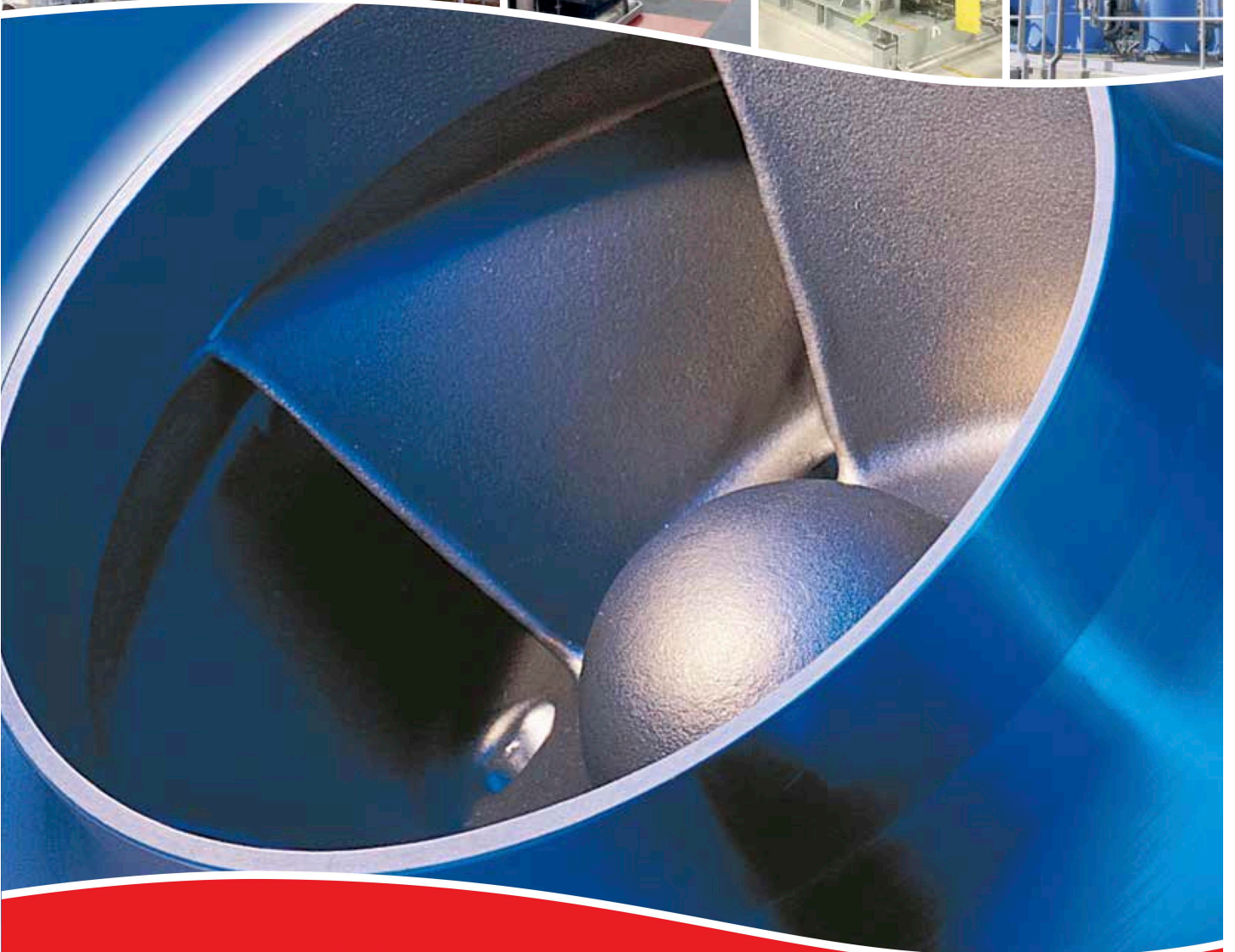




آب نیرو

مرجع تخصصی تجهیزات صنعتی (آب، نفت، گاز)



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VPL[®]
SYSTEM

THE FUTURE OF PIPELINE WELDING

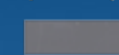
VPL Facing Truck

Pipes for pipeline construction come standard with a bevel for a 30° single-V butt weld when leaving fabrication. For being used with the VPL-System[®], such pipes must be processed with a facing machine. In order to comply with the high welding speed of the VPL-System[®], VIETZ has developed the VPL Facing Truck, which is capable of processing two pipe ends simultaneously. The VPL Facing Truck is equipped with the VACUVIETZ vacuum-lifting unit, allowing fast handling of pipes.

If you use the VPL Facing Truck, you are able to fully exploit the advantages of the VPL-System[®]!



