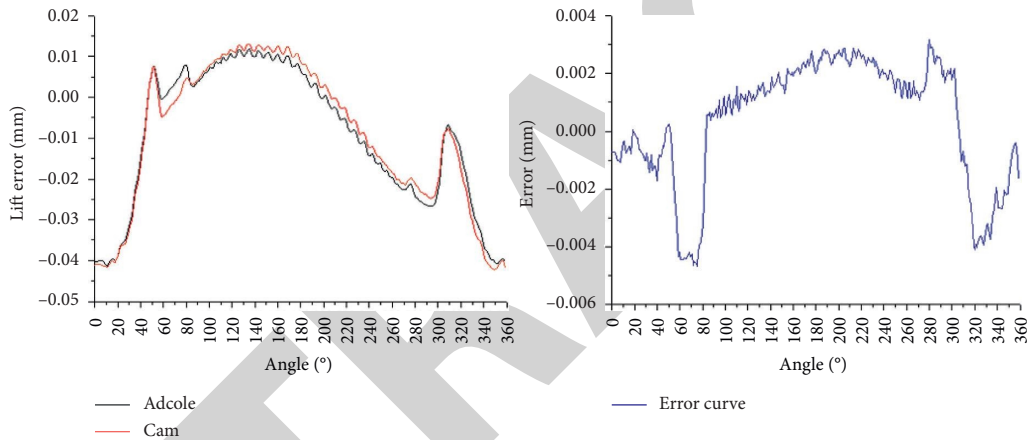
FIGURE 4: Lift error accuracy verification.

FIGURE 5: Intake cam.
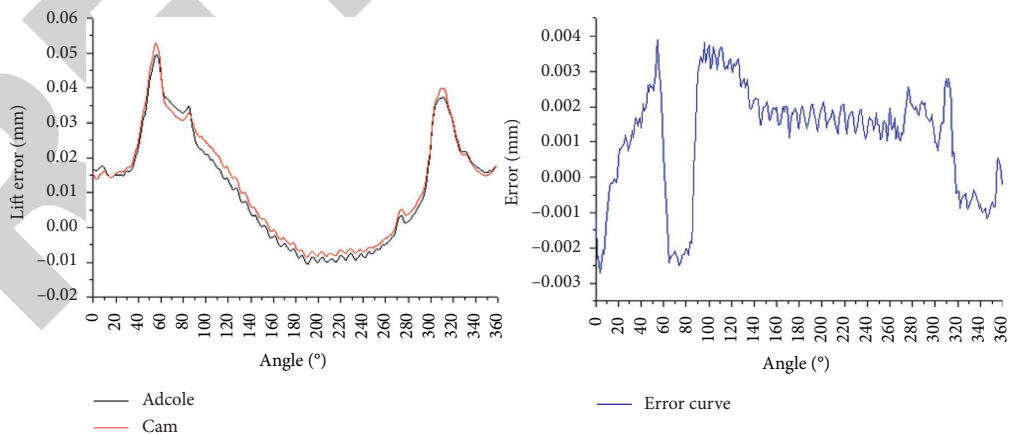
FIGURE 6: Exhaust cam.

3.1. Lift Error. Lift error repeatability verification is carried out that the same camshaft is measured repeatedly 5 times and the lift error of each theoretical point is analyzed by the cam measuring equipment. According to the lift repeatability curve data in Figure 4, the maximum range of 5 measurements at the same phase is 0.0035 mm = 3.5 um, the average value is 0.00165 mm = 1.65 um, and the lift error repeatability is high.

TABLE 1: Repeatability of valve cam phase angle error (degrees).

	Group 1	Group 2	Group 3	Group 4	Group 5
Cam 1	0.50	0.50	0.49	0.49	0.50
Cam 2	0.30	0.31	0.31	0.30	0.30
Cam 3	0.51	0.51	0.51	0.50	0.50

TABLE 2: Accuracy of valve cam phase angle error (degrees).

	Cam 1	Cam 2	Cam 3	Cam 4	Cam 5	Cam 6
Adcole	0	0.0288	0.024	−0.198	−0.197	0.0414
Keyway reference	0.5	0.52	0.51	0.3	0.31	0.55
Cam 1	−0.01	0.02	0.01	−0.21	−0.20	0.04
—	Cam 7	Cam 8	Cam 9	Cam 10	Cam11	Cam 12
Adcole	0.1425	−0.087	−0.05	0.0704	−0.053	−0.065
Keyway reference	0.63	0.4	0.46	0.56	0.43	0.44
Cam 1	0.12	−0.11	−0.05	0.05	−0.07	−0.07

TABLE 3: Repeatability of phase error of REAR dead center of WP16-SZ injection cam (Degrees).

