

Japan Credit Rating Agency, Ltd. (JCR) announces the following credit rating.

NGK SPARK PLUG CO., LTD. (security code: 5334)

<Rating Change>

Long-term Issuer Rating:	from A+ to AA-
Outlook:	from Positive to Stable
Shelf Registration:	from Preliminary A+ to Preliminary AA-
Bonds:	from A+ to AA-

Rationale

- (1) NGK SPARK PLUG CO., LTD. (the “Company”) is a leading automotive components manufacturer, which manufactures and sells IC packages and cutting tools in addition to automotive-related products such as spark plugs and oxygen sensors for which it has the world’s largest market share. While a large part of its products, mainly of its core components (ceramics) that requires sophisticated production technology, are domestically manufactured, the Company’s business results are susceptible to foreign exchange fluctuations because more than 80% of its products are sold overseas. The Company has implemented 3 M&As in 2015 and 2016 including the acquisition of U.S.-based Wells Manufacturing, L.P. (the “Wells”) which manufactures and sells switches, ignition coils, etc. The Company also announced in October 2018 the acquisition of 3 companies engaging in the manufacture of medical oxygen concentrators from subsidiaries of Chart Industries, Inc., a leading global manufacturer in the oxygen therapy devices market.
- (2) Profit of the “Company continues to remain at a high level. While its Automotive Components business is showing robust performance backed by the tightening of environmental regulations in each country, its Technical Ceramics business (semiconductors) is also reducing its deficits. The Company needs to be prepared for the impact by the shift towards EV in the future considering that most of its products in the Automotive Components business are made for combustion engines. However, combustion engines (including plug-in hybrid cars) are expected to remain as major power train for a reasonable period of time going forward, and replacement parts which account for more than 70% of the sales of plug-related products are projected to support market demand. The Company is also putting its focus on the development and acquisitions of new businesses by leveraging current technologies such as ceramic medical devices. JCR upgraded the ratings on the Company by one notch and retained its outlook Stable taking into account that its business is forecasted to perform strongly over the medium term and its sound financial structure is also likely to be maintained.
- (3) The Company expects its operating income to decline 0.4% year-on-year for the fiscal year ending March 2019 (FY2018) to 67.0 billion yen (as of the announcement made in the second quarter of FY2018). The Company’s overall business performance remains steady although its Automotive Components business is currently affected by a decline in sales volume of new cars in China. The deficits of the Technical Ceramics business (semiconductors) are decreasing partly owing to its efforts to consolidate its production sites and promote product selection and concentration, and the Company aims to achieve a surplus in FY2019. With regard to activities related to the acquisitions, JCR forecasts that the Company will receive relatively stable orders for ceramic medical devices even though there is not yet enough profit from the Wells at the moment compared to the investment amount. JCR will continue to monitor the details of its new businesses and the effect on its earnings.
- (4) The interest-bearing debt has increased due to the recent M&As, however, its financial indicators continue to be at a sound level as shown in its equity capital ratio of 66.2% in the second quarter of FY2018. Although the Company aims to build a production system that will produce 1 billion pieces of plugs per year beginning 2020 in order to meet increasing demand at present, such investment costs are likely to stay within the tolerance range of its operating cash flow and JCR forecasts the Company will maintain its sound financial structure.

Mikiya Kubota, Akio Kamimura

Rating

Issuer: NGK SPARK PLUG CO., LTD.

<Rating Change>

Long-term Issuer Rating: AA- Outlook: Stable

Issue	Amount (bn)	Issue Date	Due Date	Coupon	Rating
bonds no.7	JPY 30	Oct. 27, 2015	Oct. 27, 2020	0.296%	AA-
bonds no.8	JPY 10	Jun. 14, 2018	Jun. 14, 2023	0.110%	AA-
bonds no.9	JPY 10	Jun. 14, 2018	Jun. 14, 2028	0.370%	AA-

Shelf Registration: Preliminary AA-

Maximum: JPY 35 billion

Valid: two years effective from May 26, 2018

Rating Assignment Date: December 20, 2018

The criteria used for identifying matters which serve as assumptions for the assessment of the credit status, and the criteria used for setting of grades indicating the results of the assessments of the credit status are published as "Types of Credit Ratings and Definitions of Rating Symbols" (January 6, 2014) in Information about JCR Ratings on JCR's website (<https://www.jcr.co.jp/en/>).

