

# Case study: Consistent sealing performance for continuous catalyst regeneration application

## TOMBO™ No. 1891-NM Kammprofile gasket



### Industry

Petroleum refining

### Customer

Crude oil refinery

### Background

Customer used large diameter spiral wound gaskets in Continuous Catalyst Regeneration (CCR) where temperatures reached 550°C in the petroleum refining process. However, the spiral wound gasket came apart during transportation. They decided to find alternative sealing solutions that would help them resolve this issue and provide better stable sealing performance. Their requirements were for the gasket to provide stable sealing performance under high operating temperature and to limit damages to gasket, leakages and increased equipment operating temperatures.

### Challenges faced

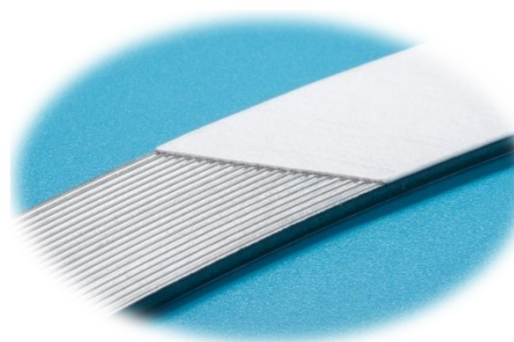
The main requirement was to find a gasket that had both structural stability and heat resistance performance above 550°C. Spiral wound gaskets with alternative materials were not an option due to the need of inner ring for reinforcement and lower structural stability. Moreover, spiral wound gaskets are also prone to the risk of buckling which further increases the likelihood of gasket damage and subsequent leakages. For this reason, it was necessary to find a completely different gasket.

### Solution and benefits

To fulfil customer's requirements, the technical team selected TOMBO™ No.1891-NM Kammprofile gasket. It is a semi-metallic gasket with concentric grooves on both sides of a metal ring and NM sheet attached as a surface material. Furthermore, NM sheet is a novel innovation by

NICHIAS. As such, it is structurally more stable than spiral wound gaskets. This gasket doesn't come apart during transportation like a spiral wound type. Due to TOMBO™ No. 1891-NM design, it is also suitable to be used in large diameter pipeline exceeding diameter 1000mm whilst maintaining its sealing stability. The NM sheet then provides heat resistance up to 1,000°C, resulting in minimal leakages at 550°C. In this way, the gasket is able to maintain the seal for longer period of time than other commercially available gaskets. Ultimately, NICHIAS was able to assist customer with reducing risks of gasket damage, leakages and the solution provided a stable sealing performance under high operating temperatures as required.

For more information, please visit:  
<https://nichias.co.jp/en/>



TOMBO™ No. 1891-NM Kammprofile gasket

\*TOMBO is a registered trademark or trademark of NICHIAS Corporation.

\*Products with TM are trademarks of NICHIAS Corporation.

**Head Office**

6-1, Hatchobori 1-chome, Chuo-ku, Tokyo 104-8555, Japan  
**International Marketing and Sales Group**  
 Phone: 81-3-4413-1132 Fax: 81-3-3552-6108  
 Web Site: <https://www.nichias.co.jp/>

**Overseas Sales Companies**
**Indonesia**
**PT. NICHIAS SUNIJAYA**

Sequis Tower Level 19 Suite 1&2,  
 Jl. Jend Sudirman Kav. 71, Jakarta 12190, Indonesia  
 Phone: +62-21- 2277-6101 Fax: +62-21- 2793-8033

**Malaysia**
**NICHIAS SOUTHEAST ASIA SDN. BHD.**

Suite A1102, 11th Floor, West Wing, Wisma Consplant 2,  
 No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia.  
 Phone: +60-3-5636-4067 Fax: +60-3-5636-4078

**Singapore**
**NICHIAS SINGAPORE PTE. LTD.**

25 International Business Park, #01-15/17 German Centre,  
 Singapore 609916  
 Phone: +65-6571-0830/0838 Fax: +65-6265-7681

**Vietnam**
**NICHIAS VIETNAM CO., LTD**

Room 709, Elite Business Center, 7th Floor Diamond Flower Building,  
 48 Le Van Luong Street, Nhan Chinh Ward, Thanh Xuan District,  
 Hanoi, Vietnam  
 Phone: + 84-24-6664-3136 Fax: + 84-24-6666-8168

**Thailand**
**NICHIAS (THAILAND) CO., LTD.**

85 Moo 1, Wellgrow Industrial Estate T. Homsin, A. Bangpakong  
 Chachoengsao 24180, Thailand  
 Phone: +66-38-570-600 Fax: +66-38-570-601

**THAI NICHIAS INTERNATIONAL CO., LTD.**

Unit 1107, 11th Floor, AIA Capital Center  
 89 Ratchadaphisek Road, Dindaeng, Bangkok 10400 Thailand  
 Phone: +66-2-001-2060 Fax: +66-2-001-2062

