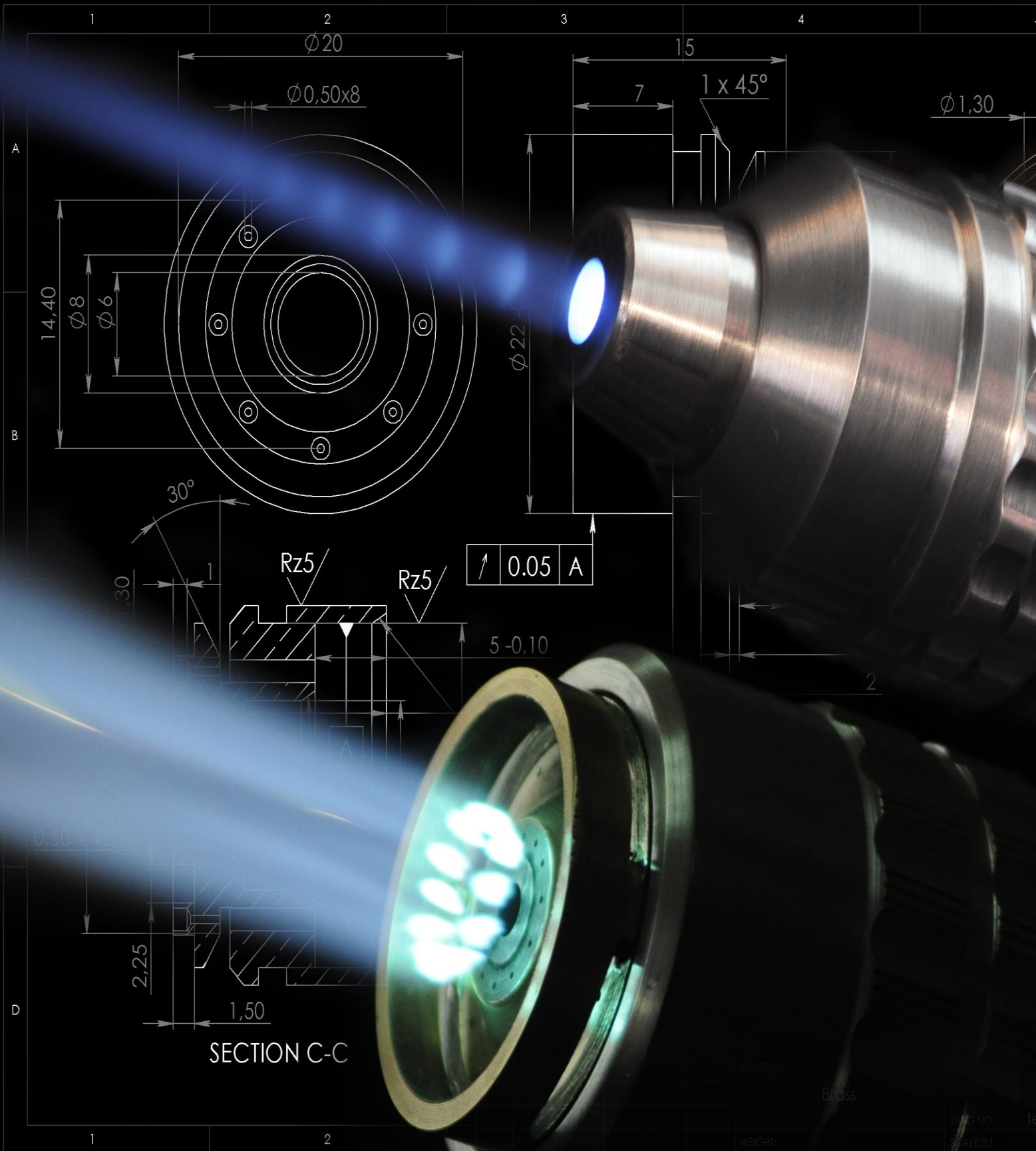


A.Termika

industrial coatings & equipment





Founders of the firm A.Termika Ltd.



Eng. Anatoli B. Shvartsman

Graduated from the Technological University, majoring in machinery and instrument. Has experience in the field of thermal coatings for over 30 years. Author 32 patents. For outstanding achievements in the development of gas-thermal coating techniques he was awarded the USSR State Prize.

