SolidCAM – The Solid Platform for Manufacturing

March 2023

Dr Emil Somekh Founder & CEO













CAD Integration: **SolidWorks, Inventor**



- + SolidCAM CAM
- + SolidCAM for Operators
- + CIMCO Edit Professional
- + SolidMold (R&B SplitWorks, MoldWorks, ElectrodeWorks)
- + SolidCloud SolidCAM Cloud backup
- + **SolidMetal** marketplace for CNC and 3D Printing jobs
- + SolidCAM Additive Desktop Metal 3D Printing + CNC machining



















The <u>Complete</u>, <u>Easy to-Learn and to-Use</u> CAM Solution, with <u>Revolutionary iMachining</u>, <u>Multi-Channel Mill-Turn and Swiss CNC</u> Machining Support, seamlessly <u>Integrated</u> & <u>associative</u> in

SOLIDWORKS & INVENTOR



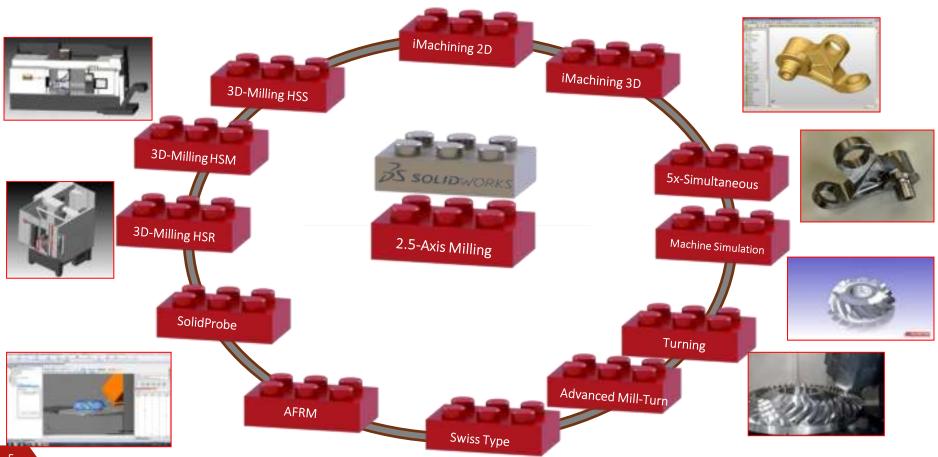






Complete Integrated CAM Solution Inside SOLIDWORKS



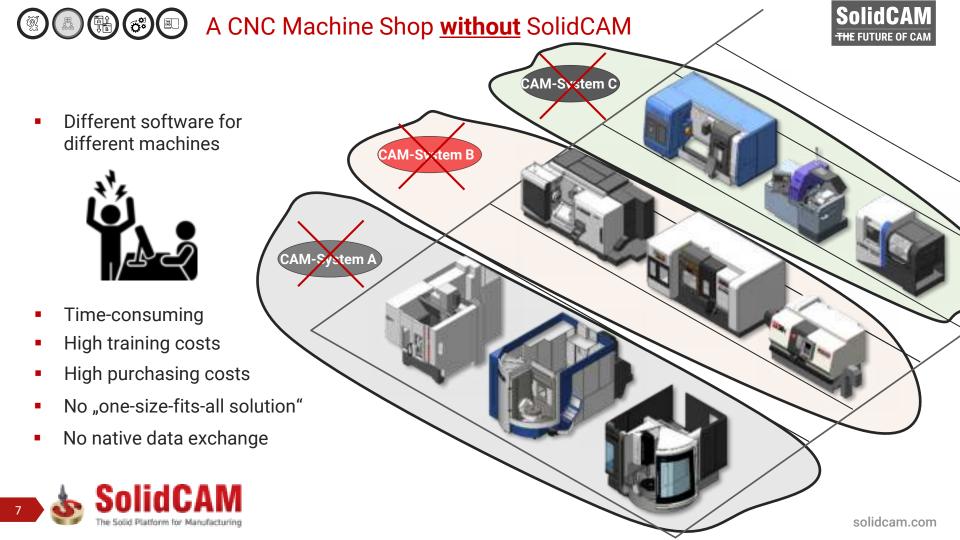




SolidCAM - The one CAM solution for all your CNC machines









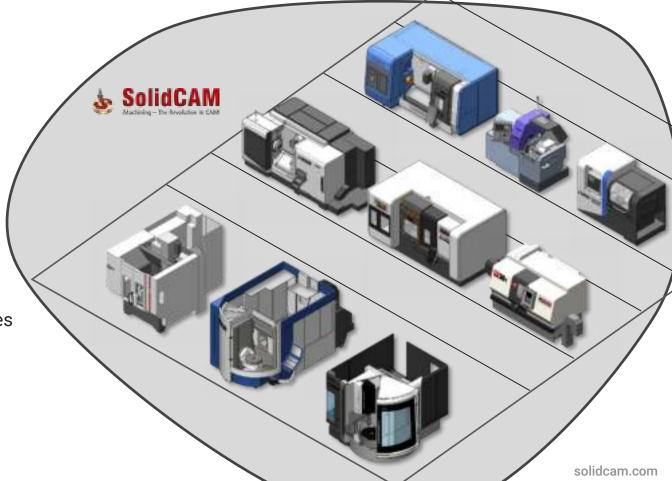


SolidCAM
-THE FUTURE OF CAM

The solution for all CNC machines



- Native data exchange
- Easy training
- Employees train employees
- One support for all
- Future-proof

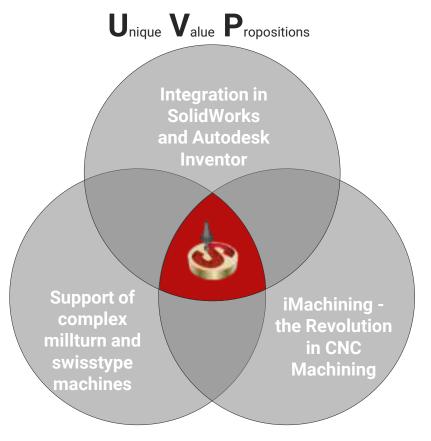






SolidCAM UVPs





SolidCAM International Customers





SolidCAM Customers include small & medium Job Shops, medium-size Engineering & Manufacturing companies, and large Aerospace and Automotive companies.