**China**
**NICHIAS (SHANGHAI) TRADING CO., LTD.**

霓佳斯（上海）贸易有限公司  
 Room 1701, THE PLACE, Tower A, No. 100 Zun Yi Road,  
 Changning District, Shanghai, P.R.China Postcode 200051  
 中国上海市长宁区遵义路100号虹桥南丰城A栋1701室 邮编200051  
 Phone: +86-21-6236-1783 Fax: +86-21-6236-1781

**NICHIAS (SHANGHAI) TRADING CO., LTD. Guangzhou Branch**

霓佳斯（上海）贸易有限公司 广州分公司  
 17F-G, Gold Sun Building, No.109 Tiyu West Road, Guangzhou,  
 Guang Dong Province, 510620, P.R.China  
 中国广东省广州市天河区体育西路109号高盛大厦17楼G室 邮编 510620  
 Phone: +86-20-3879-1640 Fax: +86-20-3879-1647

**NICHIAS (SHANGHAI) AUTOPARTS TRADING CO., LTD.**

霓佳斯（上海）汽车零部件贸易有限公司  
 Room 1702, THE PLACE, Tower A, No. 100 Zun Yi Road,  
 Changning District, Shanghai, P.R.China Postcode 200051  
 中国上海市长宁区遵义路100号虹桥南丰城A栋1702室 邮编200051  
 Phone: +86-21-6236-2668 Fax: +86-21-6236-2667

**Overseas Construction Companies**
**Malaysia**
**NICHIAS SOUTHEAST ASIA SDN. BHD.**

Suite A1102, 11th Floor, West Wing, Wisma Consplant 2,  
 No. 7, Jalan SS 16/1, 47500 Subang Jaya, Selangor Darul Ehsan, Malaysia.  
 Phone: +60-3-5636-4067 Fax: +60-3-5636-4078

**Thailand**
**THAI-NICHIAS ENGINEERING CO., LTD.**

45 Huaypong-Nongbon Road, Huaypong, Muang Rayong,  
 Rayong Province 21150, Thailand  
 Phone: +66-38-682-242 Fax: +66-38-691-156

**Overseas Factories**
**Indonesia**
**PT. NICHIAS ROCKWOOL INDONESIA**
**PT. NICHIAS METALWORKS INDONESIA**
**Malaysia**
**NICHIAS FGS SDN. BHD.**
**NT RUBBER-SEALS SDN. BHD.**
**Vietnam**
**NICHIAS HAIPHONG CO., LTD.**
**China**
**SUZHOU NICHIAS INDUSTRIAL PRODUCTS CO., LTD.**

(苏州霓佳斯工业制品有限公司)

**SUZHOU NICHIAS SEAL MATERIAL CO., LTD.**

(苏州霓佳斯密封材料有限公司)

**SHANGHAI XINGSHENG GASKET CO., LTD.**

(上海兴盛密封垫有限公司)

**SUZHOU SHUANGYOU AUTOPARTS CO., LTD.**

(苏州双友汽车零部件有限公司)

**India**
**NICHIAS INDUSTRIAL PRODUCTS PRIVATE LTD.**
**Czech**
**NICHIAS AUTOPARTS EUROPE a.s.**
**Mexico**
**NAX MFG, S.A.DE C.V.**

**Cautions**

- The products included in this catalog are intended for common use, including those presented in the catalog. If you intend to use any of the products in a way that requires extremely high quality and reliability such that any possible defect may directly affect the safety of human lives, please make sure to consult with our company in advance and take necessary measures at your responsibility.
- Because the stated material values may vary according to actual usage environments or circumstances, please consider such figures as indications for reference.
- The content of the catalog explains the features of the products when they are used alone. When actually using the products, please start using them after testing them under the actual usage environment.
- The content of the explanation of the products may be modified without any advance notice, and the production of the product may also be discontinued without advance notice. Please obtain the latest version of the catalog, and confirm the content thereof. The date of issuance of this catalog is printed on this page.
- The standards, accreditation and provisions of laws included in the catalog may not conform with the latest version thereof.
- We strictly prohibit any acts of infringement upon our rights that are protected by the Copyright Act with regard to information included in the catalog, through the production of copies or imitations, misappropriation or unauthorized reprinting.
- Please be informed that, in the case where any problem involving a third party's industrial property right arises due to the use of any product included in the catalog, our company shall not be responsible for any problems other than the problems arising strictly due to reasons related to only such products.
- Please be aware that our company will not bear any responsibility for the following damage related to our products:
  - Damage arising due to natural disasters or accidents occurring for reasons that are not attributable to our company;
  - Damage arising due to remodeling, repairing or other acts by a third party;
  - Damage arising due to the willful intent or negligence of the customer or the user, or due to the improper use or use under abnormal conditions of the products;
  - Damage arising due to the failure to carry out regular checkups and appropriate repairs, maintenance and part replacements, considering various conditions, such as the usage conditions, usage environment and usage period, etc., of the product;
  - Indirect damage (including any operational damage, lost profits, opportunity losses, etc.) arising due to the use of or inability to use our company's product;
  - Damage arising due to a situation which was unforeseeable under the technical standards at the time of the shipment of our company's product; or
  - Damage arising due to reasons that are not attributable to our company.