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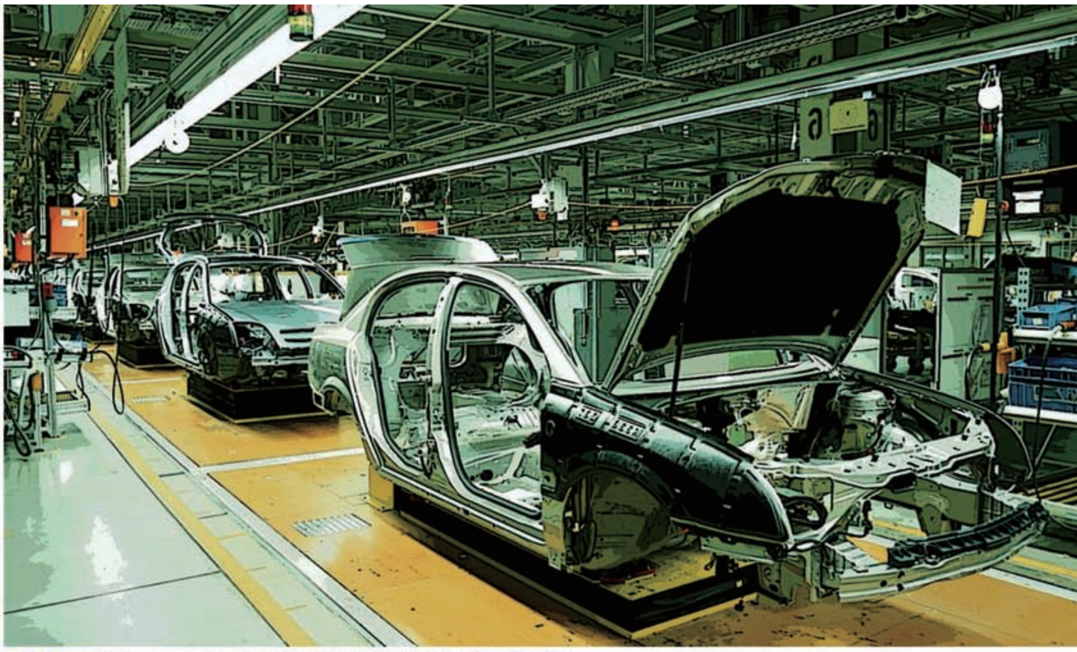

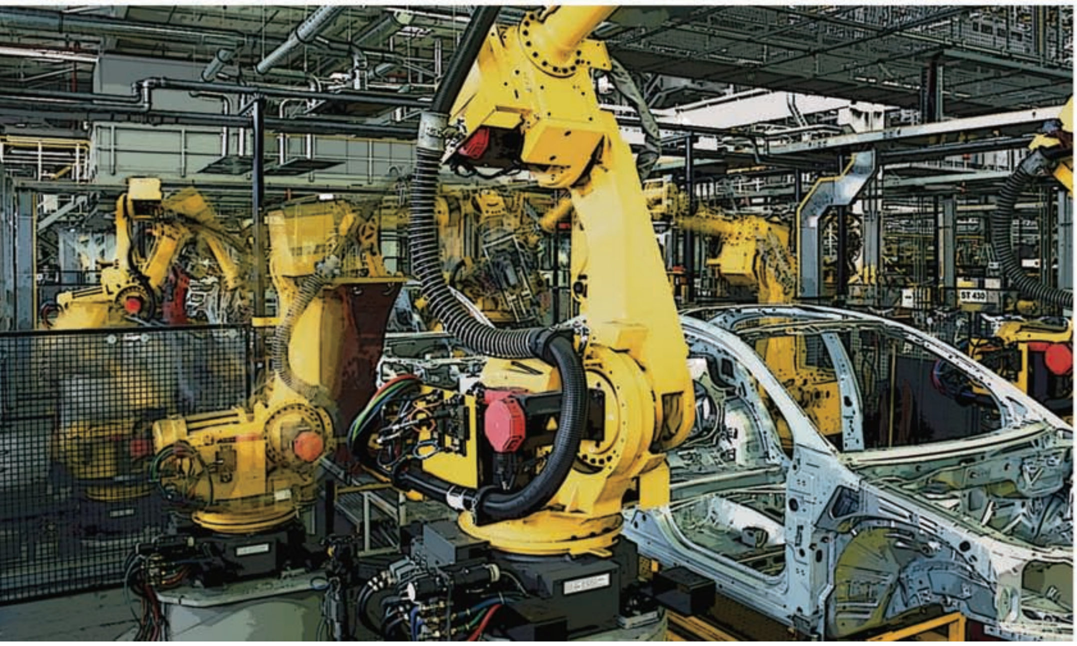

KOBELCO Puts the Customer First with All-in-One Product and Service

PREMIARC™ DW-308L-XR
PREMIARC™ DW-316L-XR

Helping Workplaces Comply with New OSHA Standards by Reducing Cr(VI) Emissions

In order to reduce a risk of significant health effects, the Occupational Safety and Health Administration (OSHA) in the USA has amended the existing standard of the permissible exposure limit (PEL) of hexavalent chromium, also known as Cr(VI), from 52 to 5 μg/m^3 effective from June 2010. This rugulation applies to all manufacturing processes where Cr(VI) is present. Under this rule, the welding industries are required to reduce occupational exposure to Cr(VI) to less than the new PEL, which may need safer materials and equipment depending on the workplace environment.

Taking into account this amended OSHA standard, Kobe Steel has developed two new flux-cored wires (FCWs) for stainless steels, **PREMIARC™ DW-308L-XR** (AWS A5.22 E308LT0-1/-4) and **PREMIARC™ DW-316L-XR** (AWS A5.22 E316LT0-1/-4), both of which are now available.

Because flux cored arc welding (FCAW) generates more welding fumes than other stainless steel welding methods, it presents a burdensome safety challenge. In addition, the welding fumes emitted by stainless steel FCAW contain chromium oxide (Cr_2O_3) in a range of 10-20% as shown with an example in Figure 1, a part of which exists as highly toxic Cr(VI). This figure shows the typical composition of fumes generated by a conventional 308L-type FCW. These fumes were collected following ISO 15011-1:2009, and the Cr(VI) in the fumes was analyzed according to ISO 16740:2005.

