

高性能焊接设备在造船中的应用

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摘要: 丹麦米加尼克来到苏州与四川威达集团合作成立了苏州米加尼克。我们致力于技术的研发,米加尼克的先进技术与威达的强大营销网络结合为苏州米加尼克提供了强大的竞争力。我们为欧洲市场提供高品质的焊接机器,客户包括知名的马士基集装箱、奥迪、法拉利等。同时我们有很多合作伙伴,他们是来自对焊接技术有巨大需求的造船工业。

关键词: 焊接;技术;研发;竞争力;造船工业

中图分类号: U671.81 **文献标识码:** C **文章编号:** 1001-2303(2007)06-0058-06

High quality welding equipment in shipyard industry

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Abstract: Migatronic DK come to Suzhou to cooperate with Weida Group and established Suzhou Migatronic. We focus our attention on R&D, the advanced technology of Migatronic and the large distributor's net of Weida Group will provide Suzhou Migatronic with high competitiveness. We provide high quality equipment for the European market such as Maersk Logistics, Audi, Ferrari and so on. Also, we have some partners in shipyard industry which has huge need in welding technology.

Key words: welding; technology; R&D; competitiveness; shipyard industry



Niels Lonstrup

从1980年到现在一共在3家公司工作过。第一家公司是丹麦北部的Aga公司,一共工作了8年,职位是销售服务工程师。之后的一年在芬兰的Kempfi公司从事相同职位的工作。

1989年接到了丹麦米加尼克的工作,职位是服务经理,掌管丹麦整个售后服务部。

1992年掌管国际售后服务部,进入丹麦米加尼克的管理层。

2000年掌管整个集团售后服务部,到世界各地的米加尼克分公司进行培训,检查监督分公司的工作情况,对整个售后服务和质量做出决策。同时还掌管了ISO9001和ISO2000的更新和维护,到船厂和工人讨论技术方面的问题,给出解决造船遇到的技术问题。在这个部门的总人数是40人,另外10个分公司的员工。

2007年到中国和威达合作成立了苏州米加尼克,并出任总经理。苏州米加尼克的产品质量是按照欧洲的标准生产的,和丹麦米加尼克是同一水平。我们的理念是生产物美价廉的产品提供中国的客户,绝不在质量上做出妥协。

我接受了很多学院的管理课程培训,但是最好的培训来自客户。

Our company

Suzhou Migatronic Welding Technology Co. Ltd. is a joint venture company established by the Chinese Weida Group and the Danish company Migatronic A/S. Figure 1 Suzhou Migatronic company.

The Weida Group, with its headquarters in Chengdu, is one of China's biggest suppliers of automated welding solutions marketed through a net of nation-wide distributors.

The Danish partner, Migatronic A/S, is an internationally-renowned manufacturer of high quality welding machines and widely respected for its high-tech welding solutions for industrial applications sold all over the world.

Suzhou Migatronic Welding Technology Co. Ltd. will combine the knowledge and abilities of the partners to



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Fig.1 Suzhou migatronik company

produce and sell high-quality welding machines on the Chinese market. The product range will cover MIG machines for industrial applications, adapted to the Chinese market but based on European standards and quality. Suzhou Migatronik Welding Technology Co. Ltd. is a Chinese company with European-oriented and creative working environment with a high team spirit and focus on cross-organizational co-operation. We have about 50 staffs, of which 15% is in R&D Department. Also we have invested a lot in R&D, so that we can renew our technology and promote our competitive abilities.

Technology development

Migatronik DK was certified according to ISO9001 in 1991 as the first welding machine manufacturer in the EU. We export welding machines to 40 countries all over the world and have subsidiaries in 10 important European markets.

As a result of controlled growth the company today disposes of modern facilities for development, production, sale and service of total solutions for welding.

At the HI Exhibition Migatronik introduces its FLEX whose multi process power source technology is used in all future welding machines.

October 1999 sees the end of welding jobs at the φ resund elevated bridge. Since January 1998 a total of 20 Migatronik welding machines have been in use seven days a week. According to Sundlink Contractor they never needed a backup machine and the error percentage in weldings was between 0.35 and 0.45.

Migatronik establishes the "Welding Team" in co-operation with Migatronik centres in order to introduce active training of welders. The "Welding Team" assists on expert level individual companies in increasing welding quality and utilizing possibilities in the best possible way in a time where quality and efficiency are strong competitive parameters.