Technology Cooperation Partners - Cutting tool & CNC machine tool manufacturers THE FUTURE OF CAM





























SolidCAM Company Profile



Founded 1984 - 38 years expertise in CAM development and applications – 284 staff

SolidCAM Ltd 2 offices – 60 staff

Europe: SolidCAM GmbH, Germany – 7 offices – 76 staff

SolidCAM Spain – 15 staff

Intl Support Serbia – 10 staff

Affiliated companies:

SolidCAM UK, SolidCAM France,

SolidCAM CZ, SolidCAM Italy

America: SolidCAM Inc. - U.S. – 37 staff

– Asia-Pacific:

SolidCAM India – 62 staff

SolidCAM Japan – 2 staff

SolidCAM China – 22 staff

Affiliated companies:

SolidCAM ANZ (Australia/New-Zealand), SolidCAM Singapore,

SolidCAM Korea, SolidCAM Taiwan

Worldwide CAM distributor network of 65 Resellers (in addition to Branches & Affiliates)



SolidCAM Worldwide





SolidCAM Industrial Seats - 26,500

* 20,000 manufacturing customers



SolidCAM Technical Education Seats - 70,000

* 2,700 Vocational Schools/Colleges/Universities



Worldwide CAM Distributor Network with 8 Branches, 9 Affiliates and 65 Resellers

SolidCAM Additive

March 2023

Dr Emil Somekh Founder & CEO

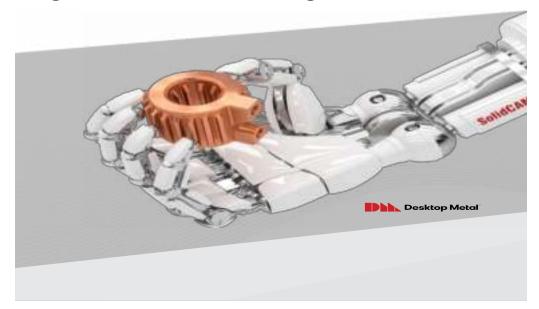








Combining 3D Metal Printing with CNC Machining!