Dr.Boris A.Eizner

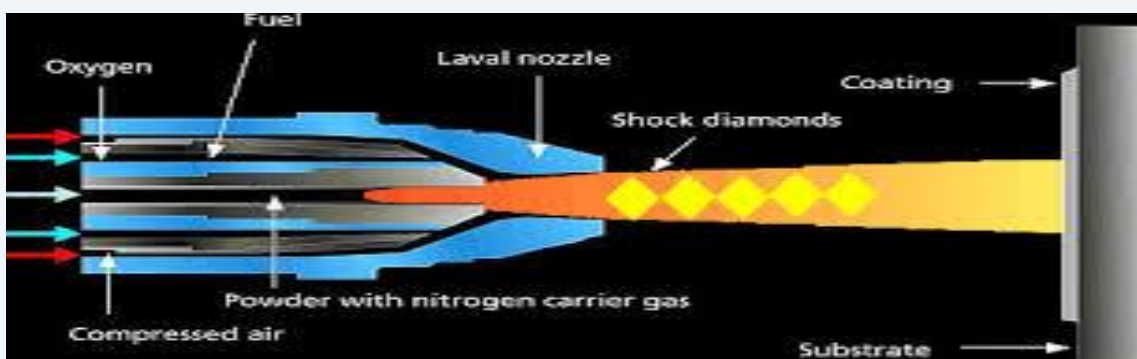


Graduated from the University and post graduate studies at the Physical-Technical Institute Academy of Sciences, majoring in physics of the discharge of liquid and vacuum. In 1991 he defended doctoral dissertation. Author of the book and 134 scientific articles and 25 inventions. In 1996, for the successful preparation of graduate students was awarded the title of professor. Author of many technological developments in the application of heat-resistant and wear-resistant coatings. Member of the Editorial Board of the International Journal of Materials Science & Surface Engineering.

A.Termika Ltd (2003) produces mobile gas-thermal equipment (HVOF and Flame Spray) for the industrial coatings' application. We have an experience of over 30 years in the field of thermal coatings and equipment usage.

HVOF set Termika-3

The "Termika-3" is a mobile system for application of coatings with different powder materials by the HVOF method.



The formation of coatings on the work-pieces surfaces is achieved by heating up particles of powder material supplied from the burner feeder in the hyper-thermal (2850 C) gas flow until they reach the ductile condition. The gas flow velocity is 6-8 times higher than the sound propagation velocity, and this allows to boost the particles up to speeds of 500-700 m/sec. This particles' velocity provides high adhesion and high density of the coatings.

As proven by our long-term experience, HVOF Termika-3 differs from its competitors by being easy to work with, compact and reliable. The device complete set is stored in one portable suitcase. The design seems simple, yet it produces the same coatings as the systems costing ten times as much. The suit-case contains all you will need, except the gases and powders.

Different powders with the grain size of +10-45 microns may be applied. The system assembly takes 15 minutes. In order to achieve the operational mode all you have to do is to turn one handle. The obtained coatings' characteristics comply with the HVOF technology.

The system may be used at major plants as well as by small companies, agricultural machinery repair workshops, at the military bases and ships.



Today in the market there are different systems for deposition of coatings by a method HVOF. This are bulky, powerful, cost intensive, stationary installations, which one can gain large plants. We tender the mobile installation, reliable and simple to service. With the help HVOF Termika-3 it is possible to deposit HVOF of coating of different kinds, with the same quality, as cost intensive systems. Our HVOF Termika-3 of the installation can be used both large corporations and farmers, with the owners of small plants and repair workshops.



Package of the HVOF Termika-3

The package of the setup “Termika-3” consists of:

1. Burners for inner deposition
2. Console of control of working gases
3. Containers for ID burners
4. Feeder powder
5. Complete set of gas hoses for the burners and feeder
6. Burner for outside deposition
7. Container for the powder
8. Tripod
9. Complete set of gas hoses for the inner burners

The package also includes ear muffs, a lighter and a set of spare parts.
The weight of a complete set is 20 kg.

Assigning a “Termika-3”



Figure 1. Manual mode



Figure 2. Work with manipulator



Figure 3. Work with lathe



Burners for internal deposition (ID burners) for coating internal surfaces, where it is impossible to do with help conventional burner.



IDand 1500 mm. Technical characteristics ID burner you can see in table below



Technical characteristics:*Outside deposition burner (OD)*

Velocity of the particles in the jet (m/sec)	600-700
Temperature of the jet (°C)	2850
Working gases/pressure (MPa)	
oxygen	0.8-1.0
propan/propylene/mapp	0.6-0.8
Working gases/consumption (l/min)	
oxygen	30-40
propan/propylene/mapp	15-20
Working spray distance (mm)	80-120
Productivity (kg/h)	
WC-Co	1.7-1.9
steel SS316	1.5-1.6
Cooling	air(air + water)
Consumption (l/min)	600-800
Pressure (MPa)	0.6
Grain of the powder material (mkm)	-45 +15
Porosity (%)	Up to 1
Adhesion (MPa)	70-90

Burners for internal deposition (ID burners)

Velocity of the particles in the jet (m/sec)	500-600
Temperature of the jet (°C)	2850
Working gases/pressure (MPa)	
oxygen	0.8-1.0
propan/propylene/mapp	0.45-0.5
Working gases/consumption (l/min)	
oxygen	30-40
propan/propylene/mapp	15-20
Working spray distance (mm)	60-80
Productivity (kg/h)	
WC-Co	1.5-1.7
steel SS316	1.2-1.4
Cooling	air
Consumption (l/min)	600-800
Pressure (MPa)	0.6
Grain of the powder material (mkm)	-30+10
Porosity (%)	2-3
Adhesion (MPa)	60-80

Examples of using set HVOF Termika-3

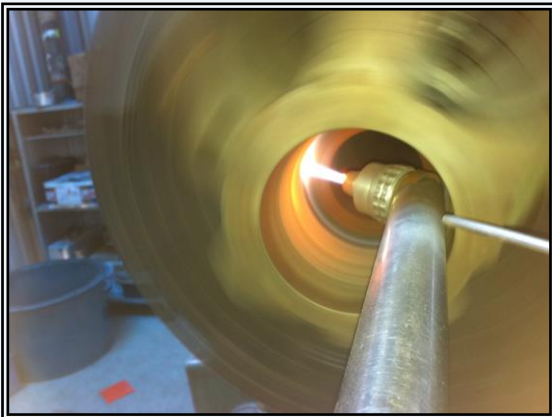
Singapore. Shaft repair.