With DPC (Dynamic Pulse Control) Migatronik sets new standards for pulse welding—especially in thin aluminum work pieces. DPC—implemented in all programmable FLEX machines—creates extreme control of the arc energy in the milliseconds in which the pulse peak is active.

The new Pilot Mamba 151 represents new thinking in the design of a portable, efficient machine for professional welding jobs. Behind the strong composite exterior you will find one of the strongest mono-phased 230 V welding machines in the market. The design is compact like a petrol can, and the weight is less than 5 kilograms.

Among the news at Schweissen & Schneiden in Essen are Migatronik's new Navigator range and the fully digitized "flagship", FLEX 4000.

New production layout, new powder painting plant etc.—DKK 5 million investments in the production. Introduction of Multi-motive 220 and new Pilot 200 range. The subsidiary in the UK celebrates its silver jubilee. We attend the HI fair with focus on welding for the 2nd time (every 4th year like at the Schweissen & Schneiden in



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Germany). We arrange the Danish Welding Championship for the second time.

Among the novelties at Schweißen & Schneiden in Essen 2005 is Sigma, a range of MIG/MAG power inverters with MMA.

Pi is also introduced, a TIG range consisting of two mono-phase and three three-phase portable and high-performance inverters for precision welding in stainless steels, aluminum and other high-alloy metals.

The iF Product Design Award 2006 goes to Migatronic for product quality and commitment to innovation and strengthens Migatronic's position on the German market.

Application in shipyard

It is anything but a "soft job" to be a welder at the Danish Odense Steel Shipyard's construction of the world's largest containerships-with up to 650 000 tons deadweight. Many metres of perfect welds in thick wall thicknesses in all weathers. Alone with the torch and the wire feed unit up to 40 meters from the power source, the welder is often cramped for room. Anything that can be done to make the work easier and reduce the power consumption on the hundreds of welding machines, is a welcome relief. In March, the shipyard started using 40 new and specially developed wire feed units for the robust Migatronic KMX machines. The units weigh 4 kilograms less than the units that have been used so far and the built-in standby function is expected to reduce the power consumption by an amount corresponding to 3 000~5 000 DKK per machine.

Svend-Ove Lüders, who has been a welding engineer with the shipyard for many years, has cooperated actively with Migatronic in developing the new wire feed unit for 5 kilogram wire reels. The requirements stick out a mile: simple control panel, low weight, maximum electric safety, minimum sensitivity to weather, cabinets that stand up to a free fall of four meters and cables that stand up to being run over by heavily loaded fork-lift trucks.

We have modified the wire feed units several times in cooperation with Migatronic in terms of new technologies and materials. The cabinet of MWF5 Lindφ, the latest wire feed unit, is made of aluminum. This has not reduced the size of the cabinet, though, because at present it is not possible to further reduce the contents of this strong construction. But a weight reduction of 4 kilograms is tangible and the welders who work with the new generation of wire feed units are content, says Svend-Ove Lüders. Figure 2 Application in shipyard.