- Pipe end preparation for conventional welding



- Pipe end preparation for welding with VPL-System[®]



Technical specifications ARCOTRAC VPL 2000

Laser	
Make	IPG
Output Power	20 kW
Engine	
Make	Deutz BF 6 M 1013
Number of cylinders	6
Output power / rpm	171 kW / 1500
Emission standard	EPA 2/ COM II
Electrical system	24 V / DC
Onboard control system	VIETZ VCU 1000
Wireless data exchange for error analysis*	VIETZ VCU 2000 GSM
Generator	
Output power	210 kVA
Frequency	50 Hz at 1500 rpm
Frequency *	60 Hz at 1800 rpm
Crane	
Make	HIAB 166
Max. radius	8,10 m
Lifting capacity at 6 m radius max.	2.400 kg
Basic specifications	
Track width in mm	600 / 700
Dimensions in mm (L x W x H)	7000 x 2950 x 3200
Operating weight	17.500 kg
Max. speed	6 km/h
Heatable cab with roll-over protection system	Yes
Air conditioning *	Electric, mounted onto cab roof
* = optionally available	

Technical specifications of laser welding head

Focal length	250 mm
Lens diameter	55 mm
Clear aperture	48 mm
Weight	15 kg
Operating temperature	15° - 55°C
Cooling system	water-cooling system for lens holder and collimator connection

Special characteristics of laser welding head

- integrated protective window monitoring
- efficient cross jet
- tested up to 20 kW laser output power

Technical specifications of IPG High Power Ytterbium Fiber Laser – Pipeline Welding – YLR 20000

Laser Output Power	20 kW
Beam Quality	11 mm x mrad
Power Tuning Range	10-100 %
Wavelength	1070 nm
Fiber Diameter	200 µm
Fiber Length	50-100 m
Dimensions (WxDxH)	1480 x 806 x 1482 mm
Efficiency	30 %
Weight	1200 kg
Humidity	95%

Errors and omissions excepted.

04/2006 Specifications subject to change.



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VPL[®]
SYSTEM



worldwide patented concept for autogenous and hybrid laser welding in pipeline construction

The technology

The VPL-System® is a worldwide patented new development made by VIETZ. For the first time ever, laser welding technology can be applied in pipeline construction! The results are unprecedented, and they clearly outperform all welding methods previously applied in pipeline construction!

The extremely high welding speed of the VPL-System® (2.3 meters per minute for pipe of 20 mm wall thickness) allows to produce an entire pipe connection in a few minutes. The technological concept of the VPL-System® is promoted and supported by a number of renowned research institutes in the field of laser technology as well as by many constructors in the pipeline industry.

The core of the VPL-System® is a compact 20 kW fiber laser in connection with the laser welding head. Over a special fiber cable, the laser light can be conveyed to the welding head over a distance of up to 100 meters without loss of energy.

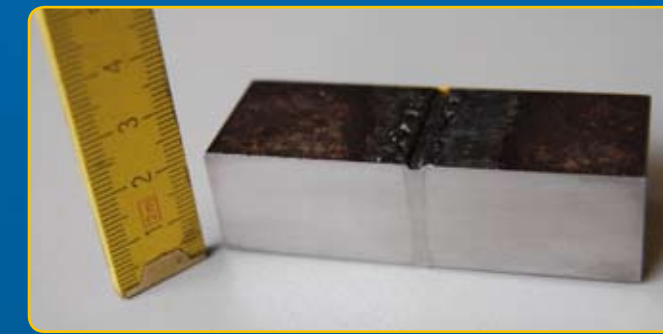
When applying this method, pipes are butt-jointed and aligned by means of an alignment device particularly developed for the VPL-System®. The welding process takes place in a hermetically shielded enclosure, which can be exactly deployed by means of the hydraulic-driven crane mounted to the vehicles of our ARCOTRAC series. The laser welding head of the VPL-System® is mounted to an aluminum ring, which is positioned automatically around the pipe to the nearest millimeter by integrated sensors. VPL-System® is then started by the push of a button on the operating panel – and the welding process begins.

The welding process is fully automated! No intervention is required during the process!

The welding speed is very high. For example, a DN 1000 (40") pipe with 16 mm wall thickness can be welded in just 2.5 minutes! As the pipes are butt-welded, no filler material is required. Weld imperfection is thereby avoided, since there is no arc consuming filler material.



20 kW fiber laser, made by IPG Laser GmbH, Burbach



Macrosection of a laser welded pipe joint

The advantages are obvious

Pipes can be jointed homogeneously over the entire cross section of the material in a single welding process. Due to the small weld seam and the low heat input, optimal metallurgical values can be achieved. A small edge misalignment does not have a negative effect on the welding process; make sure, however, that the welding process can be executed without air gap. To do so, use our newly developed internal pneumatic line-up clamp.

For pipeline construction, only one single ARCOTRAC VPL 2000 is required. Using the VPL-System®, you need not provide for several stations and up to ten machines for welding the root, filler and final passes, as is required in conventional pipeline construction.

Advantages at a glance:

- achieves welding speed of 2.3 meters per minute with pipe of 20 mm wall thickness,
- reduces pipeline construction time to one third the time of conventionally executed projects,
- reduces costs for pipeline construction to one third the costs for conventionally executed projects,
- fully automated process – no welders required,
- no weld imperfection,
- no filler material required,
- welding process is immediately followed by ultrasonic testing and weld seam documentation.

Hannover Fair



Hermes Award



Innovation prize of the german industry



Innovation for the Future