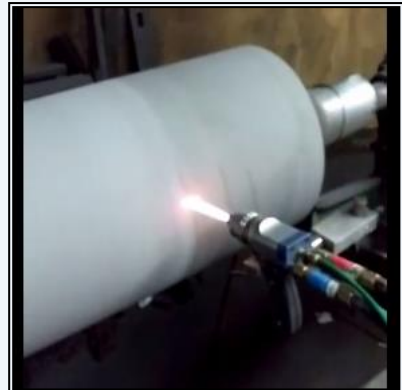
Brazil



Vietnam



Argentina



Colombia

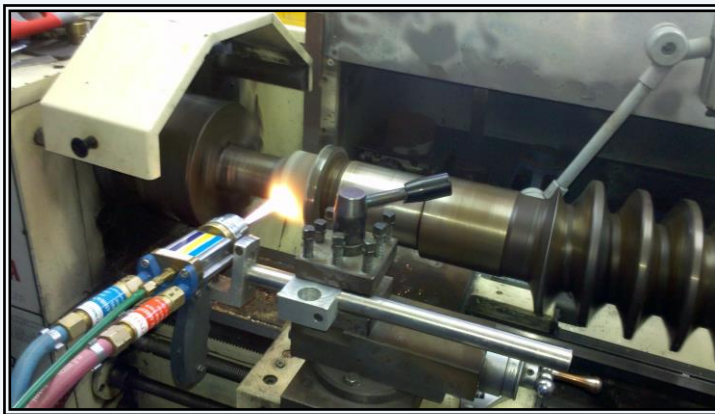


Peru





Protect welds seams of smoke extraction turbine from sulfide-oxide corrosion. Coating is NiCrBSi. Bulgaria.



Restoration of bearing seats. Israel



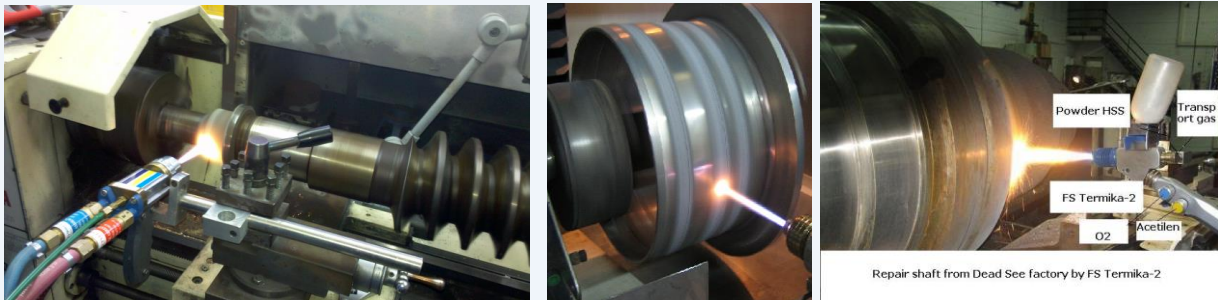
Vietnam



Application of cavitation coating. Chile



Repair service in Israel



In Israel, too small amount of such work. There is no this industry. In a large country, this work to repair equipment can bring great profits. We have all the opportunities for these works. This may be a separate shop of the company.

Protection from undercutting (start-up technology)

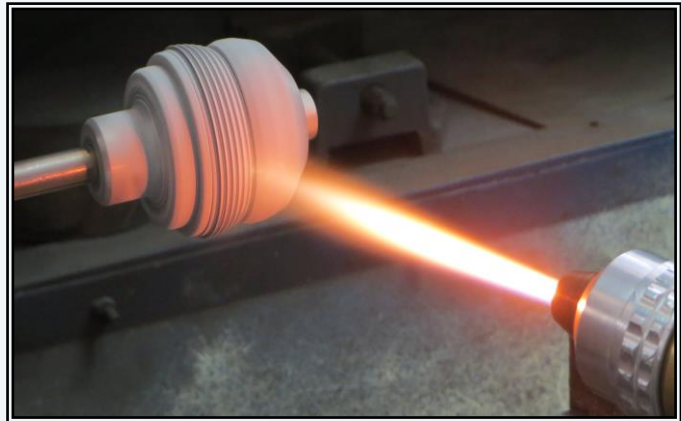


Abrasive materials tend to erode the metal core, or center, of diamond blades causing undercutting. Undercutting tends to be concentrated on part of the core that attaches to the segment. If undercutting is excessive, it can cause segment loss and damage the blade.