	Group 1	Group 2	Group 3	Group 4	Group 5
Cam 1	0.69	0.69	0.70	0.70	0.70
Cam 2	0.15	0.14	0.14	0.15	0.13
Cam 3	−0.05	−0.04	−0.05	−0.05	−0.06

Lift error accuracy verification is carried out that the results measured by the cam measuring equipment are compared with the ones measured by Adcole measuring equipment for the same valve cam in the United States. The results are shown in Figures 5 and 6.

In the measurement results of the intake cam and Adcole, the maximum positive error is 0.003169 mm and the maximum negative error is –0.00469 mm. The measurement accuracy is high, which can meet the engineering needs. In the measurement results of the exhaust cam and Adcole, the maximum positive error is 0.003887 mm and the maximum negative error is –0.0027 mm. The measurement accuracy is high, which can meet the engineering needs.

3.2. Phase Angle Error

(1) For a single high point cam, the same camshaft is measured by the cam measuring equipment and repeatedly 5 times. The lift error of each theoretical point is analyzed according to the lift repeatability. Table 1 shows the repeatability accuracy of the proposed method for three single high point cams.

3.2.1. Repeatability. The repeatability of phase angle error is $0.01° = 0.6'$. The result is stable and the repeatability is good.

3.2.2. Accuracy. For the same valve cam, the results measured by the cam measuring equipment are compared with the ones measured by Adcole measuring equipment in the United States. This time, the angle of Adcole cam #1 is relative to the datum (keyway) = 0.0536°.

It can be seen in Table 2. When the center of the keyway is used as the angle reference, the angle of cam 1 to keyway is 0.5°. Compared with the result of Adcole, the error is $−0.0036° = 0.216'$ and the accuracy is high. When the first cam tip is taken as the angle datum, the datum of the two measured results is the same. The maximum positive error is 0.0022°, the maximum negative error is −0.0226°, the average error is −0.01103°, and the phase angle error detection accuracy is high.

(2) High point arc segment cam

Table 3 is the phase error data of circular arc cam detected by the method described in this paper. The repeatability of phase angle error is $0.02° = 1.2'$. The result is stable and the repeatability is good.

4. Conclusion

A cam detection technology based on moving window Lagrange interpolation algorithm is presented. The lift and phase angle errors of the injection cam can be extracted accurately and stably by this method. In the process of cam automatic measurement, the system error caused by cam phase angle reference is avoided. It solves the problems of accurate measurement of single high point cam peach point phase and accurate acquisition of high point arc segment cam backstop phase. It is helpful to obtain and calculate the lift error of the cam accurately. This method is suitable not only for injection cam but also for intake and exhaust camshaft, conjugate cam, and common rail cam.

Data Availability

All the data are actually available upon request.

Conflicts of Interest

The authors declare that they have no financial and personal relationships with other people or organizations that can inappropriately influence their work. There is no professional or other personal interest of any nature or kind in any product, service, and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled.

Acknowledgments

References

[1] X. Gu, Y. Xu, J. Miao, and J. Yu, "Study on the key Part Optimization of common rail injector used on a commercial vehicle," *Modern Vehicle Power*, vol. 03, pp. 15–19, 2020.

[2] F. Hoppe, M. Thewes, H. Baumgarten, and J. Dohmen, "Water injection for gasoline engines: potentials, challenges, and solutions," *International Journal of Engine Research*, vol. 17, no. 1, pp. 86–96, 2016.

[3] R. Zhi-Xiang, F.-Z. Guo, and K. Zhu, "Simulation research on fuel system of a type of marine medium speed diesel engine," *Ship Science and Technology*, vol. 42, no. 11, pp. 132–136, 2020.

[4] L. Fan, Q. Dong, C. Chen, Y. Bai, W. Zhao, and X. Ma, "Research on effects of key influencing factors upon fuel injection characteristics of the combination electronic unit pump for diesel engines," *Journal of Mechanical Science and Technology*, vol. 28, no. 10, pp. 4319–4330, 2014.

[5] C. Abagnale, M. Migliaccio, and O. Pennacchia, "Design of a new mechanical variable valve actuation system for motorcycle engines," in *Proceedings of the ASME 2012 11th Biennial Conference on Engineering Systems Design and Analysis*, Nantes, France, July 2012.

[6] G. Liu, P. Y. Liu, W. J. Wei, S. Y. Zhang, and H. T. Li, "A new design method for the rotor profile curve of the cam pump," *Advanced Materials Research*, vol. 482–484, pp. 1196–1200, 2012.

[7] S. Li, "Defect inspection and assembly of fuel injection pump parts," *Use and Maintenance of Agricultural Machinery*, vol. 65, no. 05, 2020.

[8] S. Sun, Z. Jiang, J. Huang et al., "Analysis and Detection Method for Machining Error of Globoidal Indexing Cam Profile," *MATEC Web of Conferences*, vol. 213, 2018.

