

Japan International

Welding Show 2022

We, NIPPON STEEL WELDING & ENGINEERING CO., LTD., introduce welding consumables and welding processes that contribute to society in the following concept of “WELDREAM -Link the Future-”.

1. Carbon Neutrality
2. Labor-Saving Technology and High-Quality Welding in Construction
3. Improvement of National Resilience and Reduction of Life Cycle Costs



Welding Consumables and Processes that Contribute to Manufacturing of Offshore Wind Power Generation Facilities

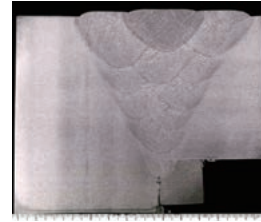
High-efficiency and high-toughness welding consumables for towers, monopiles, jackets and floating bodies

High-efficiency SAW materials

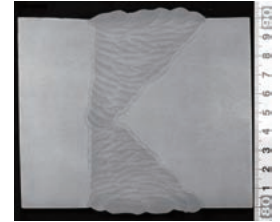
| Characteristics | Brand Name | Specification |
|------------------------------|---------------|---------------------|
| Narrow groove | NF-1 & Y-D | JIS Z 3183 S532-H |
| | | AWS A5.17 F7A4-EH14 |
| High heat input 150 kJ/cm | NSH-60 & Y-DL | JIS Z 3183 S582-H |
| | | AWS A5.17 F7A4-EG |

FCAW for EN standard S355 to S460 grade

| Characteristics | Brand Name | Specification |
|-----------------------|------------|-----------------------------------|
| All position for S355 | SF-3M | ISO 17632-A-T 46 4 ZMnNi P C 2 H5 |
| | | AWS A5.20 E71T-9C-JH4 |
| All position for S460 | SF-47E | ISO 17632-A-T 46 6 ZMnNi P C 2 H5 |
| | | AWS A5.29 E81T1-Ni1C-JH4 |



High heat input SAW
(plate thickness 80 mm)
NSH-60 & Y-DL



Vertical upward FCAW
(plate thickness 100 mm)
SF-47E

Optimal Welding Consumables for Jack-up Legs of Wind Turbine Installation Vessels

Welding consumables for YS690 grade

Long-Experience to supply products for the legs in overseas projects

| Temp. | Process | Brand Name | Specification |
|-------|---------|-----------------|-----------------------|
| -60°C | SAW | NB-250J & Y-80J | AWS A5.23 F11A10-EG-G |
| | SMAW | L-80SN | AWS A5.5 E11016-G |
| -40°C | GMAW | YM-80A | AWS A5.28 ER110S-G |

Low-Diffusible-Hydrogen seamless flux cored wire for YS690 grade

| Temp. | Process | Brand Name | Specification |
|-------|-----------------------|------------|------------------------|
| -40°C | FCAW for All position | SF-80A | AWS A5.29 E111T1-GM-H4 |
| | FCAW of Metal type | SM-80A | AWS A5.28 E110C-G-H4 |



Welding Consumables for 7-9% Ni Steel for LNG Storage Tanks

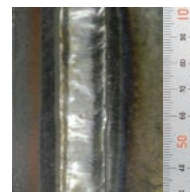
Ensured reliable high-toughness under a use environment of -162°C

Abundant of supply records in onshore LNG storage tanks

| Process | Brand Name | Specification |
|---------|-----------------------------------------|----------------------------------|
| SMAW | YAWATA WELD B(M) | AWS A5.11 ENiCrFe-4 |
| SMAW | NITTETSU WELD 196 | AWS A5.11 ENiMo-9 |
| SAW | NITTETSU FLUX 10H & NITTETSU FILLER 196 | Equivalent to AWS A5.14 ERNiMo-9 |
| GTAW | NITTETSU FILLER 196 | AWS A5.14 ENiMo-9 |

NEW ARRIVALS

| Process | Brand Name | Specification |
|-----------------------|----------------|------------------------|
| FCAW for All position | FC-9NI | AWS A5.34 ENiGT1-1 |
| SMAW | NI9 | AWS A5.11 ENiCrMo-6 |
| SAW | BF-276 & Y-276 | AWS A5.14 ERNiCrMo-4 |
| GTAW | YT-276 | [Reference Exhibition] |



FC-9NI Fillet weld
in vertical up position



NITTETSU FILLER 196
in vertical up position

Optimal Plasma Welding process for LNG vessels' Membrane tanks with Stainless Steel (SUS304)

- Provided large amounts of our Plasma welding machines to various industries around the world
- High-speed automatic welding with the narrowed arc
- Spatter, fume and welding distortion are extremely low, therefore repair work after welding is significantly reduced



Bead appearance of
Plasma welding



Welding Consumables and Processes for Cryogenic Storage Tanks, such as ammonia tanks etc.