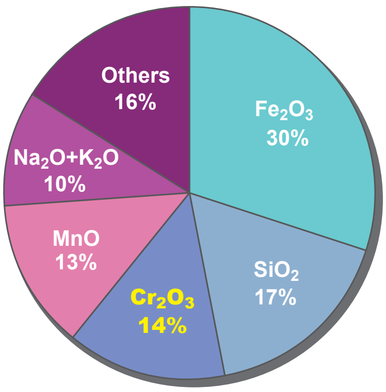

Figure 1: The typical chemical composition of welding fumes generated by a conventional 308L-type FCW.

As seen in Figures 2 and 3, the Cr(VI) emission rates of **DW-308L-XR** and **DW-316L-XR** are greatly reduced to 1/5 or 1/10 the amount emitted by conventional stainless steel FCWs (DW-308L and DW-316L).

The chemical compositions and mechanical properties of all weld metals deposited by **DW-308L-XR** and **DW-316L-XR**, shown in Table 1, are almost identical to those of the conventional FCWs for stainless steels.

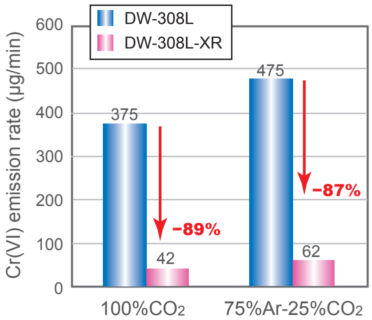

Figure 2: **DW-308L-XR** greatly reduces Cr(VI) emission rates in comparison with conventional DW-308L.

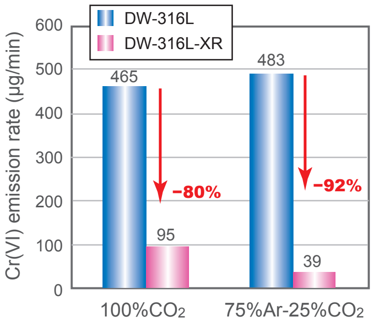

Figure 3: **DW-316L-XR** remarkably reduces Cr(VI) emission rates in comparison with conventional DW-316L.

Table 1: Chemical and mechanical properties of all weld metals deposited by the XR series FCWs

Trade desig.	DW-308L-XR		DW-316L-XR	
Shielding gas	100%CO_2	75%Ar-25%CO_2	100%CO_2	75%Ar-25%CO_2
C (wt%)	0.026	0.027	0.020	0.025
Si	0.66	0.74	0.67	0.74
Mn	1.13	1.29	1.16	1.28
P	0.016	0.016	0.016	0.016
S	0.008	0.007	0.008	0.008
Cu	0.015	0.016	0.025	0.025
Ni	9.6	9.5	12.0	12.0
Cr	18.8	19.4	18.5	18.9
Mo	0.01	0.01	2.4	2.4
FN*1	8	11	8	9
0.2%PS (MPa)	367	396	404	400
TS (MPa)	550	583	542	548
El (%)	44	40	36	42
RA (%)	45	42	44	45

*1: FN is Ferrite Number by WRC-1992 diagram.

Although use of the XR series FCWs will substantially reduce exposure to Cr(VI) in the workplace, it is recommended to control exposure by using respiratory protection, ventilation equipment and protective work clothing to achieve a safer workplace environment.

Communicating more closely with customers in order to fulfill their needs for the best welding products and total solutions

Dearest KWT readers! I am Shinichi Tanaka, and, since January 2011, the General Manager of the International Sales and Marketing Section. I have now been involved in the overseas business for 19 years — though not continuously — including two postings overseas, one at Kobelco Welding of America Inc. for a year from 1990 and the other at Kobelco Welding of Europe B.V. in the Netherlands for 5 years from 1997.

Since October 2010, the domestic and overseas sales and marketing departments of Kobelco's Welding Business have been united into one department in order to improve internal communication, enhance the power of total welding solutions and strengthen global operations. In particular, we have focused our sales and marketing effort on three industries: shipbuilding and offshore/onshore oil drilling rig fabrication, automobile and construction machinery industries, and energy related plant fabrication.

Although the needs of these customers continue to develop with the changes in the overall market, I believe that arc welding will nevertheless remain a key technology in the process of fabricating the structures. Therefore, we plan to keep supplying such products as welding processes and consumables with high efficiency and quality, and promoting effective welding methods for high tensile strength steels and low temperature services, among others.

Overseas, the demand for welding consumables and welding robotic systems is expanding along with the progress of industrialization in emerging nations particularly in Asia. Accordingly, we will conduct the sales and marketing in each region from the nearest Kobelco group base, making sure to respond quickly to each customer's request and supply quality products and technical supports toward the goal of standing apart from our competitors.

It is our promise to communicate more closely with customers in order to precisely grasp and fulfill their needs to their ultimate satisfaction. Our long overseas experience uniquely positions us to provide the most effective welding products and total welding solutions.

We thank you very much for your continuous patronage to our products and look forward to seeing you in the very near future.

Shinichi Tanaka
General Manager
International Sales & Marketing Sec.
Marketing Department
Welding Business
Kobe Steel, Ltd.

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Advanced MAG and MIG Welding Wires : Meeting Car Manufacturing Requirements for Fast and Efficient Welding

Because people around the world have been demanding that the automobile industry stop polluting the environment and wasting natural resources, in recent years car manufacturers have responded with new engine technologies and lighter auto bodies that improve fuel efficiency.

The need to reduce auto body weight has led to the application of thinner carbon steels and high tensile strength (HT) steels or light materials such as aluminum alloys as well as to the development of new welding consumables and processes that match the new structural materials. At the same time, car manufacturers have continued to request the welding industry to boost productivity and efficiency, such as by minimizing the need for repairs and reducing spatter, and thereby cut costs.