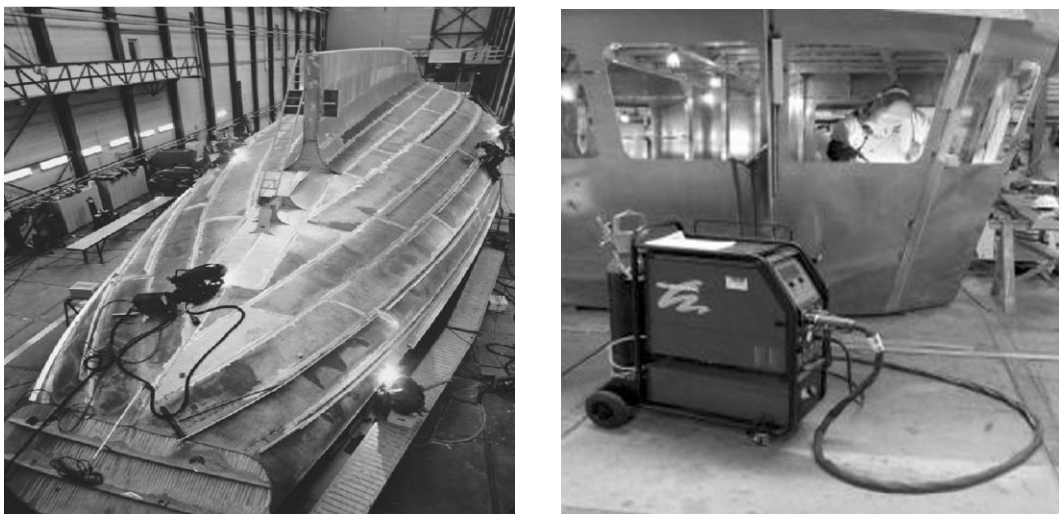


Fig.2 Application in shipyard

Everywhere at the Lindφ Shipyard, energy saving is a day-to-day issue when it comes to choice and operation of equipment and was also an important element when the new wire feed unit was developed.

-When the welder works far away from the power source, he does not always remember to switch off the machine when he has a break. Now he can put the welding machine on stand-by at the control panel of the wire

feed unit and after eight minutes, the transformer will close down. This function alone is expected to give us an annual saving on the 40 machines of DKK 120 000~200 000 on power consumption. Says Svend-Ove Lüders about the cooperation with Migatronik:—All manufacturers of welding machines know our requirements for prototype machines and wire feed units but not all manufacturers have the same drive as Migatronik when we present our ideas for improvements. Cooperativeness and the fact that Migatronik is Danish are important elements to us.

The result of the latest cooperation project has already echoed in shipyards outside Denmark. Migatronik has received inquiries from Norway and Finland among others and the fact that the new light-weight wire feed unit can function with makes other than Migatronik via an interface has increased the interest in the idea.

Characteristics

Switch on ,press and weld

Intelligent compact MIG/MAG Pulse welding machines with user-friendly control panel allowing the welder to focus on the welding operation.

One press on a keyboard will active the programmer for a specific welding operation and allow the welder to read large green display. Pulse welding stainless steels or light alloy metals down to approx. 1mm, MIG brazing high tensile steels with galvanized or primed surfaces specific Quattro programmers with a minimum of heat input to the work piece.

Quattro Pulse

Migatronik's revolutionary Quattro Pulse, one press on the Quattro keypad gives access to a complete set of Quattro settings that can also from part of sequences. Quattro pulse is based on the fact that the machine software produces the optimal droplet pinch-off of the wire. The result is shorter arc and colder weld pool. Especially at low current intensities in thin materials, the full effect is achieved with a minimum of heat input to the work piece which, consequence, maintains its mechanical properties in the best possible way and get the TIG-like weld.

Updated with MigaCARD

The integrated MigaCARD will allow the welder to adjust setting of the welding machine. Continuously updated from Migatronik's large programme date bank will always provide the welder with the latest news in materials, wires and gases.

The Migacard is a further development of the Migatronik smarted technology and holds a large number of welding programmers and machine software .Both are being updated the moment the welder inserts the card into the card reader, which is placed behind a protective cover. Figure 3 Updeated with MigaCARD.



Fig.3 Updated with MigaCARD



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Fig.4 MIG manager ERGO torch

MIG Manager ERGO torch

Figure 4 MIG manager ERGO torch. The MIG Manager torch allows the welder to control all vital functions and communicate them directly to the power source, such as

- (1) Adjustment of welding current.
- (2) Trim of arc length.
- (3) Change between current settings.
- (4) Quattro Pulse on/off.

The Migatronic MIG Manager covers a special requirement when it comes to welding operations that involve frequent changes between different welding operations where the welder does not have "eye contact" with the machine, such as welding below or inside car bodies and tanks or other difficult-to-access work pieces.

PFC (Power Factor Correction)

The two mono-phase Pi 200 machines can be supplied with the PFC (Power Factor Correction) function: an electronic circuit that allows welding with up to 200A by the use of only 16A mains fuses.

D.O.C(r)-AC machines

This feature is not only for the three-phase welding machines but also the mono-phase Pi AC machines are fitted with the patented Migatronic D.O.C(r) system (Dynamic Oxide Control) ensuring a controlled, narrow cleaning zone along the weld in TIG welding of aluminum. As a result, the welding speed can be increased by up to 30% and at the same time consumption of both energy and tungsten electrodes is reduced. Figure 5 D.O.C R-AC R-AC machines.