- □ SolidCAM today has **20,000 CNC manufacturing customers worldwide**, who are very highly satisfied with our **excellent SolidCAM product** and our **excellent Technical and Postprocessor support**.
- We are always looking for **additional products** to provide to these loyal and happy SolidCAM customers, to further serve their manufacturing needs.
- When Desktop Metal released their Metal 3D Printing systems, we realized that this will be the next major manufacturing technology and that our current SolidCAM customers will eventually need these 3D printing Metal systems, sooner rather than later.







- Most companies, whether they are SolidCAM customers or not, do not know how metal 3D Printing can work for them.
- □ As we've learned, there are many limitations to each of the different 3D Printing Technologies.
- ☐ In addition, most 3D Metal Parts will require CNC post processing, whether it's for "drilling holes, locating surfaces finish or ensuring critical tolerances".
- Every company has some interest in metal 3D printing it is a new manufacturing technology, that complements CNC machining.







- ☐ SolidCAM will educate and guide its CNC customers in 3D Metal Printing. ☐ We know the limitations and where this 3D Printing technology excels — so same as we provide practical technical support to SolidCAM customers for CNC machining, we offer the same for 3D Metal Printing. ☐ We can investigate a part and decide whether "this can be done with 3D Metal Printing or not" and "how much cost saving can be achieved with 3D Metal **Printing**" and "what CNC post processing is required". ☐ We consult regarding modifying the original SolidWorks 3D model, so we get a
- We consult regarding modifying the original SolidWorks 3D model, so we get a state of the model "for 3D Printing" (i.e. holes are removed, additional material added to be machined faces, etc.).







By taking "Real parts from our SolidCAM customers", we investigate how to integrate 3D printing in the process to manufacture such parts. There are different approaches:

- ☐ Studying parts just for Investigation
- ☐ 3DPrinting parts for Service to our customers
- □ 3DPrinting parts with option to sell 3D Metal Printer to our customers

















MANUFACTURING UNLIMITED

The complete Solution for cost effective 3D Metal Printing and efficient CNC Machining – all from one source!









- ☐ SolidCAM Additive adds 3D Metal Printing into your manufacturing process.
- ☐ Our extensive machining knowledge will help guide the entire process from Design to 3Dprinting, and to CNC Machining.
- 3Dprint near-net geometry, with post-processing by CNC machining
- 3Dprint complex model geometry, at no additional cost, vs simpler geometry

■ 3Dprint impossible to machine geometry (Internal passages, undercuts, etc.)



Design.



Sinter.

CNC-Machine.





Ric Fulop - Founder & CEO



- Launched Additive Manufacturing 2.0
- World leader in fast Metal 3D Printing, with the leading Binder Jetting technology
- First meeting at Formnext 2021, Nov 2021