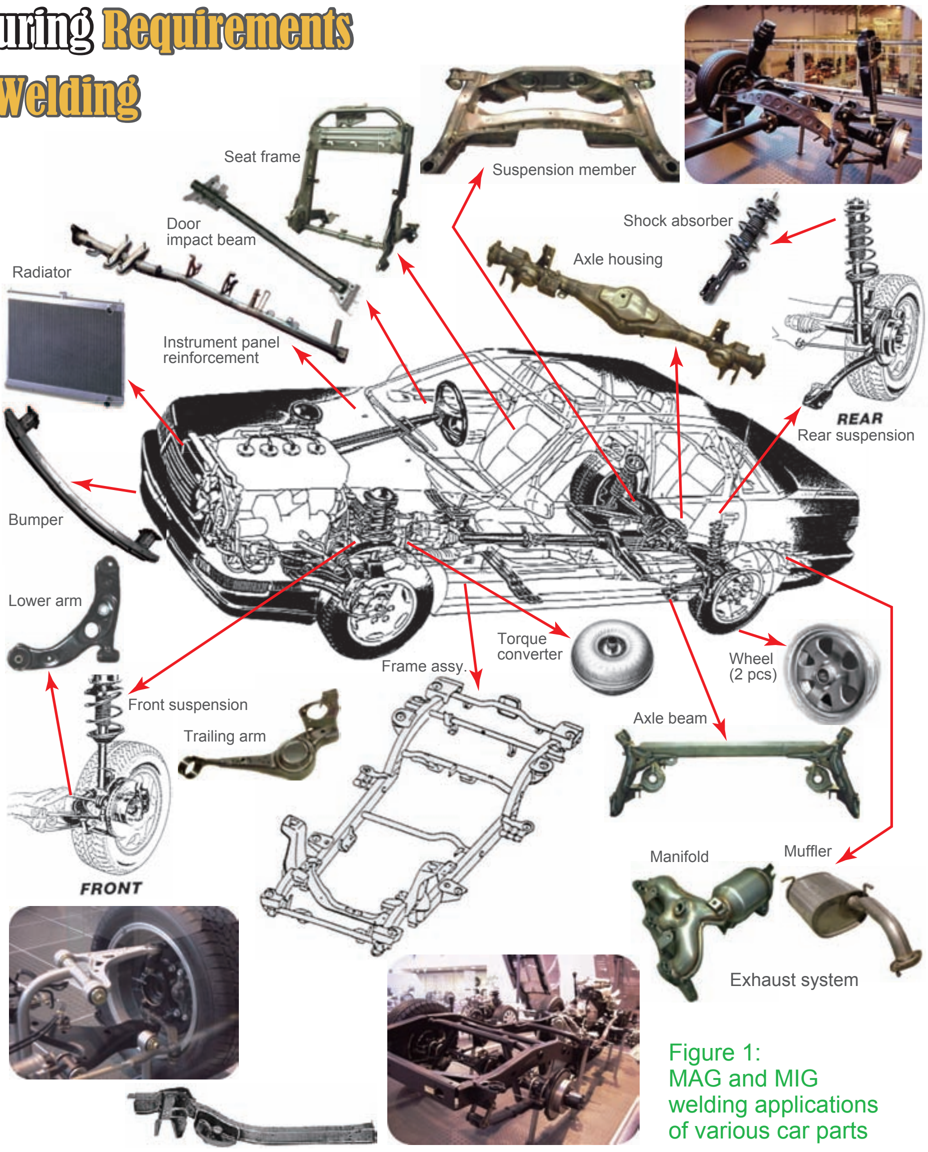


Figure 1: MAG and MIG welding applications of various car parts

This article introduces the up-to-date arc welding processes and consumables for various carbon steels and stainless steels that have been developed by Kobe Steel and applied in automobile manufacturing.

Requirements for arc welding wires for car production

As for welding in car production, arc welding and resistance spot welding are the two most common welding processes. Among various arc welding processes, MAG welding (with CO_2, Ar-CO_2, or Ar-O_2) and MIG welding (with Ar or Ar-O_2) are generally used for car production due to their high deposition efficiency and easy automation for robotic welding. These arc welding processes will continue to be favored in car production. Figure 1 shows how these welding processes are applied to car parts. They are especially favored in parts of the undercarriage, the exhaust system and for complicated shapes where more reliable strength, varied joint configuration, and good root-gap tolerance are essential.

Arc welding wires used in car production also must be resistant to burn-through and capable of high speed welding, both of which are quite important for welding very thin plates.

SE (Smooth & Ecology) wires shine in car production

The SE wires for MAG welding, developed by Kobe Steel, feature a special surface treatment instead of a copper (Cu) coating as seen in Figure 2. The SE wire has widely been accepted by car manufacturers as the welding wire that meets their needs.

Table 1 lists the particular SE and Cu-coated wires used for carbon steel welding in the production of various car parts. Table 2 breaks down the chemical compositions of all weld metals deposited by these wires.

Table 1: **FAMILIARC™** wires for MAG welding of carbon steels in car production (SE wires in black, Cu-coated wires in red, FCW in green)

Car parts	Steel type (Plate thick., mm)	Welding process	Trade designation	Wire dia.(mm)
▪Frame assembly ▪Arm (lower & upper) ▪Axle beam ▪Axle housing ▪Torque converter	Carbon steel plate (2.3-4.0)	MAG (CO_2)	**SE-50T** **MG-50T, MG-51T**	1.2
		MAG, MAG-P*1	**SE-A50** **MIX-50** **SE-A50S** **MIX-50FS** **SE-A50FS**	
▪Axle housing for truck	Carbon steel plate (3.2-6.0)	MAG (CO_2)	**MG-50**	1.2-1.6
▪Impact beam ▪Bumper reinforcement	Carbon steel tube & plate (1.4-2.3)	MAG (CO_2)	**SE-50T** **MG-50T, MG-51T**	1.2
		MAG, MAG-P*1	**SE-A50** **MIX-50**	
▪Suspension member (Cross-member)	Carbon steel plate (1.6-2.6)	MAG (CO_2)	**SE-50T** **MG-50T, MG-51T**	1.2
		MAG, MAG-P*1	**SE-A50** **MIX-50**	
	Galvanized steel plate (1.6-2.6)	MAG (CO_2)	**SE-50T** **MG-1Z** **MX-100Z** *3	1.2
		MAG-P*1	**SE-A1TS** **MIX-1TS, MIX-1Z**	
	Corrosion resistant steel plate1(1.6-2.6)	MAG-P*1	**SE-A1TS** **MIX-1TS**	
▪Instrument panel reinforcement ▪Seat frame	Carbon steel plate (0.8-1.6)	MAG (CO_2)	**SE-50T** **MG-50T, MG-51T**	0.8-1.0
		MAG	**SE-A50** **MIX-50**	
		MAG (CO_2), MAG*2	**MG-1SP**	1.2
▪Body exterior plate ▪Pillar reinforcement	Galvanized steel plate (0.6-1.0)	MAG*2	**MIX-1T**	0.6-0.9

*1: MAG-P signifies pulsed MAG. *2: MAG with variable polarity power source.
*3: MX-100Z is a metal-type flux-cored wire (FCW).