- Excellent toughness in Low-temperature and corrosion resistance
- Typical products for -60°C

| Process | Brand Name | Specification |
|---------|----------------|-------------------------------|
| SMAW | L-55SN | AWS A5.5 E7016-G |
| FCAW | SF-36E | AWS A5.29 E81T1-K2C-H4 |
| GMAW | YM-1N | AWS A5.28 ER80S-G |
| SAW | NF-310 & Y-DM3 | AWS 5.23 F8A8-EG-G, F8P4-EG-G |



2 Labor-Saving Technology and High-Quality Welding in Construction

A Robot for On-Site Welding that Contributes to Improvement of Productivity and Quality [Reference Exhibition]

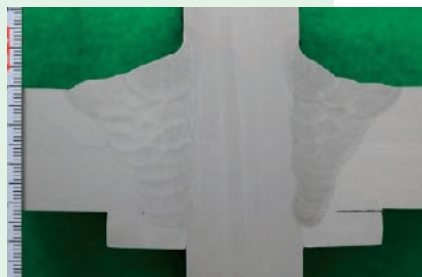
Developed the industry's first portable five-axis welding robots for joint welding of steel pipe column at construction sites

- Changeable torch angle and sagging resistance of bead in horizontal position
- It can automatically avoid erection tools
- It can enhance productivity and reduce sensing time by Groove Shape Image Sensing System.

[SX-26 / SX-55] High Efficiency of Construction Welding

SX wire series, popular owing to little spatter, obtained the certification for welding robots of building structures in Japan (RAL20 produced by Komatsu Ltd.).

- Little spatter, which significantly reduces removal spatter work
- Deep penetration
- Certified type approval with Komatsu robot
- Awarded the 2021 Tanaka Kikundo Award of Japan Welding Society



SX-55



NEW

[NF-800R (SAW-flux)] Coexistence of Excellent Welding Workability and High-Toughness

- Applicable to 400-590MPa tensile strength steel, such as S502-H and S582-H by changing the wire, with plate thickness up to 40 mm
- Improves work efficiency owing to superior removability of slag
- Ensures stable toughness of 47J or more at 0°C
- Glossy and beautiful bead appearance



NF-800R of SAW-flux
Fillet welding in Flat position



Self-Slag-removability of NF-800R
Fillet welding in Flat position

[NSH™-60S (SAW-flux)] For Build-up Box Columns to Obtain Beautiful Bead Appearance

Beautiful bead appearance and excellent alignment of welding bead toes

- Stable mechanical properties
- Deep penetration
- Applicable to 400-590 MPa tensile strength steel, which reduces flux switching works and improves work efficiency



NSH-60S of SAW-flux



3

Improvement of National Resilience and Reduction of Life Cycle Costs

[SF / FC-309SD] Exclusive Welding Wires for SuperDyma™, ZAM™ and ZEXEED™

SF/FC-309SD with SuperDyma, ZAM and ZEXEED help extend the service life and improve the performance of structures.

- Weldable without removing galvanization
- Excellent corrosion resistance even in an uncoated condition
- Applicable without Varnish / Painting
- Tensile properties equivalent to or greater than base material



Prevent the rust in a 1000-hour saltwater spray test

[SF / FC-2120] Welding Wires for Lean Duplex Stainless Steel

Applicable to lean duplex steel with excellent corrosion resistance and resource saving

- Small impact of alloy fluctuations owing to higher tensile strength and less alloy than general SUS
- Excellent corrosion resistance equivalent to base metal
- Beautiful bead appearance and stable penetration
- Applicable to SUS821L1 and SUS323L



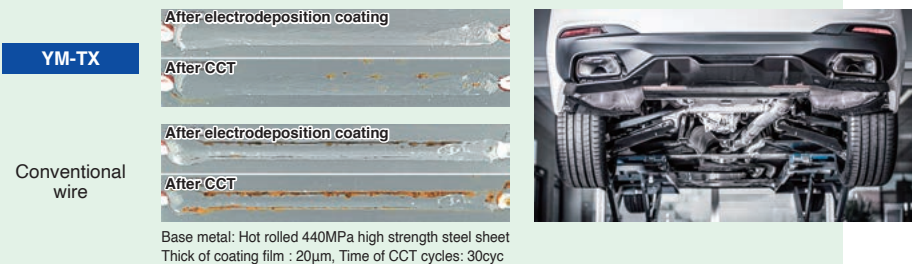
SF / FC-2120



[YM-TX] Ultra-Low Slag Solid Wire for the Automotive

Slag generation amount is extremely low, enabling superior Electrodeposition coating after welding

- Realizes very little spatter by applying pulse welding
- Stable penetration and beautiful bead appearance



◆ Inquiry **NIPPON STEEL WELDING & ENGINEERING CO., LTD.** Overseas Sales Div.
Address: 4-2 Toyo 2-chome, Koto-ku, Tokyo, Japan 135-0016
Email: nswe-support@weld.nipponsteel.com Tel: 03-6388-9000 (Representative)