Desktop Metal® Exists to Deliver on the Vision of 3D Printing: Mass Production

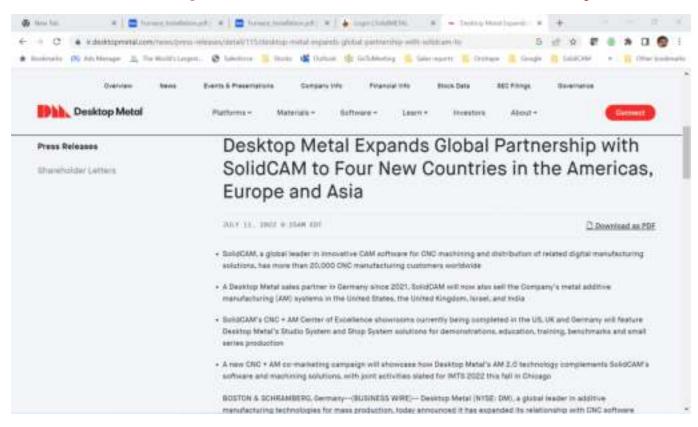








Global Partnership with SolidCAM launched on July 11, 2022



Six SolidCAM Additive + CNC technology centers SolidCAM THE FUTURE OF CAM



- SolidCAM has established combined CNC and AM Technology Centers in the US, Germany, India and Israel.
- ☐ These centers feature Desktop Metal's **Studio 2**, **Shop** and **Envision One** systems, in addition to CNC machines, to demonstrate how Desktop Metal's AM 2.0 solutions complement traditional subtractive CNC machining technologies and workflows.



SolidCAM CNC + Additive Schramberg, Germany technology center





SolidCAM CNC + Additive Schramberg technology center











Design.

3D Print.

CNC Machine.







CUSTOM CUTTING TOOL

From Design to Finished Part

powered by



Desktop Metal





Additive Manufacturing addresses critical industry needs

- □ 3D printers enable machine shops to expand business operations into new avenues of growth and recurring income streams.
- Additive Manufacturing, with tooling-free production, eliminates the significant disadvantages and barriers to innovation inherent in conventional manufacturing, allowing for faster iterations and a better final product.











- Rapid prototyping
- Part consolidation
- Complex geometries.
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering











- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering









- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering











- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering













- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering









- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering









- Rapid prototyping
- Part consolidation
- Complex geometries
- Design customization
- Rapid tooling
- On-demand manufacturing
- Supply chain re-engineering











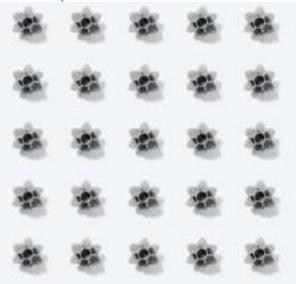








Quickly 3D print functional prototypes and reduce product development timelines.



Mass Production

Produce hundreds of thousands of parts with no tooling required.





Manufacturing Tooling

Simplify the manufacturing process and reduce lead times for end use parts.











Studio 2 system

- Office-friendly metal 3D printing in just 2 steps Print. Sinter.
- Printer: Unlike laser-based systems that selectively melt metal powder, the Studio 2 System, using Bound Metal Deposition™ (BMD) process, extrudes bound metal rods—similar to how an FDM printer works.
- Furnace: Designed to be the easiest to use sintering furnace, the Studio System 2 furnace first heats parts to remove all binders from parts, then ramps up the temperature to nearmelting to deliver industrial-strength sintering in an officefriendly package.
- The Studio System 2 makes it simpler than ever to produce custom metal parts.





Deciktop Wetar Stadio S

Designed for the office

The Studio System 2 was designed fpr office use. With no solvents, no loose metal powders or lasers and little operator intervention required, the system makes it easy to start printing metal parts.

Easy, two-step processing

Making complex, high-performance metal parts has never been easier. Featuring a breakthrough two-step process, Separable Supports, and a software-controlled workflow, Studio 2 makes it simpler than ever to produce custom metal parts.

High-quality parts

Easily produce difficult-to-machine parts featuring complex geometry like undercuts and internal channels. Studio 2 produces high-quality parts with densities and feature accuracy similar to casting.





SolidCAM









Key use cases



Functional prototyping



Manufacturing tools



Low volume production



Jigs & Fixtures



































- The world's first metal binder jetting system, designed to bring metal 3D printing to machine shops. It provides Batch production of fully dense metal parts
- The Shop System[™] printer features the most advanced printhead on the market with over 70,000 nozzles, to achieve high resolution 3D printed parts, at a fraction of the cost of laser-based Additive systems.
- Designed with the modern machine shop in mind, the Shop System™ is built to fit seamlessly into the machine shop workflow.
- Produces parts with superior surface finish and resolution, versus laser-based 3D printing systems, at a fraction of the cost.
- Machine Shops can now cost effectively 3D print end use metal parts with unparalleled speed and productivity.