Table 2: Chemical compositions of all weld metals of **FAMILIARC™** wires (SE wires in black, Cu-coated wires in red, FCW in green)

Trade desig.	Shielding gas	AWS class. JIS class.*1	Chemical composition (wt%) C	Si	Mn	P	S	Ti+Zr
SE-50T	CO_2	- Z3312 YGW12	0.07	0.49	1.02	0.008	0.016	-
MG-50T			0.09	0.44	0.96	0.012	0.012	-
MG-51T		A5.18 ER70S-6 Z3312 YGW12	0.10	0.88	1.56	0.011	0.012	-
MG-50		A5.18 ER70S-G Z3312 YGW11	0.08	0.51	1.10	0.010	0.010	0.05
MIX-1T	Ar-CO_2	- Z3312 G43A2M16	0.06	0.47	0.98	0.010	0.017	-
SE-A50		A5.18 ER70S-G Z3312 YGW16	0.06	0.62	1.27	0.010	0.015	-
MIX-50		A5.18 ER70S-3 Z3312 YGW16	0.10	0.55	1.11	0.012	0.011	-
SE-A50S		- Z3312 YGW15	0.08	0.35	1.06	0.009	0.011	0.02
MIX-50FS **SE-A50FS**		- Z3312 G49A0M0	0.04	0.70	1.20	0.010	0.060	-
MG-1Z	CO_2	A5.18 ER70S-G Z3312 G49A0C12	0.10	0.49	1.19	0.009	0.009	-
MX-100Z*1		A5.20 E71T-1C Z3313 T49J0T15-1CA-U	0.10	0.40	1.55	0.025	0.012	-
SE-A1TS **MIX-1TS**	Ar-CO_2	- Z3312 G49A2M16	0.08	0.60	1.01	0.010	0.006	-
MIX-1Z		- Z3312 G43A2M0	0.05	0.18	1.00	0.010	0.004	-
MG-1SP	CO_2, Ar-CO_2	- Z3312 G49A0C11	0.06	0.58	1.32	0.010	0.015	≥0.04

*1: MX-100Z is a metal-type flux-cored wire (FCW).

Figure 2: SE wire (left) and Cu-coated wire (right) differ markedly in appearance.

SE wires are "Smooth" in that they offer smooth wire feeding, a smooth arc start, a stable arc, little spatter generation, and a wide welding parameter range due to the special surface treatment that eliminates the need for Cu coating. The benefit of smooth wire feeding allowed by **SE-A50** was demonstrated by comparing it with a Cu-coated wire at a customer site (see Figure 3); that is, use of **SE-A50** resulted in lower consumption of contact tips. In addition, as shown in Figure 4, there were fewer arc start errors with **SE-A50** in comparison with a Cu-coated wire that was often suffered from burn-back causing fusion with the contact tip and thus much more arc-start errors.

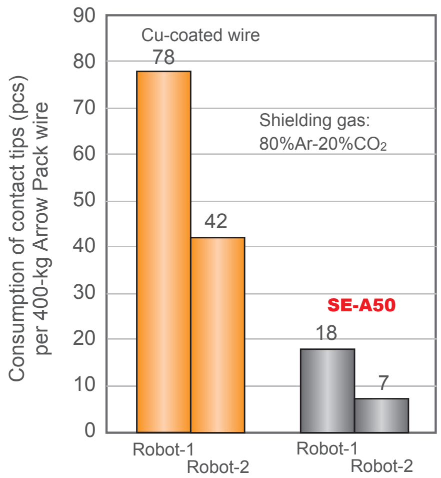


Figure 3: On-site survey records about the consumption of contact tips in robotic arc welding in comparison between Cu-coated wire and **SE-A50**.

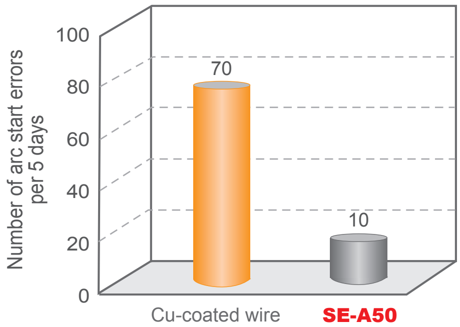


Figure 4: On-site survey records about the number of arc start errors in robotic arc welding in comparison between Cu-coated wire and **SE-A50**

With regard to arc stability, SE wire is also preferable to Cu-coated wire. Figure 5 shows how smaller and more stable droplet transfer with **SE-A50S** was observed by a high-speed camera. Furthermore, with SE wire, a wider range of welding current is applicable. This is because the welding current needed for transition from globular arc to spray arc is significantly lower with **SE-A50S** than with Cu-coated wire as shown in Figure 6.

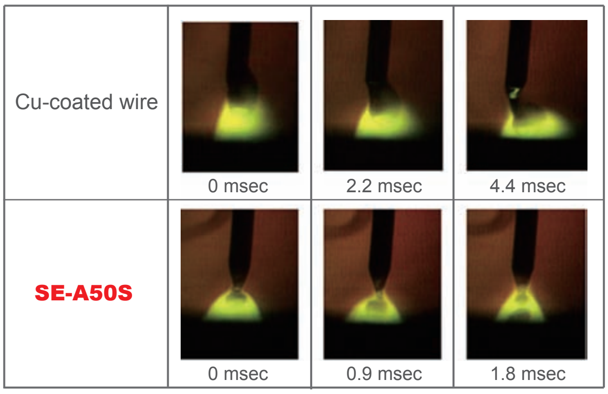


Figure 5: Metal droplet transfer profiles taken by a high-speed camera in comparison with Cu-coated wire and **SE-A50S** (1.2 mmØ, 80%Ar-20%CO_2, 260Amp).