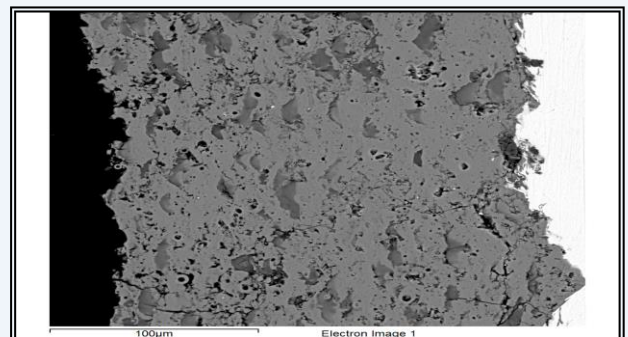
We have suggested this protection technology by applying a protective coating. The technology has been successfully tested.



Hydroxyapatite (bioactive) coatings (start-up technology)



Knee implants



Dental implants

At present we produce clinical test of dental implants with our coating. The organization of this production will give a relatively high turnover.



Diamond and BN grinding wheels of large diameter (start up).

Diamond grinding wheels and grinding wheels from nitride of a boron (CBN) it is one of kinds of the grinding tool playing a considerable role in an industry. This kind of the tool has the different shapes, but the diameters of wheels (for example type 1A1) limit by the size in 600 mms. Below we present maximum diameters of wheels of the given type, issued by several large corporations:

Company	Country	Type	Dia. (mm/inch)
WINTER	Germany	1A1	600
TYROLIT	Germany	1A1	600
National			
Diamond	USA	1A1	20
Lab.			
DIAMENTPOL	Poland	1A1	350

Wheels of greater diameter is problematic enough, and sometimes it is impossible to make, using conventional technology of pressing and sintering. The large ovens and presses high-power modulation are indispensable.

The customary abrasive wheels from silicon carbide or other materials are made in diameters 1m and more. Such wheels are widely applied on large grinding machines. Their main lack is, that they few-effective at grinding modern super-hard materials such, for example, as coating from WC+Co. Besides, even at grinding bulky articles from customary steels often

dressing of a wheel is required, that reduces productivity and machining accuracy.

Our firm A.Termika Ltd has elaborated a new technology of manufacturing of diamond or CBN of grinding wheels. The abrasive working layer is put by a method gas-thermal of deposition of mixes diamond powder - bond or powder from CBN - bond. The time of deposition of an abrasive layer takes, depending on the size of a wheel and thickness of a layer, from several minutes (wheels of small diameters) till several o'clock (wheels of diameters more than 800 mms) .On a fig. 1 are submitted diamond abrasive wheels of the different shapes and sizes manufactured on technology of A.Termika Ltd.



fig.1Diamond wheels by DCT Ltd.

The pattern of a diamond layer marked by gas-thermal method is shown on a fig. 2. The pattern has a definite porosity .Size of a porosity can be regulated by means of variation of parameters of deposition.

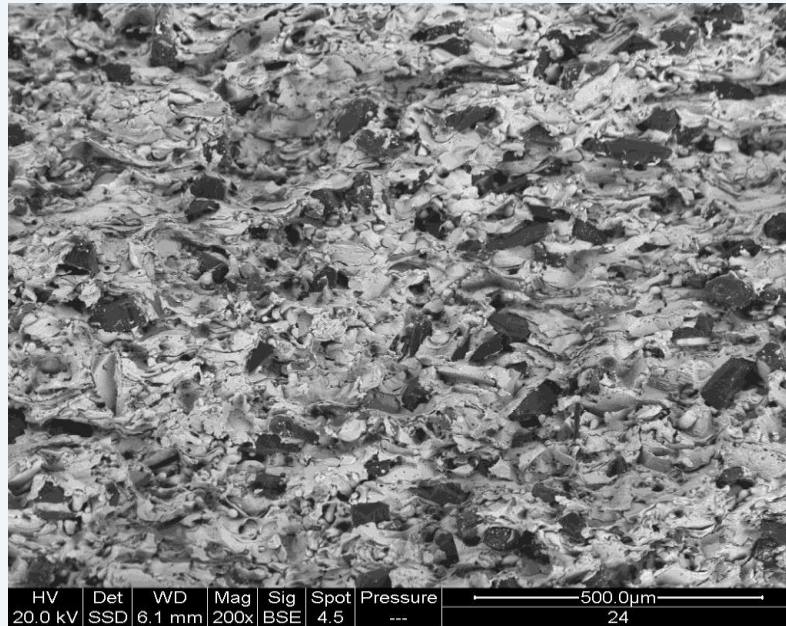


fig.2 Pattern of diamond layer

For the given technology diameter of a wheel has no value. We can deposit diamond grinding wheels and wheels from CBN of any diameter. On a fig. 3 the process of deposition of a diamond layer on a wheel type 1A1 (a diameter of 1000 mms and thickness of 40 mms) is shown.