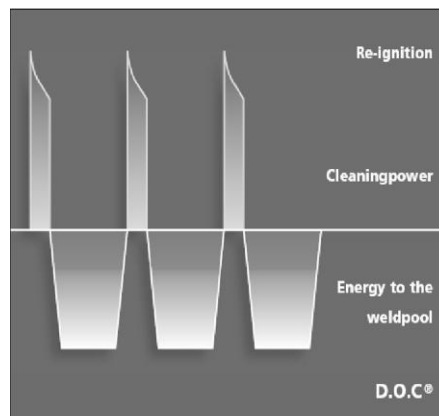


Fig.5 D.O.C R-AC R-AC machines

Our customers in shipyard industry and some heavy industries

Figure 6 Our customers in shipyard industry and some heavy industries.

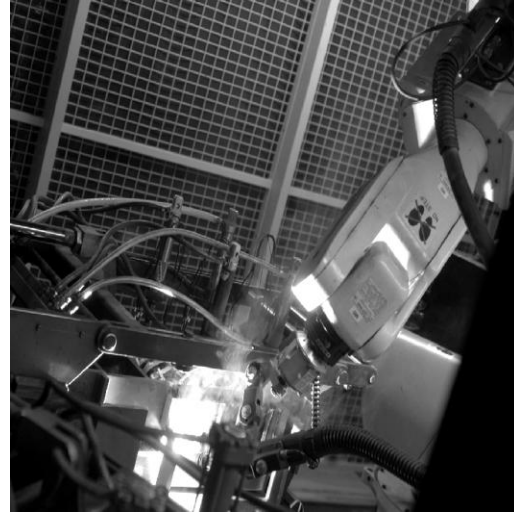
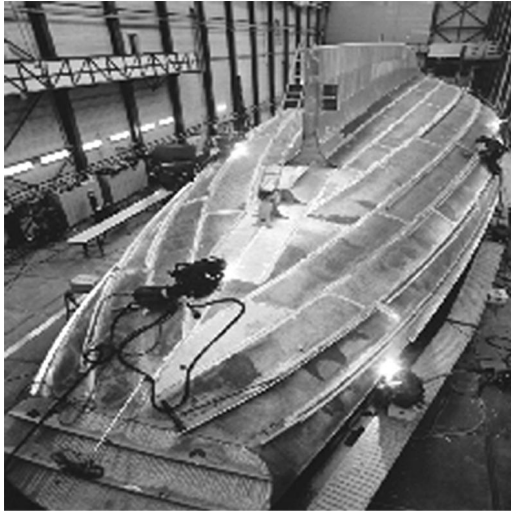


Fig.6 Our customers in shipyard industry and some heavy industries

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|---|---|
| *Lindφ ,Denmark | *Karlskrona Varvet ,Sweden |
| *Ficantieri ,Italy | *Marstrand Varvet ,Sweden |
| *Inma ,Italy | *Goa Shipyard ,India |
| *Huisman ,Holland | *Garden Reach Shipyard ,India |
| *GEC Alsthom ,France | *Kvaerner Egersund ,Norway |
| *Chantiers de l'Atlantique ,France | *Kverner Kleven ,Norway |
| *Bruces ,Sweden | *Ulstein Verft ,Norway |
| *Mazagon ,India | *Helo Skipsservice ,Norway |
| *Cochin ,India | *Nymo ,Norway |
| *GRSE ,India | *Tangen Verft ,Norway |
| *Arhus Flydedok ,Denmark | *Salthammer B?byggeri ,Norway |
| *Loksa Shipyard ,Estonia | *Westa Marin Shipyard ,Norway |
| *Ime Shipyard ,Estonia | *Szczecin Shipyard ,Poland |
| *Rondal Vollenhove ,Netherlands | *Flensburger Schiffbau ,Germany |
| *Heesen Shipyard ,Netherlands | *Cassens Werft ,Germany |
| *Gamelin ,France | *Meyer Werft ,Germany |
| *Aker Yards ,France | *Malakoff & Moore ,UK |
| *Baltijos Shipyard ,Lithuania | *Plymouth Royal Dockyard ,UK |
| *Bruces Shipyard ,Sweden | *Berthon Boats ,UK |
| *G?taverken Cityvarvet G?teborg ,Sweden | *Ministry of Defence ,Marine Salvage Unit ,UK |
| *Fallk Varv ,Sweden | *Est. Navais de Viano do Castelo ,Portugal |
| *FEAB ,Sweden | *Solisnor Shipyard ,Portugal |

收稿日期:2007-06-04



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