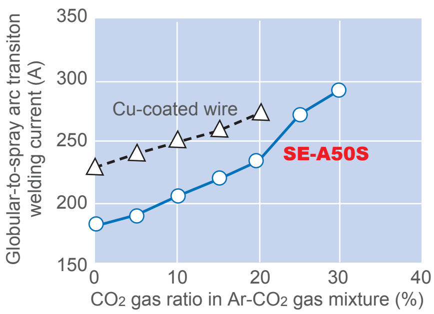


Figure 6: Globular-to-spray arc transition welding current as a function of CO_2 ratio in Ar-CO_2 shielding gas mixture in comparison between Cu-coated wire and **SE-A50S** (1.2 mmØ).

SE wires generate less spatter, as can be seen in the comparison between **SE-50T** and a Cu-coated wire shown in Figure 7. Larger sizes of spatters by **SE-50T** are apparently reduced.

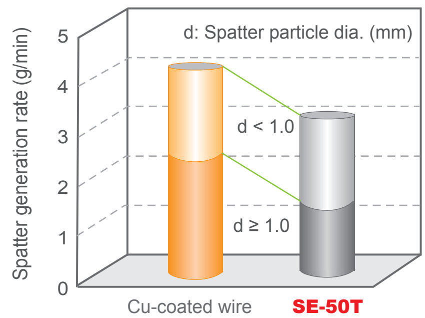
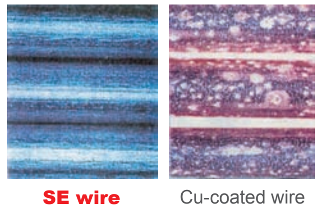


Figure 7: Comparison of spatter generation rates between Cu-coated wire and **SE-50T** (1.2 mmØ, CO_2, 240 Amp)

In terms of corrosion resistance, SE wire also performs well. Figure 8 shows that corrosion resistance of SE wire is equal to or better than Cu-coated wire after 10% NaCl solution was sprayed on the wire surfaces and left in an atmosphere of 30°C × 80% RH (Relative Humidity) for two hours.

Figure 8:
SE wire exhibits excellent corrosion resistance in an accelerated corrosion test (10%NaCl solution spray, 30°C×80%RH, 2 hrs) in comparison with Cu-coated wire



"Ecology" in SE wires relates to the elimination of the Cu coating and the toxic fumes that accompany its use. As seen in Figure 9, SE wire is lower than Cu-coated wire in solid waste, CO_2 emissions and energy consumption, which factor highly in life cycle assessment (LCA).

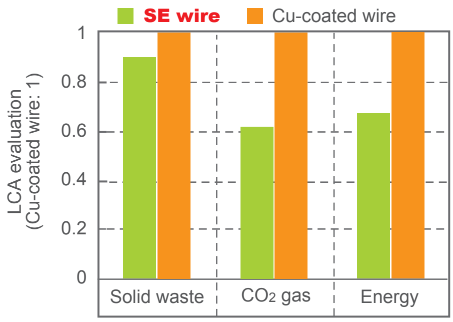
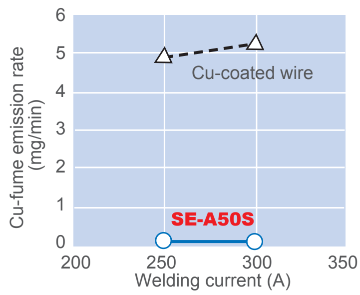


Figure 9:
LCA evaluation of Cu-coated wire and SE wire

SE wire emission of Cu fume is almost zero as shown in Figure 10. It also contributes to achieving a Cu fume PEL (Permissible Exposure Level) of 0.1 mg/m³ as per the OSHA (Occupational Safety and Health Administration) standards.

Figure 10:
Cu-fume emission rates of Cu-coated wire and **SE-A50S**



Development of SE-A50FS and MIX-50FS, exclusive wires for car production

The most stringent requirement of car manufacturers is for welding of the highest efficiency without stoppages. High welding speeds of 90-140 cm/min without any welding defect are required; slag generation must also be reduced as slag causes paint to peel off after painting. In order to meet these requirements, **SE-A50FS** has been developed; also, as its sister product, the Cu-coated **MIX-50FS** has been marketed. These two wires are called FS wires. The advantages of FS wires over conventional wires are discussed below.

Good bead contour in high speed welding

FS wire exhibits good bead contour without humping and undercut whereas conventional wire results in humped bead, undercut and convex bead — Figure 11.

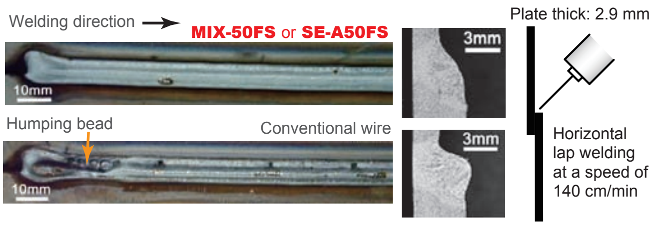


Figure 11: **MIX-50FS** or **SE-A50FS** excels in bead contour over conventional wire in high speed welding on thin plate joints.

Little slag generation and easy slag removal

Whereas slag associated with the FS wire is condensed in one spot, thus easier to remove, but the slag of the conventional wire is scattered along the entire length of bead — Figure 12.

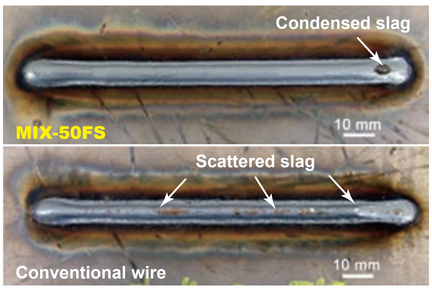


Figure 12: A condensed slag spot with **MIX-50FS** is easier to remove over scattered slag with conventional wire.

More tolerable to deviated wire-tracking

FS wires offer flat, wide bead shape, which enables to tolerate when wire-tracking deviates from a weld line — Figure 13.

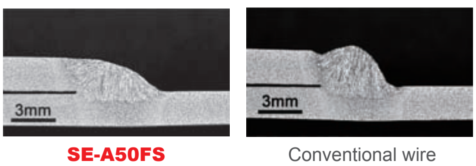


Figure 13: A comparison of cross sectional bead shape between **SE-A50FS** and conventional wire.