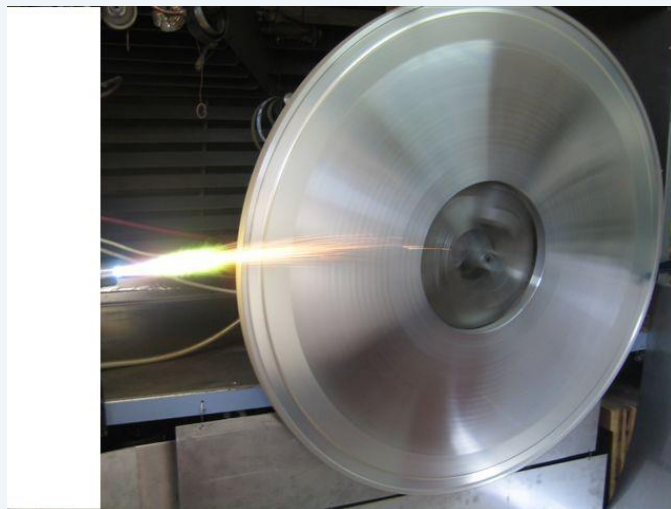


fig.3 The process of deposition of a diamond layer(wheel dia 1 m).

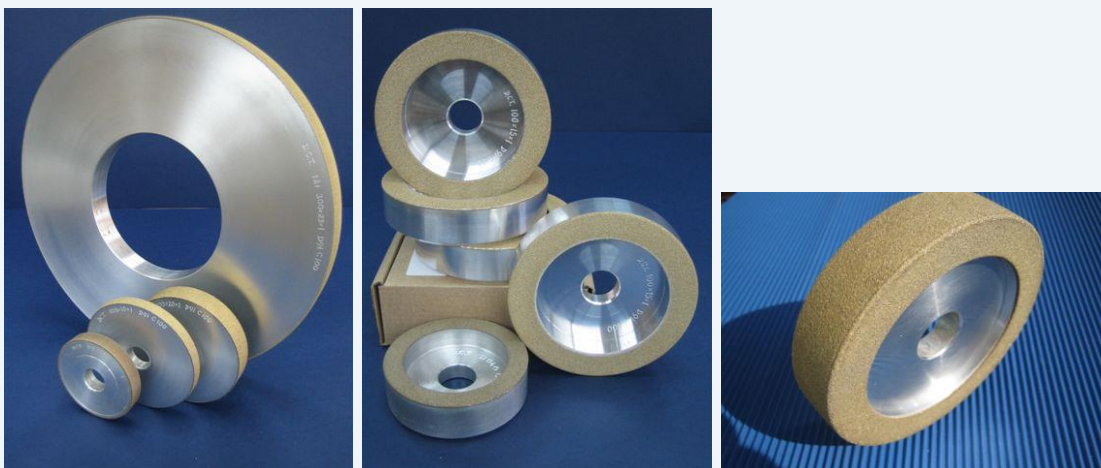
Essential advantage of the given technology is the capability to deposit diamond or CBN an abrasive layer directly on a grinding machine. The wheel does not need to be removed. After wearing of an abrasive diamond layer, it is possible to deposit a new layer directly on a grinder. Besides, you directly on a grinding machine, can deposit diamond or CBN a layer with the grit size and concentration, necessary to you.

For realization of any separate operation it is possible to deposit a diamond or CBN layer of small thickness - 0.3-0.4 of mm (it take 20-30 min). After fulfillment of an operation the layer can be removed by diamond dresser.

Moreover, it is possible to deposit diamond or CBN a layer on a working surface of a customary abrasive wheel from silicon carbide or from other material. Also, after realization of grinding operation the given layer can be removed.

Thus there is no necessity to store in warehouse abrasive diamond or CBN wheels of large dia. It is enough to have instrumentation for gas-thermal deposition and set of mixes a diamond - bond and CBN - bond.

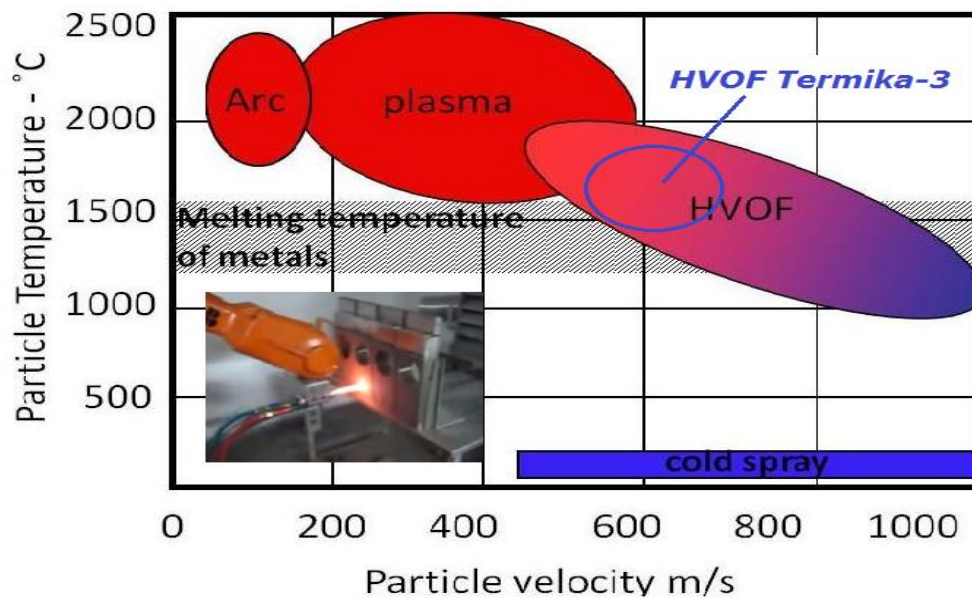
Thus technology by A.Termika Ltd essentially reams capabilities diamond and CBN grinding.