SolidCAM THE FUTURE OF CAM

High Resolution Printhead

The Shop System[™] features the highest resolution single pass printhead in the market.

Unparalleled productivity

With a high-speed, single pass print engine, Shop System produces high-quality metal parts 10x faster than laser powder bed fusion - you can print tens to hundreds of nearnet shape parts each day.

No tooling required.

The Shop System is a tooling-free manufacturing process.

End-to-end solution

The Shop System[™] contains all pieces of equipment the machine shop needs, with upgradable variable build volume configurations (4L, 8L, 12L, and 16L), scaling to the shop's throughput.









3D printing on the manufacturing floor: volume production with no tooling!













Metal

Industry standard metals trusted	Deskto	
by manufacturers	Studio System	Shop System
17-4 PH Stainless Steel	Qualified	Qualified
304L Stainless Steel		R&D
316L Stainless Steel	Qualified	Qualified
4140 Low-Alloy Steel	Qualified	
Cobalt Chrome		Qualified*
Copper	Qualified	
D2 Tool Steel	Qualified	
H13 Tool Steel	Qualified	
Nickel Alloy Inconel 625	Qualified	Qualified
Titanium (Ti64)	Qualified	

Desktop Metal ETEC Systems

SolidCAM
THE FUTURE OF CAM

- ETEC offers a variety of 3D printing systems, with the patented CDLM (continuous digital light manufacturing) technology, and with the ability to mass produce polymer parts with the speed and quality needed for demanding end-use applications.
- ETEC printers deliver parts with exceptional speed, accuracy, print resolution, smooth surface finish, and part properties with fine feature detail at a scale and cost that is competitive with traditional manufacturing techniques like injection molding.
- The Envision One produce strong, stable parts isotropic parts suitable for end-use applications and capable of standing up to the most demanding conditions.
- Print technology Continuous Digital Light Manufacturing (CDLM)

Build envelope (L \times W \times H) 180 \times 101 \times 330 mm (7.09 \times 3.98 \times 13 in)

XY resolution: 60 μm (with patented pixel tuning)

Z resolution: 50–150 μm (material dependent)













Desktop Metal ETEC Systems





Hard Plastics



High Temperature Plastics



Elastomers



Castable Resins



Desktop Metal ETEC Systems









Burn orth polymer poet some

26 (00_{pm}



	Desiring production of land high territories parts
	near +
100 100 100 100 100 100 100 100 100 100	Special homograph
N.B DOPT	MS+65+70 mm
***	Series
	25um orth parameters are turning

3.75m

D4K

P46. 201 position of coult, also high reputation and comparis.
MAN -
Description DAT
Name and Address of the State o
Dated
2) Klynish umret (ne'lung
SS(e)

PAK

Envision One	Xtreme 8K
April production at already. National products and conclusion	Might softening production of large prici-
est -	SECRET 1
erinan Oglik i yli Newferlang (Cl.)8	No Demokrating Processing Pro-
Dis Star 75 men anti-se	40-77-30-
(6)	Swint

100, or with parents and having

00/75/00







- We have spoken with a few SolidCAM customers about doing "joint R&D work". At IMTS we spoke with engineers at **DEKA Research**, and they were very interested to work with us.
- □ DEKA Research develops equipment for Improving Lives Using State-of-the-Art Technology, and they are one of our largest US customers.
- Working with a company like DEKA, we educate some of their engineers on DM Metal Printing.
- ☐ The success rate of finding "practical parts for 3D Print" would be very high.
- ☐ They are open to finding unique designs to expand their capabilities, and 3D Printing offers a completely new world with designs, in comparison to CNC Machining.