Unique MAG processes with dedicated wires for specific applications

MIX-1T (1.2 mmØ) with pulsed MAG (Ar-5%O_2)

In thin plate welding, conventional MAG processes require to use a small-diameter wire of 0.9-1.0 mm with low welding currents and speeds to prevent burn-through at the cost of welding efficiency. A new process that combines **MIX-1T** (1.2 mmØ) and pulsed MAG (Ar-5%O_2 shielding gas) has made it possible to weld a 1.4-mm thick plate joint with a 2-mm root gap at speeds as fast as 100 cm/min as shown in Figure 14.

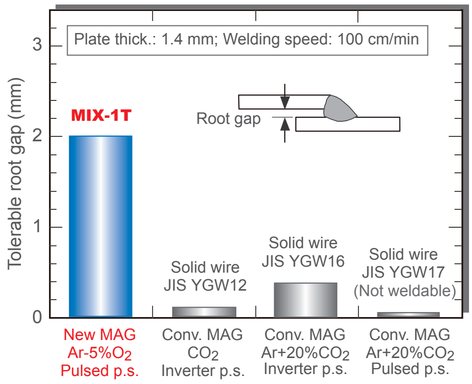


Figure 14: Pulsed MAG (Ar-5%CO_2) with **MIX-1T** outstrips conventional MAG processes in root-gap tolerance.

MIX-1T (0.6 mmØ) + variable polarity power source

A variable polarity power source, which makes it easy to change the ratio of electrode positive polarity (EP) and electrode negative polarity (EN), is useful for controlling the penetration and wire melting rate in every weld passes. Ultra-thin plates, such as the 0.6-0.7 mm plates used for car bodies, have generally been spot welded. However, to fulfill recent requirements for increased car body rigidity, arc welding is preferred to use in the place of resistance spot welding.

Figure 15 shows the test results of **MIX-1T** (0.6 mmØ) in robotic short-bead welding on 0.7-mm thick plates with a 0.5-mm root gap at three different EP-EN ratios. 100%EP resulted in burn-through; 27%EP-73%EN caused a too narrow bead, and the best result was obtained with 53%EP-47%EN, which has already been applied by one of the biggest Japanese car manufacturers.

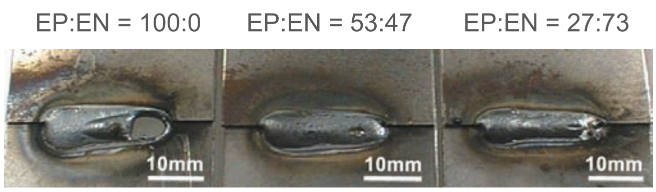
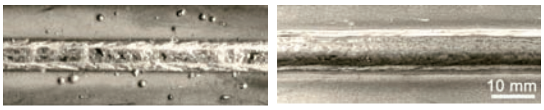


Figure 15: EP:EN polarity ratio of 53:47 resulted in the best bead contour in short-bead welding with **MIX-1T** of 0.6mmØ (Plate thick.: 0.7 mm; Shielding gas: 80%Ar-20%CO_2; Welding parameters: 60A-16V-50cm/min)

SE-A1TS or MIX-1TS with pulsed MAG

The welding of underbody parts such as car suspensions, where galvanized steel plates are often used to prevent corrosion, requires special care to reduce the spatter and porosity caused by the zinc coating on the surface. Although non-surface-treated corrosion-resistant steel plate has increasingly been adopted for such parts, it often sustains solidification cracks during welding due to the alloying elements of copper and phosphorous contained in the steel plate.

Pulsed MAG with **SE-A1TS** or **MIX-1TS** can solve these problems. As shown in Figure 16, pulsed MAG with **MIX-1TS** offers better bead appearance as opposed to MAG (CO_2) welding with conventional wire on a galvanized steel plate. Figure 17 shows the positive influence of **MIX-1TS** with two types of shielding gases against solidification cracks on the corrosion-resistant steel plate.



MAG (CO_2) with conv. wire　　Pulsed MAG with MIX-1TS

Figure 16: In galvanized plate welding, pulsed MAG with **MIX-1TS** results in a good bead look without spatter adhesion (right) whereas MAG (CO_2) welding with conventional wire exhibits much spatter particles adhered and porosity (left).

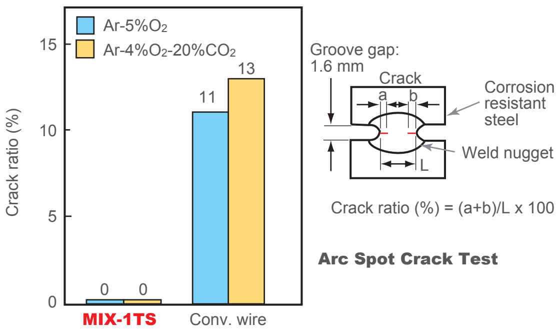


Figure 17: **MIX-1TS** outstrips conventional wire in solidification crack resistance on corrosion-resistant steel plate.

MAG welding wires for HT steels

One way to reduce car body weight is to apply HT steels with thinner plates. Use of HT steels had been limited to those parts not requiring fatigue strength, such as the bumper, seat frame, instrument panel, and impact members. However, more recently the undercarriage can also be reduced in weight with the application of advanced HT steels of 590, 780 and 980 MPa classes to such parts as the arm, beam, frame and suspensions.

In order for welding wires to meet the requirements of tensile strength and fatigue strength, the MX-MIG process that uses **TRUSTARC™ MM-1HS** metal-type flux-cored wire has been developed. The process is described in more detail on Page 8 of this issue.

Welding wires for exhaust systems

In car exhaust systems, stainless steel sheets and pipes are applied to exhaust manifolds, converters and mufflers. Because such parts are assembled with thin pipes and press-formed shapes of a wall thickness of 0.8-2.0 mm, the welding joints necessarily contain small or large root gaps. This is why burn-through resistance and root-gap bridging ability are primary concerns for welding wires. Table 3 shows the recommended welding wires for such applications and the chemical compositions of respective all-deposited metals.

Table 3: **PREMIARC™** wires (1.2 mmØ) for stainless steel and the chemical compositions of all-deposited metals

Trade desig.*1	MX-A430M	MG-S430M	MG-S430NbS	MG-S308
AWS class.	-	-	-	A5.9 ER308
Applicable stainless steel grade	Ferritic			Austenitic
	430, 409, 410L, 444			304
Welding process	MAG (80%Ar-20%CO_2)	Pulse MIG (98%Ar-2%O_2)	Pulse MIG (98%Ar-2%O_2)	Pulse MIG (98%Ar-2%O_2)
C (wt%)	0.05	0.02	0.02	0.05
Si	0.40	0.90	0.88	0.45
Mn	0.14	0.40	0.29	1.64
P	0.008	0.021	0.023	0.024
S	0.017	0.002	0.001	0.002
Cr	17.0	18.4	18.1	20.0
Ni	-	0.23	0.21	9.8
Nb	0.75	-	0.56	-

*1: MX- is for metal-type flux-core wire whereas MG- is for solid wire.