Outline of methodology for determination of the credit rating is shown as "JCR's Rating Methodology" (November 7, 2014) and "Automakers and Auto Parts Manufacturers" (March 26, 2012) in Information about JCR Ratings on JCR's website (<https://www.jcr.co.jp/en/>).

Glossary:

A preliminary rating is a credit rating assigned as a preliminary evaluation while material terms for issue to be rated are not yet finalized. When the issuing terms are finalized, JCR will confirm them and will assign a credit rating anew. The rating level of the final rating may be different from that of the preliminary rating, depending on the final content of the terms, etc.

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JCR publishes its press releases regarding the rating actions both in Japanese and in English on the same day. In case that it takes time to translate rating rationale, JCR may publicize the summary version, which will be replaced by the full translated version within three business days. (Regarding Structured Finance products, JCR only publicize the summary version in English.)

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INFORMATION DISCLOSURE FORM

Japan Credit Rating Agency, Ltd.

Disclosure Required by Paragraph (a)(1)(ii) of Rule 17g-7

Issuer:	NGK SPARK PLUG CO.,LTD.
Rating Publication Date:	December 26,2018

1 The Symbol, Number, or Score in the Rating Scale used to Denote Credit Rating Categories and Notches and, the Identity of the Obligor or the Identity and a Description of the Security or Money Market Instrument as Required by Paragraph (a)(1)(ii)(A) of Rule 17g-7

- Please see the news release.

2 The version of the procedure or methodology used to determine the credit rating; as Required by Paragraph (a)(1)(ii)(B) of Rule 17g-7

- Please see the news release.

3 The Main Assumptions and Principles used in Constructing the Procedures and Methodologies used to Determine the Credit Rating as Required by Paragraph (a)(1)(ii)(C) of Rule 17g-7

- The credit rating methodology assumes, in principle, to be applied to assess the likelihood of a given debt payment in light of its issuer's condition and business environment, etc. in the relevant future. There is certain limitation, however, in the time horizon that the rating foresees.
- The credit rating methodology assumes, in principle, that the factors posted in the below are particularly important for such likelihood to be determined, and that the rating determination is made by evaluating each of them not only quantitatively but also employing qualitative analyses.

A) Business Bases

The likelihood of a given debt payment is highly conditional to its issuer's business bases - how they can be maintained/ expanded into the future and thereby secure earnings and cash flows in adequacy and in a sustainable way.

B) Financial Grounds and Asset Quality

The likelihood of debt payment is highly dependent on the degree of the issuer's indebtedness and loss absorption capacity in terms of equity capital. Also notable is that a financial institution might see a significant loss of financial grounds as a result of changes in value of the assets under its possession.

C) Liquidity Positions

The likelihood of debt payment is highly dependent on the adequacy of the issuer's cash and other sources of repayment (liquidity positions).

D) Related Parties' Status and Stance of Support/ Assistance for the Issuer

The likelihood of debt payment is affected one way or the other by the issuer's related parties such as parent company, subsidiary, guarantor, and the government of the issuer's business domicile, etc. - by their own conditions and/ or position of support/ assistance for the issuer.

E) Order of Seniority in Debt Payment

The likelihood of debt payment can be different between given debts of the same issuer. The likelihood of debt payment for an individual debt is dependent on the issuer's discretion, and/ or its rank relative to other debts of the same issuer in the order of seniority in principal/ interest payment which is determined by design as financial product or by laws, etc.

4 The Potential Limitations of the Credit Rating as Required by Paragraph (a)(1)(ii)(D) of Rule 17g-7

- The credit rating herewith presented by JCR is its summary opinion with regard to the likelihood of given debt payment and hence not necessarily a perfect representation of such likelihood. The credit rating is not intended to estimate the probability of default or the loss on given default, either.
- The objective of the credit rating herewith presented does not include any concerns other than the likelihood of debt payment, such as risks of price changes, market liquidity, etc.
- The credit rating herewith presented is necessary to be reviewed along with possible changes of the issuer of rated objects in its business performance and/ or circumstances which include regulatory environment, and hence subject to possible alteration.