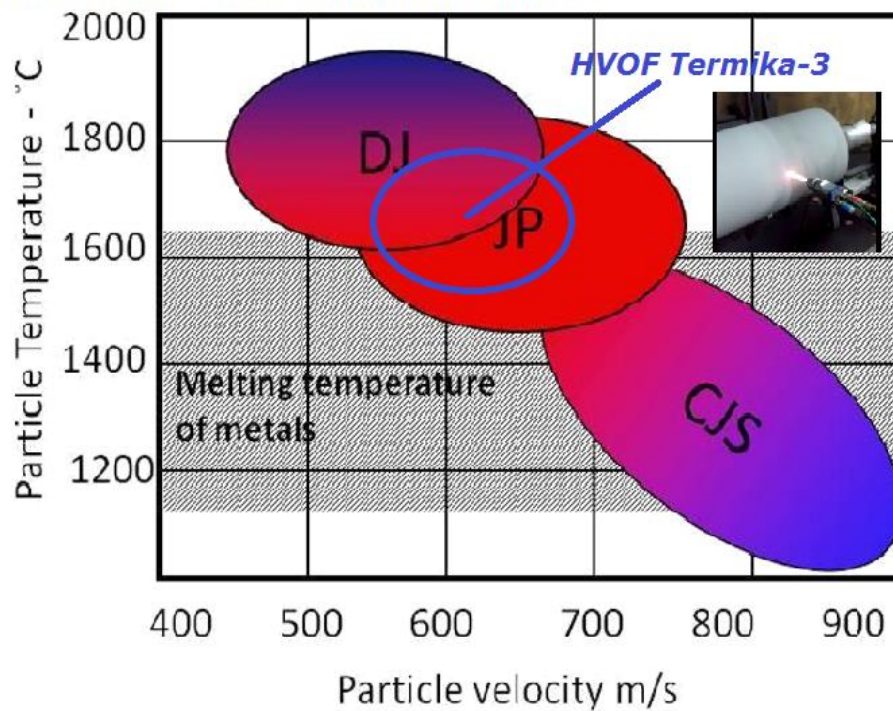
The technology is especially effective for large-diameter wheels.



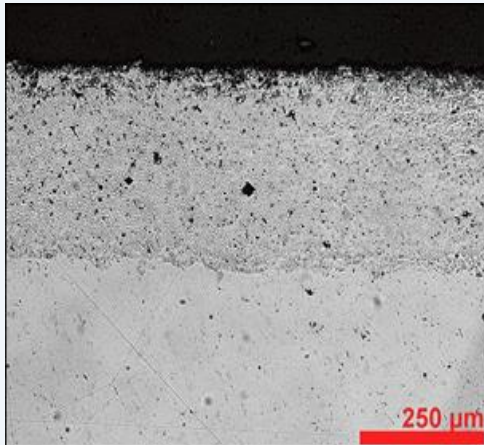
Particle temperature and velocity in different thermal spray techniques.



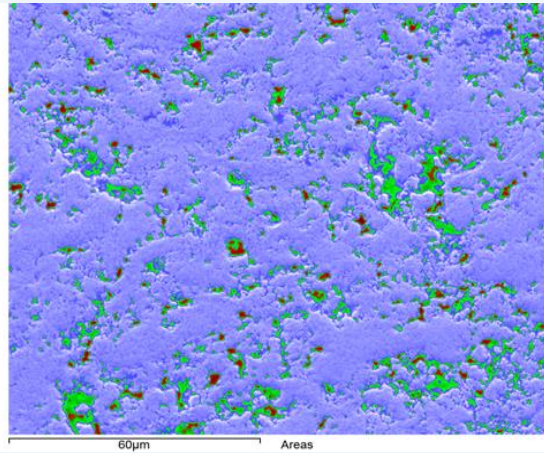
Particle temperature and velocity of carbide based coatings applied by different commercially available HVOF systems.