MX-A430M metal-type flux-cored wire is excellent in burn-through resistance as seen in Figure 18 and in root-gap bridging ability as shown in Figure 19.

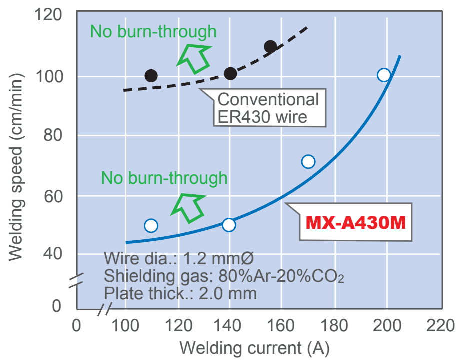
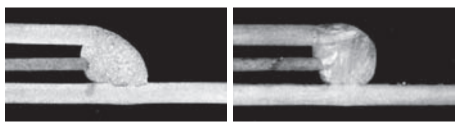


Figure 18: **MX-A430M** offers a wider current-speed range over conventional ER430 wire to prevent burn-through.



MX-A430M　　Conv. ER430 solid wire

Figure 19: **MX-A430M** offers better root-gap bridging ability and smoother fusion over conventional ER430 solid wire.

References:
[1] Kobe Steel Welding Technical Reports, Vol. 40 2000-4, -12
[2] Kobe Steel Welding Technical Report, Vol. 46 2006-11
[3] Kobe Steel Engineering Report, Vol. 52

TRUSTARC™ MM-1HS

An Innovative Metal-Type Flux Cored Wire for the MX-MIG Welding Process that Improves Fatigue Strength and Corrosion Resistance

The newly developed MX-MIG welding process combines MM-1HS (a metal-type flux cored wire with unique chemistry flux), pure-Ar shielding, and pulsed-arc welding power source. It remarkably improves the fatigue strength of the welded joint by means of the following hybrid effects. This innovative technology will enable HT steel to be applied more extensively to car body components, thereby contributing to the auto body weight reduction.

The hybrid effects of the MX-MIG process consist of lower stress concentration at the weld toe with a larger flank angle (Figure 1) and of improved residual stress distribution in the weld (Figure 2), when compared with conventional solid wire MAG. The MX-MIG process also offers flat and wide bead shape as shown in Figure 3.

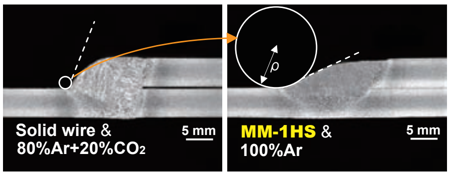


Figure 1: MX-MIG with MM-1HS offers a larger flank angle weld toe as compared with conventional solid wire MAG.

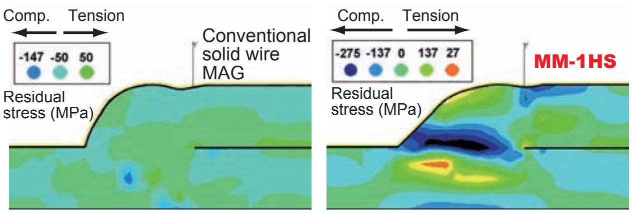


Figure 2: MX-MIG with MM-1HS is characterized by larger compression stress at weld toe vs. conv. solid wire MAG

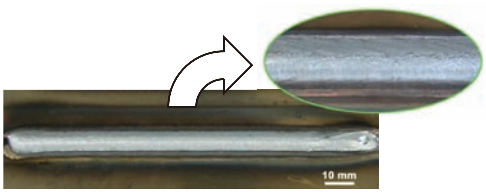


Figure 3: MX-MIG with MM-1HS features flat and wide bead contour with slag-less shiny surface on a lap joint.

MX-MIG welded joint exhibits higher fatigue strength, reaching closer to plain steel plate, over conventional MAG in the fatigue test with lap-fillet weld joints of 780MPa class HT steel plates of 3.4-mm thick (Figure 4).

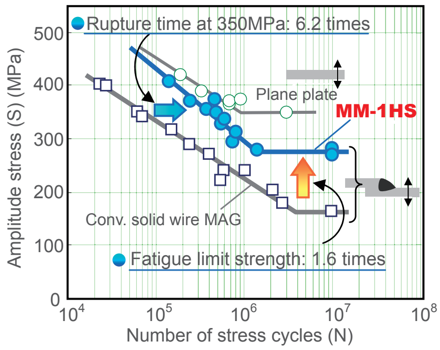


Figure 4: MX-MIG with MM-1HS outstrips conventional solid wire MAG in lap joint fatigue strength.

Car bodies are required to be corrosion resistible in the usage environment particularly in road-salting regions. For this, car underbodies are electro deposition coated after welding. To assess the coating quality and corrosion resistance of MM-1HS weld, cyclic corrosion test (CCT), an accelerated corrosion test, was conducted on electro deposition coated weld joints. As shown in Figure 5, slag-less MX-MIG weld exhibits a uniform coating and thus better corrosion resistance, whereas conventional MAG weld's coating is partly peeled off along the toe because of detachment of slag after the coating and thus much rust is generated along the weld.

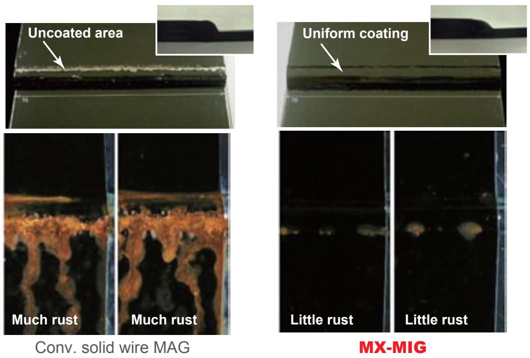


Figure 5: Electro deposition coated bead appearances (top) and CCT results (bottom) highlight the excellence of MX-MIG with MM-1HS over conventional solid wire MAG.