[9] H. Wang, A. Zhang, Q. Zhang, and C. Peng, "Research on measurement method for disk cam based on image processing technology," *Modern Manufacturing Engineering*, vol. 02, pp. 117–121, 2017.

[10] C. Lu, Y. Zhang, J. Feng, and X. Zhang, "Detection for the wear degree and relative position of the cams," *Journal of Changchun University of Science and Technology (Natural Science Edition)*, vol. 38, no. 01, pp. 49–52, 2015.

[11] L. I. Qi, Y. Hu, and Y. Zhou, "Design and precision testing of CAM based on the three coordinate measuring," *Light Industry Machinery*, vol. 32, no. 05, pp. 80–83, 2014.

[12] Z. Kaijun, J. Zhaoping, and L. Jie, "CAM parts detection and copy based on three-coordinate measuring machine," *Manufacturing Automation*, vol. 36, no. 14, pp. 51–54, 2014.

[13] Z. Hu, *Research on Vision Measurement Technology of Disc Cam Based on Line Structure Light*, Jilin University, Jilin, China, 2020.

[14] A. An, Y. Ma, and Q. Zhang, "Identification of the cam profile based on machine vision," *Journal of Henan Institute of Science and Technology(Natural Science Edition)*, vol. 44, no. 01, pp. 62–67, 2016.

[15] G. Wang, Y. Yao, Z. Chen, and P. Hu, "Thermodynamic and optical analyses of a hybrid solar CPV/T system with high solar concentrating uniformity based on spectral beam splitting technology," *Energy*, vol. 166, pp. 256–266, 2019.

[16] Y. Mingfu and H. Zhao, "A new method of spatial cam profile inspection and error evaluation and its experimental research," *Chinese Journal of Scientific Instrument*, vol. 4, pp. 452–456, 2004.

[17] L. Jianfeng, "Cam profile surface analysis of swing output movable teeth cam mechanism," *Advanced Engineering Sciences*, vol. 50, no. 1, pp. 149–156, 2018.

[18] Y. Sun, "Analysis for center deviation of circular target under perspective projection," *Engineering Computations*, vol. 36, no. 7, pp. 2403–2413, 2019.

[19] L. Z. Zhang, M. Mouritsen, and J. R. Miller, "Role of perceived value in acceptance of "bring your own device" policy," *Journal of Organizational and End User Computing*, vol. 31, no. 2, pp. 65–82, 2019.

[20] H. Zhang, S. Qu, H. Li, J. Luo, and W. Xu, "A moving shadow elimination method based on fusion of multi-feature," *IEEE Access*, vol. 8, pp. 63971–63982, 2020.

[21] A. M. Al-Momani, M. A. Mahmoud, and M. S. Ahmad, "Factors that influence the acceptance of Internet of things services by customers of telecommunication companies in Jordan," *Journal of Organizational and End User Computing*, vol. 30, no. 4, pp. 51–63, 2018.

[22] T. Grubljesic, P. S. Coelho, and J. Jaklic, "The shift to socio-organizational drivers of business intelligence and analytics acceptance," *Journal of Organizational and End User Computing*, vol. 31, no. 2, pp. 37–64, 2019.

[23] L. Z. Zhang, M. Mouritsen, and J. R. Miller, "Role of perceived value in acceptance of "bring your own device" policy," *Journal of Organizational and End User Computing*, vol. 31, no. 2, pp. 65–82, 2019.

[24] S. Namasudra and P. Roy, "PpBAC," *Journal of Organizational and End User Computing*, vol. 30, no. 4, pp. 14–31, 2018.

[25] C. Li, F. Sun, J. M. Cioffi, and L. Yang, "Energy efficient MIMO relay transmissions via joint power allocations," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 61, no. 7, pp. 531–535, 2014.

[26] L. Zhang, H. Shi, X. Zeng et al., "Theoretical and experimental study on the transmission loss of a side outlet muffler," *Shock and Vibration*, vol. 2020, Article ID 6927574, 8 pages, 2020.

[27] B.-Z. Xia, X.-C. Liu, X. Shang, and S.-Y. Ren, "Improving cam profile design optimization based on classical splines and dynamic model," *Journal of Central South University*, vol. 24, no. 8, pp. 1817–1825, 2017.

[28] R. M. Fang, J. F. Cai, and G. Li, "Cam curve synthesis method based on classical splines," *Applied Mechanics and Materials*, vol. 312, pp. 69–73, 2013.

[29] T. Ouyang, P. Wang, H. Huang, N. Zhang, and N. Chen, "Mathematical modeling and optimization of cam mechanism in delivery system of an offset press," *Mechanism and Machine Theory*, vol. 110, pp. 100–114, 2017.

[30] F.-H. Bu, Y.-M. Zhang, and D.-G. Shang, "Study on machining error of globoidal cam profile resulting from motion error of machine tool in machining," *Applied Mechanics and Materials*, vol. 148-149, pp. 1356–1364, 2012.