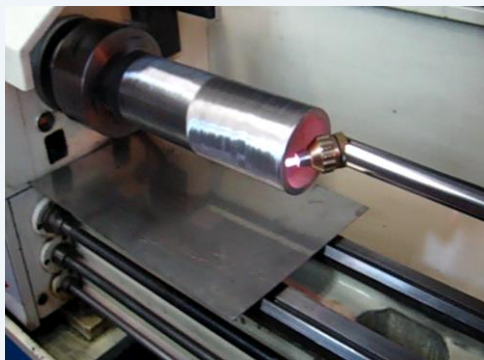
Structure of HVOF coatings



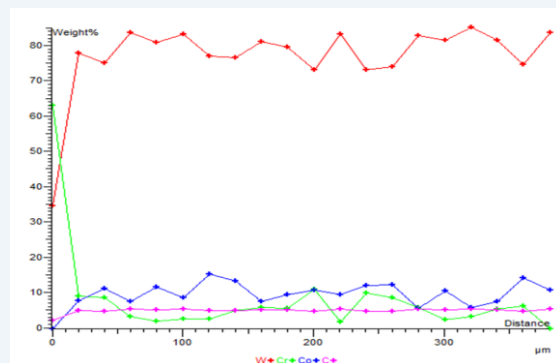
WC+Co (OD burner)
Porosity less 1%



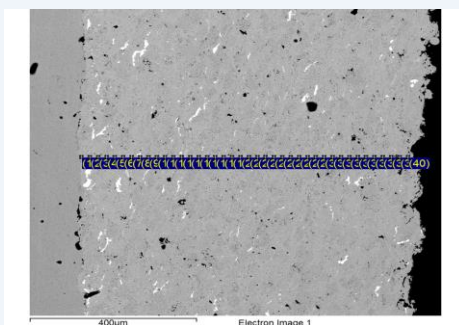
WC+Co (ID burner)
Porosity up to 3%



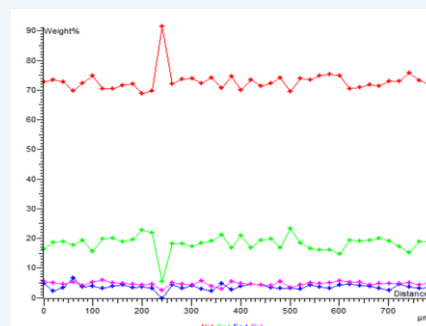
ID burner in action



The distribution of elements in
the cross section WC+Co coating (ID)



NiCrBSi (ID burner)
Porosity about zero



The distribution of elements in the
cross section NiCrBSi coating (ID)

Microhardness (OD burner)

Microhardness HV-300 was measured in the metallographic cross-sections

Diamalloy 2006
876, 804, 845

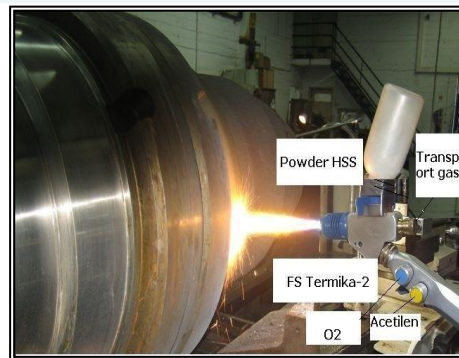
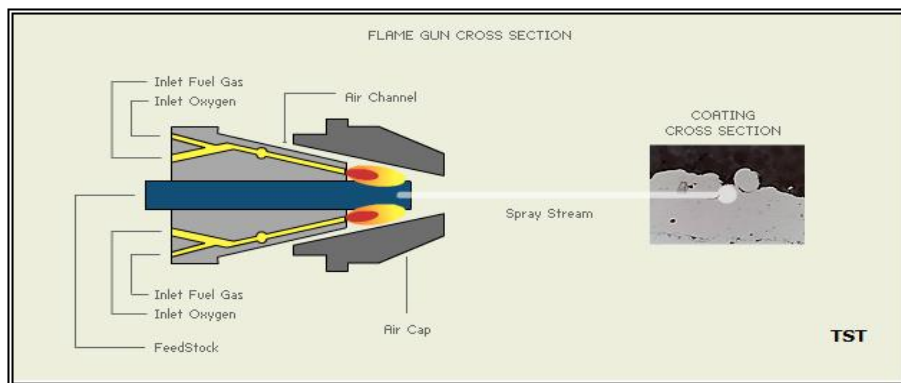
Diamalloy 2005
898, 1181, 849

1342 (TAFA)
1007, 860, 1070



Flame Spray set Termika-2.

Mobile setup "Termika2" is intended for application of metal coatings by flame spraying in stationary and field conditions (using flame-spray method). Flame Spray Technology and today has a wide application. Therefore, in the workshop it is desirable to have a such relatively old but still indispensable technology. This confirms our 30 years of experience in the use of thermal-spray technology and equipment.



Set Flame Spray Termika-2

Technical characteristics:

Productivity (kg/h)	1.5-1.7
Gas pressure MPa(kg/sm ²)	
oxygen	0.4-0.5(4-5)
acetylene	0.07-0.1(0.7-1.0)
Gas consumption L/h	
oxygen	600-650
acetylene	
Grain of the powder material (MKM)	40-100



Examples of using FS Termika-2



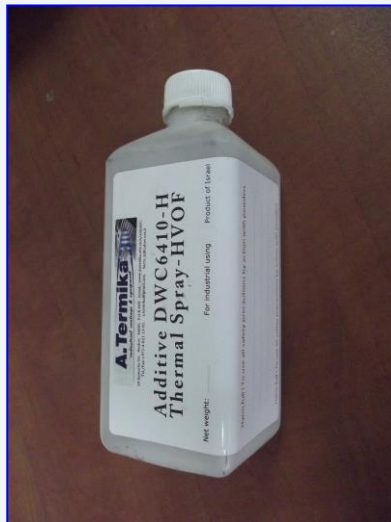
Israel



Vietnam



Russia



Diamond-base Additive for WC+Co powders (start up).