In addition, the MX-MIG process offers little spatter (Figure 6) and prevents hump formation in high speed welding (Figure 7).

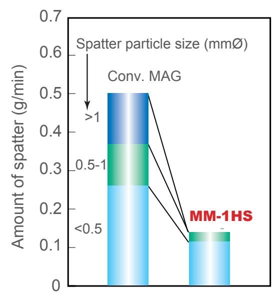


Figure 6: MX-MIG with MM-1HS markedly reduces larger size particle spatter as compared to conventional solid wire MAG.

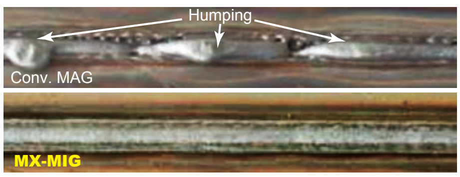


Figure 7: MX-MIG excels in high-speed welding due to low tendency of humping (1.2Ø, 350Amp, 140cm/min, 20-deg upward).

Kobelco Welding India

… a strategic base for sales and marketing with the potential for sourcing important raw materials

In June 2011, Kobelco Welding India Pvt. Ltd. (KWI) was established in Gurgaon, Haryana state, about 30 km southwest of New Delhi. The new company is formed under a joint investment between Kobe Steel, Ltd., Kobe Welding (Singapore) Pte. Ltd. and Taseto Co., Ltd.

Commencing operations with five staff members, including two Japanese, the company will focus on sales and marketing of welding consumables as well as sales support and maintenance services of welding robotic systems.

In India, growing demand for welding consumables offers great potential for Kobe Steel. In particular, rapid expansion in the construction of new power plants is likely to increase demand for high value-added welding products, one of Kobe Steel's strengths. In addition, with Japanese firms in such fields as heavy electrical machinery, construction equipment and automobiles increasing their presence in India, the need to build a support framework for not only welding consumables but also welding robotic systems is becoming urgent.

In addition to marketing, KWI is expected to strengthen the cost competitiveness of the Kobelco welding group companies by searching for and procuring raw materials for welding consumables, since India is expected to become an important source of these materials.

KWI is thus positioned as an Indian base of strategic operations that will enhance marketing effectiveness in coordination with operations in Southeast Asia.

Posing at the office entrance are staff members of KWI and Shinichi Tanaka, GM of ISMS, Welding Business, KSL (the 1st from the left)

Kobelco Welding Marketing of Korea

… expanding marketing networks in the energy field

In April 2011, Kobelco Welding Marketing of Korea Co., Ltd. (KWMK) was established in Pusan, South Korea, as a joint venture between Kobe Steel, Ltd. (KSL), Kobe Welding of Korea Co., Ltd. (KWK), Shinsho Corporation and McQAN Corporation (McQAN). It started the marketing of welding consumables in September 2011.

Staff members of KWMK poses at the entrance of KWMK office in Pusan, South Korea.

KSL has been steadily increasing sales of welding consumables in South Korea through McQAN, a distributor. In 1995, when KSL established KWK, which produces and markets flux cored wires (FCWs) for mild steel, it was unable to take full ownership of the unit. Through the cooperation and support of McQAN, however, KSL has been able to solidify and expand KWK's business, especially the marketing of FCWs to Korean shipbuilders. As far as welding consumables for LNG tanks and other energy fields are concerned, these have been exported from Japan and distributed by McQAN.

Anticipating that demand will decline in the Korean shipbuilding industry in the future, KWMK aims to maintain sales volume by offering welding solutions that combine on-site response and technical development capabilities with welding consumables, construction methods and welding equipment.

In the energy field, Korean heavy manufacturers are active in overseas emerging markets, where they are seeking orders in energy plant construction. KWMK aims to build an efficient marketing network throughout South Korea, strengthening ties with these major customers and securing large sales volumes.

From its location in the exciting Space City of Houston, KWAI expands to Central and South America

In front of the Saturn Rocket at the NASA Johnson Space Center the author, Ryusaku (Ray) Yanagimoto, National Marketing Manager, KWAI poses with his daughter on his shoulder.

My dearest KWT readers! I am Ryusaku (Ray) Yanagimoto and I was assigned to Kobelco Welding of America Inc. (KWAI) as National Marketing Manager in April 2011.

Kobe Steel, KWAI's parent company, usually supplies its customers with the welding products they need from the nearest sales and production center. These are located in many countries, including Japan, Korea, China, Thailand, and Singapore in Asia and the Netherlands in Europe.

In the USA, however, KWAI was established in Houston, Texas in 1990 to serve as the base for marketing and sales to the North American market. Last year, in 2010, we celebrated our twentieth year of serving our customers!

I believe there are two key factors behind KWAI's success in marketing and sales. One is that we have been blessed with talented and loyal staff members, while the other is that our main product, flux cored wires (FCWs) for stainless steels, is reputed by many customers for "QTQ," which stands for Quality Products, Technical Supports and Quick Delivery, the Kobelco welding group slogan.

KWAI's products are market leaders in North America. As a matter of fact, KWAI was awarded the "North American Stainless Steel Tubular Wire Excellence in Product Line Leadership of the Year Award" by the internationally renowned research company Frost & Sullivan in 2008.

In the recent years, not only has KWAI been operating in North America but also expanding into Central and South America where a number of quite large energy-related projects are in progress. We plan to respond to all new inquiries by offering the same quick delivery and systematic technical support that all our customers have come to expect.

Meanwhile, after arriving at my new post and helping my family get set up in Houston, I took my family to visit NASA's Johnson Space Center, one of the important bases for space exploration in the USA and located in a nearby suburb. It is well known that through this center, Captain Armstrong, the first man to walk on the Moon, delivered his famous message: "That's one small step for man, but one giant leap for mankind."

When I saw the real, full-scale space shuttle and other rockets there, their enormous scale was overwhelming. And I could also feel that I, too, shared the enthusiastic passion of the people who dreamed of the challenge of flying into the unknown.

I sincerely hope that the KWT readers can visit this exciting "Space City" of Houston and feel the same passion as I did. And if you do, please visit KWAI as well to meet our excellent staff members.

I truly look forward to seeing you in the nearest future.

KWAI's talented and loyal members, posing at the office lobby (the 1st from the right in the 2nd row is the author)

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