- VMR services range from 3D printing with metal & Additive Manufacturing in plastic, to design, mold making & plastic injection molding, to CNC machining with milling and turning.
- VMR has 9 seats of SolidCAM and does metal 3D printing since 2014, with SLM and Renishaw Laser Metal Printers.
- □ VMR plan to expand their metal AM services. They are now checking the **Desktop Metal Shop system**, the binder jetting solution that delivers high-resolution 3D printed metal parts, at a fraction of the time and cost of Laser Metal Printers.





SolidCAM support for Hybrid CNCs



Hybrid CNCs combine CNC technology and additive production processes

ModuleWorks - Additive Manufacturing

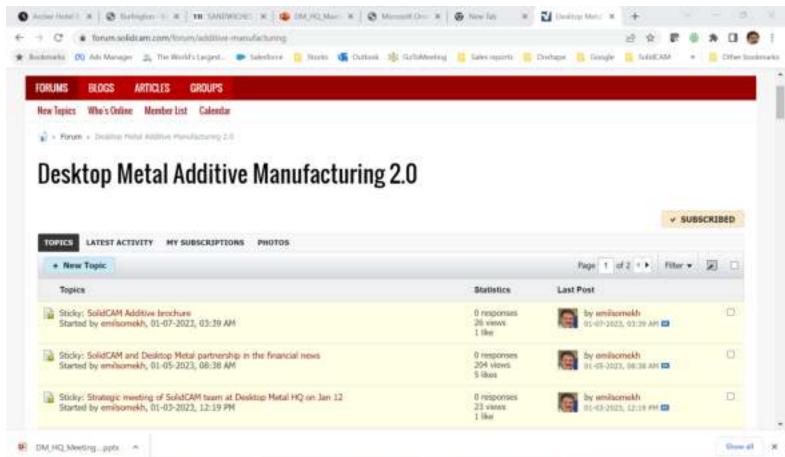






SolidCAM Forum – Additive Channel





SolidCAM at Rapid+TCT 2022, May at Detroit





SolidCAM at Metav 2022, June at Dusseldorf





SolidCAM Additive at Exhibitions – <u>IMTS 2022</u>, Sep at Chicago









SolidCAM Additive at Exhibitions – <u>AMB 2022</u>, Sep at Stuttgart









SolidCAM Additive at Exhibitions – Formnext 2022, Nov at Frankfurt SolidCAM





Additive at SolidCAM Worldwide Reseller Conference, Oct at Tel Aviv





SolidCAM Israel Additive technology center - Metal





SolidCAM Israel Additive technology center - Polymers





SolidCAM CNC + Additive Newtown, PA technology center









SolidCAM Reseller SolidWorld Slovenia Additive technology center

















Get your parts programmed and machined by our Manufacturers, using SolidCAM – the leading CAM software.

Manufacturers are all Job Shops that have the <u>SolidCAM</u> CAM software under valid subscription, and the iMachining amazing technology module.

Explore Manufacturers

Download SolidMetal:























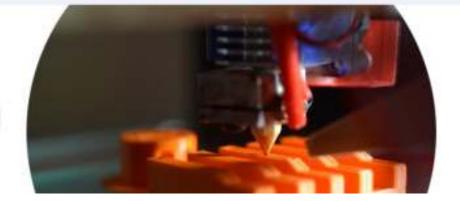
Are you a manufacturer?