5 Information on the Uncertainty of the Credit Rating as Required by Paragraph (a)(1)(ii)(E) of Rule 17g-7

- The information used for the determination of credit rating as herewith presented is obtained by JCR from the issuer of rated objects and other sources that JCR trusts in terms of accuracy and reliability but possibly contains errors due to human, non-human or other causes. Consequently, the credit rating determined on the grounds of such information does not constitute, explicitly or implicitly, any representation or warrant of JCR on the information itself or any consequences of its use in terms of accuracy, relevance, timeliness, wholeness, market value, or usefulness for any specific purposes.

6 Use of Due Diligence Services of a Third Party in Taking the Rating Action as Required by Paragraph (a)(1)(ii)(F) of Rule 17g-7

- There is no use of any third-party due diligence service in the determination of the credit rating herewith presented.

7 Use of Servicer or Remittance Reports to Conduct Surveillance of the Credit Rating Required by Paragraph (a)(1)(ii)(G) of Rule 17g-7

- There is no use of any servicer or remittance report to conduct surveillance of the credit rating herewith presented.

8 The Types of Data Relied Upon for the Purpose of Determining the Credit Rating as Required by Paragraph (a)(1)(ii)(H) of Rule 17g-7

- The information posted in the below, which includes data, is used for the determination of the credit rating herewith presented.

- A) Audited financial statements presented by the rating stakeholders
- B) Explanations of business performance, management plans, etc. presented by the rating stakeholders

9 Overall assessment of the Quality of Information Available and Considered in Determining the Credit Rating as Required by Paragraph (a)(1)(ii)(I) of Rule 17g-7

- JCR holds its basic policies for securing the quality of information as a base of due diligence for the determination of credit ratings. The information used as a base for the determination of credit rating herewith presented satisfies such policies, which include the audit by an independent auditor, the publication by the issuer or some independent media or, otherwise, JCR analyst's scrutiny, etc.
- JCR sees no particular weakness in the quality of information used for the determination of the credit rating herewith presented as compared to the information used in other cases of the credit rating for comparable issuers or ratable objects.

10 Information Relating to Conflicts of Interest as Required by Paragraph (a)(1)(ii)(J) of Rule 17g-7

- JCR receives payment of compensation for the determination of the credit rating herewith presented from either one of those parties who are issuer, underwriter, depositor or sponsor.
- JCR did not receive in the last fiscal year in the past payment of compensation from the same party for any kind of JCR's service other than the determination of credit rating, such as one in the ancillary business.

11 Explanation or Measure of the Potential Volatility of the Credit Rating as Required by Paragraph (a)(1)(ii)(K) of Rule 17g-7

A) Business Bases

The credit rating is subject to alteration if there is improvement or deterioration of the issuer's business bases, since its revenue, etc. may improve or deteriorate by the change in its business management policies, clients' preferences, competitive situation, or a technological innovation. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change in the business bases is large.

B) Financial Grounds and Asset Quality

The credit rating is subject to alteration if the issuer increases/ decreases its debt/ capital or vice versa and thereby makes its individual debt payment liability less or more bearable and its loss absorption capacity into the future decreased or increased. Also, the changes in the quality of asset under the issuer's holding may affect the credit rating, since such changes could raise or lower the likelihood of future loss of the issuer's financial grounds. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change in the financial grounds and/ or asset quality is large.

C) Liquidity Positions

The credit rating is subject to alteration if there is a change in the issuer's financial management policy or in the relations with fund procurement sources and the change thereby makes its liquidity positions improve or deteriorate. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change is large.

D) Related Parties' Status and Stance of Support/ Assistance for the Issuer

The credit rating is subject to alteration if there is a change in the issuer's parent company or subsidiary, guarantor or other provider of credit enhancement, or the government of the issuer's

business domicile, or other related parties' own conditions and/ or position of support/ assistance for the issuer, and the change thereby makes its business bases, financial grounds and/ or liquidity positions improve or deteriorate, and/ or making the effectiveness of guarantee and other credit enhancement improve or deteriorate. The resultant alteration of the credit rating is usually a notch, with possibility of a few notches if and when the change is large.

E) Order of Seniority in Debt Payment and Non-Payment Forgiven by Contract

The credit rating is subject to alteration if there is a change in the rated debt's status in the order of seniority relative to other debts caused by the improvement/ deterioration of the issuer's financial condition. The resultant alteration of the credit rating is usually a notch, with possibility of a few notches if and when the change is large. Also, in case of the financial products for which non-payment of interest/ principal is contractually permissible, the credit rating is subject to alteration if and when the likelihood of such non-payment is projected to increase or decrease. The resultant alteration of the credit rating could be by a notch but often as much as a few notches.