A.Termika Ltd. (Israel) offers extra wear-resistant HVOF coatings of the WC + Co + (Cr) type. The high wear-resistance is achieved by the additive of DWC6410-H (based on synthetic diamond powder). This additive agent allows to increase the wear-resistance of such coatings as WC + Co + (Cr), up to 8 – 10 times. The additive agent is manufactured in the powder form and is mixed with the basic WC + Co + (Cr) powder. Just 1 kg of additive is enough for the preparation of 10 kg of mixture. And the wear-resistance of such mixture will be equivalent to 80-100 kg of the usual powder, such as WC + Co + (Cr).

www.atermika.vix.com/additive



Our equipment HVOF Termika-3 and FS Termika-2 in the world
For order: a.termika@gmail.com



Our office



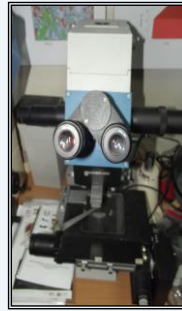
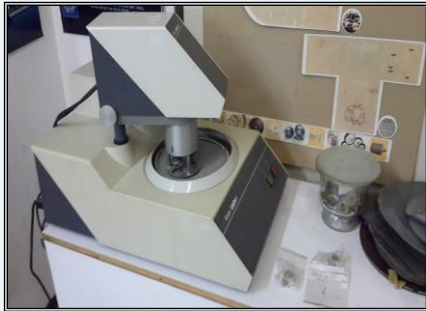
Our production



Assembly and testing worksho



Our CNC



We use the entire chain from research micro-sections coatings and optical microscopy up to electron microscopy and the test machines for physical characteristics. In addition to own base we use the most modern research base in Technion (Technical University of Haifa)

Training courses for our customers (free)



Canada



Thailand



Singapore

Feedback

"...You should know that having the only ID HVOF gun in the world that will spray down to 75mm is a genius product! "
From Skype latter Curt Cadau (USA)".Surface eng.and Alloy Co.

"Dear Dr. Boris A. Eizner,
Today I had a very positive discussion with Tocalo and they confirmed your good coating properties
(Tocalo mentioned that almost the same properties as that of Diamond Jet).
So would you please inform us of the system description and price with delivery time for 1 system of TERMIKA 3 HVOF system. ".....
It from the letter of Mr.Takeshi Kawamura
in Japan ([www.http://acmcorp.co.jp/Termika/](http://acmcorp.co.jp/Termika/)).

[株式会社エーシーエム]小型・ポータブル溶射装置(A.Termika社) Termika-3 HVOF
acmcorp.co.jp

株式会社エーシーエム、A.Trmika社製の小型・ポータブル溶射装置のページです。
Termika-3 HVOFとID Gunのご紹介です。ACMはA.Termika(ターミカ)社の正規輸入代理店です。

A.Termika Ltd

"Dear Dr.Boris,

I think you are a genius . I am truly amazed to see this kit.

.....I wish you good luck because you would solve the problems of many small thermal spray shops in India who can not afford the expensive price ..."

It from the letter of Mr.Sam Nistala, which one has business on coatings in India.

"Sent: Thursday, January 28, 2010 4:22 PM

A.Termika Ltd

" HVOF setTermika-3 is a great equipment, the best engineering solution for equipment created by high-speed spraying (HVOF) - a simple and mobile, the possibility of spraying inside and out, low gas flow rate and high quality of the resulting coatings. Similar analogues in the world does not exist yet."

Ing.Andrew Khavanov-specialist in the field of gas-thermal coatings,Gas production company, Urengoy, Russia.

A.Termika Ltd On 08/21/13 10:50 AM, Yucel BAYRAKTAROGLU wrote:

"Hello Mr.Eizner,

Termika hvof-

3 seems to be simple,quick,efective system.

Can you inform me of the price of the system please.

Best Regards

Yucel Bayraktaroglu"

LinkedIn Android'den Gönderildi

....At the moment we are spraying with JP5000 and Diamond jet but when we have a need for spraying smaller parts which we cannot reach with earlier mentioned guns the Termika-3 might be an option.....

Joris Kraak

Vice General Manager,Changzhou Coating Technology

Why sell?

Maintain such a business in Israel with his specificity is very problematically. In a quiet region, we would have already achieved sales of more than \$ 1,000,000-3,000,000 per year. Many potential customers are just afraid to come to our company for training and refused from purchase of our equipment (due to periodic military operations). Unfortunately this is the reality for such a beautiful country like Israel. Next reason. We dn't have diplomatic with many muslim countries. But this is urgent market.

This is the main reason why we want to sell the company and move it to another country. Possible option when production shop remain in Israel but training base and office moves to the country of buyer.

Using original technical solution we created a compact system HVOF which allows it to apply coatings in regular and field conditions.



Internal burners allow to apply coatings to the inner surfaces of pipes with diameter of 75 mm and wider, and maximum length of such a coating up to 3 meters



Unique design control console allowed to create a mobile system stably working in any conditions of



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Tel./Fax: +972-4-8211301