Get Started

Learn More

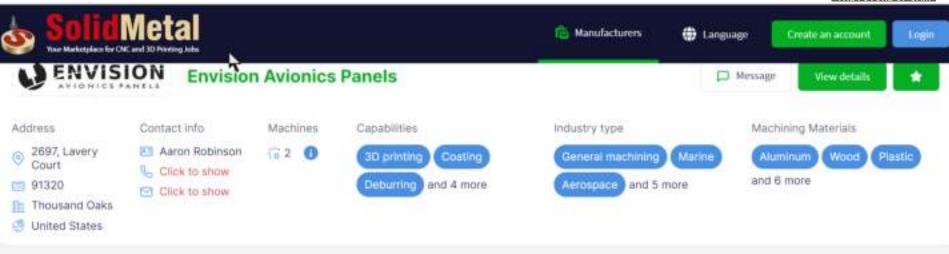
Our partners in 3D Printing

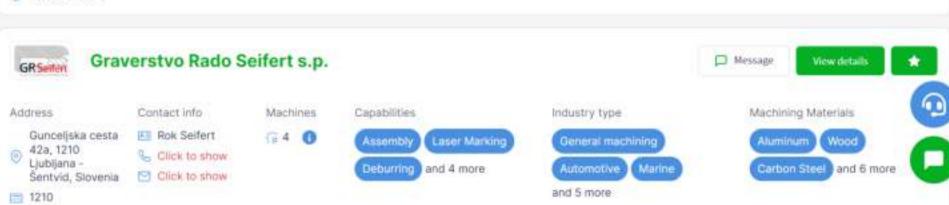






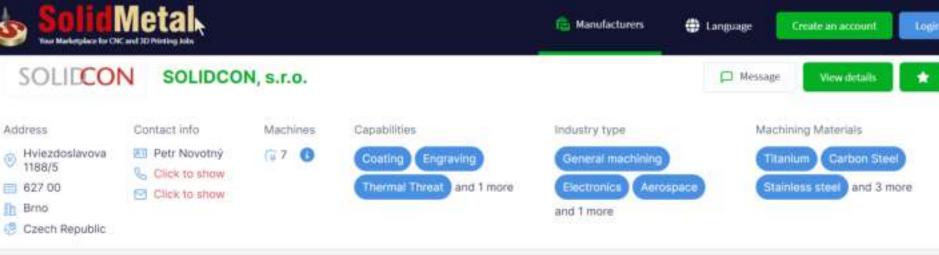


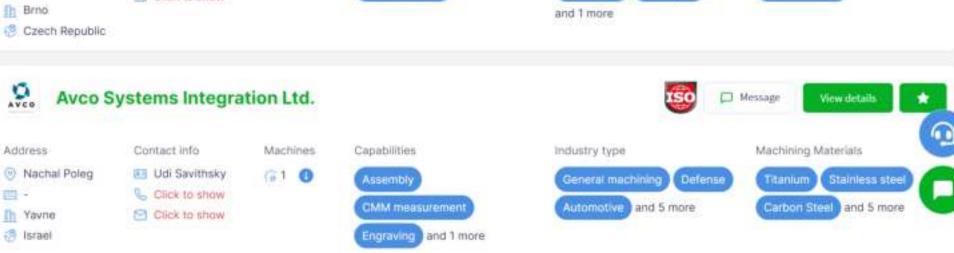




In Ljubliana







05























Avco Systems Integration Ltd.

Nachal Poleg, Yavne, Israel

















Avco is a premier engineering & precise machining company, focused on the aerospace & Defense sector. The company has an advanced electro mechanical assembly line, which enables Avco delivering complicated assemblies for the aerospace and defense sector.

Located in Yavne Israel, Avco modern facilities and production floor contains 50 top tier CNC machines with highly 120 experienced engineers and employees.

Avco's client base includes, among other, Israel Aerospace Industries, Elbit Systems, RAFAEL, UTAS, Crouzet, Flextronics and others.

Avco's aerospace machined parts and assemblies combined in the following programs:

- Boeing 787
- Boeing 777
- Gulfstream business jets: G-280, G-200, G-150
- Boeing F-15
- F-16
- F-18





28 Nov. 2022

Certifications

Iso 9001, A59100D

Invite manufacturer to a project

Upload your parts and send to the manufacturer in 4 easy steps.

invite





rael

solidcam.com









Workshop Pictures







Our Work







"The best way to predict the future is to create it."

- Peter Drucker

SolidCAM THE FUTURE OF CAM