F) Rise and Fall in General Economy and Markets

The credit rating is subject to alteration if there is a rise/ fall in the general economy and/ or the markets inducing the issuer's revenues/ expenses to increase/ decrease and vice versa, etc. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change is exceptionally large.

G) Various Events

The credit rating is subject to alteration on occurrence of various events, such as change in the issuer's major shareholders, M&A and other organizational change, accident, violation of the law, litigation, legal/ regulatory change, natural disaster, etc., which are unforeseeable at the time when the credit rating is determined, causing a significant change on the issuer's business bases, financial grounds, etc. The resultant alteration of the credit rating could be by a notch but more often than not as much as a few notches.

12

Information on the Content of the Credit Rating, Including the Historical Performance of the Credit Rating and the Expected Probability of Default and the Expected Loss in the Event of Default as Required by Paragraph (a)(1)(ii)(L) of Rule 17g-7

- Historical records of the credit rating herewith presented are posted in the end of this paper.
- The credit rating herewith presented by JCR is its summary opinion with regard to the likelihood of given debt payment and hence not necessarily a perfect representation of such likelihood. The credit rating is not intended to estimate the probability of default or the loss on given default, either.
- Facts of the probability of default are posted as Form NRSRO Exhibit 1 on the JCR website under the URL:

<https://www.jcr.co.jp/en/service/company/regu/nrsro/>

13

Information on the Sensitivity of the Credit Rating to Assumptions Made as Required by Paragraph (a)(1)(ii)(M) of Rule 17g-7

A) Business Bases

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's business bases and powers of earning or cash flow generation, etc. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's business bases on some drastic change in the operational environments, etc.

B) Financial Grounds and Asset Quality

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's financial grounds and asset quality. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's financial grounds and/ or asset quality on some drastic change in its business bases.

C) Liquidity Risks

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's liquidity positions. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's liquidity positions on some drastic change in its financial management policy or relations with fund procurement sources, etc.

D) Order of Seniority in Debt Payment and Non-Payment Forgiven by Contract

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the order of seniority in repayment of interests and principal. JCR assumes the resultant change of the credit rating is most likely by a notch. The change could be as much as a few notches if the issuer's financial structure differs so much and thereby the balance between debts shifted so greatly. Rating change is also possible in case of the financial products for which non-payment of interest/ principal is contractually permissible, if and when the assumptions made at the time of its determination turns out to be inaccurate. The change of the credit rating is assumed to be by a notch but often as much as a few notches.

E) Rise and Fall in General Economy and Markets

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the prospects of general economy and markets. JCR expects the change should be most likely by a notch but could be as much as a few notches, should the economy or the markets change so greatly.

14 Information on the Representations, Warranties, and Enforcement Mechanisms of an Asset-backed Security as Required by Paragraph (a)(1)(ii)(N) of rule 17g-7

- The credit rating herewith presented is not for an ABS product, and hence no relevant issue.

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The Historical Performance of the Credit Rating

Issuer Name	Issue Name	Publication Date	Rating	Outlook/Direction
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	February 9, 2006	AA-	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 5, 2007	AA-	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 16, 2008	AA-	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	February 26, 2009	A+	Negative
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	February 4, 2010	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 28, 2011	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 20, 2012	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	February 8, 2013	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 28, 2014	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 14, 2015	A+	Stable
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	January 26, 2016	A+	Positive
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	December 27, 2016	A+	Positive
NGK SPARK PLUG CO., LTD.	Issuer(Long-term)	December 27, 2017	A+	Positive
NGK SPARK PLUG CO., LTD.	Shelf Registration	May 25, 2018	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.7	October 21, 2015	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.7	January 26, 2016	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.7	December 27, 2016	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.7	December 27, 2017	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.8	June 8, 2018	A+	
NGK SPARK PLUG CO., LTD.	Bonds no.9	June 8, 2018	A+	

Attestation Required by Paragraph (a)(1)(iii) of Rule 17g-7

I, Mikiya Kubota, have responsibility to this Rating Action and to the best of my knowledge:

- A) No part of the credit rating was influenced by any other business activities.
- B) The credit rating was based solely upon the merits of the obligor, security, or money market instrument being rated.
- C) The credit rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.

窪田 幹也

Mikiya Kubota

General Manager of Corporate Rating Department I

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