

TIP TALK



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Why Would You? Why Wouldn't You?



Stef Wertheimer, 83, one of Israel's most successful industrialists, established an industrial empire consisting of ISCAR, the precision metal-cutting tools company founded in 1952, and then turned his attention to building five industrial parks, intentionally situated in peripheral areas of Israel. These complexes of export-oriented factories generate annual sales of US\$2.7 billion and provide employment to their surrounding areas. According to Wertheimer, "There are no unemployed, only people who are unlucky not to find a job."

Wertheimer's initiative to create 100 industrial parks throughout the Middle East that will employ Israelis and Palestinians might sound a bit far-fetched, but it has already gained the support of important policymakers. The prominent one is George Mitchell, former US envoy to the Middle East. Wertheimer's peace enterprise is acknowledged in Europe as well. It is symbolic that in March 2008, 70 years after he fled Nazi Germany with his family, Wertheimer returned to Germany to receive the Buber-Rosenzweig Medal in Düsseldorf for his vision to advance **peace through industry**.

The latest industrial park will provide employment mainly for the Arab community of Nazareth and technical education to its youth at the technical school that is being built alongside the park. "It took us eight years of preparations and negotiations, but once the park is completed it will definitely bring prosperity to the city that cannot rely

solely on tourism and urgently needs more sources of employment for its citizens," Wertheimer said. "In this part of the world we don't have oil or vast territories, and therefore we must rely on industry that can be exported to make it possible for us to become part of the free world," he explained. "Both Israel and Palestine are nations consisting of refugees, and unfortunately we have grown accustomed to living in fear. But it doesn't have to stay that way forever. Israel needs to realise that power cannot provide an answer, and the Palestinians need to understand that they won't solve their problems with terror. I believe factories should be the new path for peace. In all of our industrial parks, people of various nationalities and religions work side by side, and the conflicts are left aside because they need to meet their deadlines," he insisted.

"Tefen Park, which is the flag park and located in the Northern Galilee, provides employment and education to the people of the whole area, and even during the time of the Second Intifada, this part of the country remained relatively calm. This proves my point that when people have something to lose and are proud in their source of livelihood they would not want it to be destroyed by war," he said.

Most of all Wertheimer would have wanted to build an industrial park for the Palestinians, and he actually has plans to establish such a park in Rafah near Gaza. As soon as the situation changes, this is the number one priority.

HSK - Who needs it?



Buckley Systems Limited has invested in a brand new SPINNER U-1520 which is a double table machine; one being a full simultaneous 5 axis table, and the other a 3 axis side by side, thus allowing a machining envelope of over 1500mm. The SPINNER was a deliberate departure from the typical machine that Buckley's invests in, as it was equipped with a **20,000 RPM HSK spindle**.

"The accuracy is brilliant; with glass scales and a HSK spindle we can hold tolerance all day long. The HSK taper is proving that with the double contact taper, we can spend the whole day making a part holding a tight tolerance without having to make any of the adjustments that we previously had to do. The HSK is also allowing us to keep very close step height between tools especially when you are chasing 0.01 or 0.02. I was never a fan of it before because I had never used it, but now I definitely am!"

"It's very fast and productivity has increased because we are getting shorter cycle times. This is because with a 20,000 RPM HSK spindle we can zoom around the shape at any speed we like without juddering. One of our jobs used to take 20 minutes and we are now doing it in 8! Even jobs we used to do on 5 axis machines are coming off in almost half the time when on the 5 axis table in the SPINNER. It was so capable it took a while for the guys to realise just how fast we could machine with it."

Paul Bruce: Machine Shop Foreman



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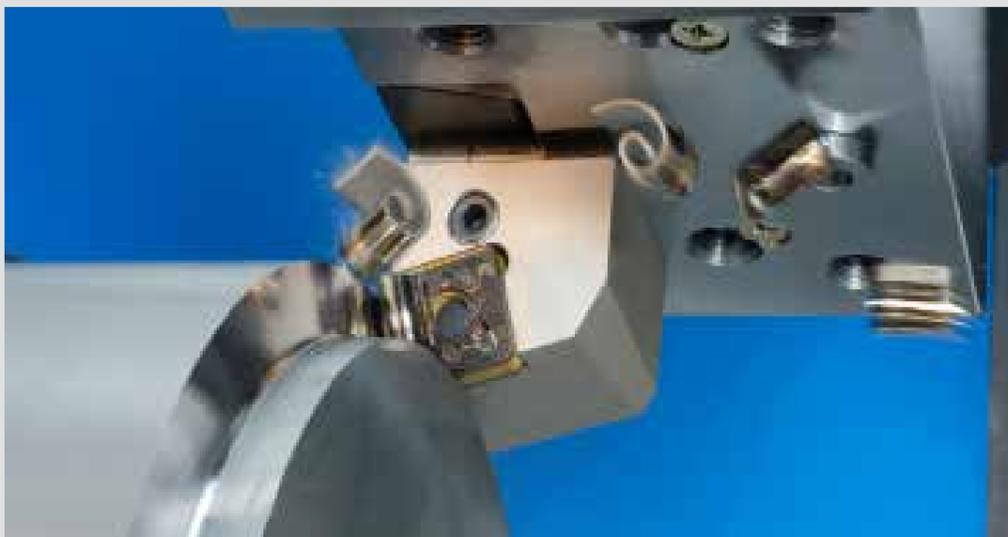
ALL IN THE FAMILY

Setups and changing fixtures on a CNC machine is time consuming. A family can have one fixture to handle all parts. Changing tools in the magazine takes time, but with a family of parts, it will be possible not to have to change tools in the machine.

From a machining perspective, however, other characteristics can also define a family. Consider parts that you can:

- hold in the same fixture
- run with variations on the same program
- make using the same type of operations
- machine with the same set of tools.

Sometimes it's hard to see these commonalities, but once you do, you can use them to boost production by reducing setup and changeover time, minimising programming effort, or improving other aspects of your process.



Tooling: Parts made by the same processes and tooling might not look the same, but you can consider them to be a family and you will know this because you won't be changing tooling between parts, so ensuring virtually no downtime. In doing this you will also be making the best use of the space in the tool magazine and this is significant if you have limited tool spaces in the turret or the tool changer. To assist reducing tool changeovers you can make sure that you keep a multi-function tool in your turret that can perform many different options

Programming: As you add parts to a family, you may be able to use portions of previously written programs. Suppose you are already making a part with a particular feature on it, and the customer asks you to make another part with the same feature but in a different size or location. You can copy the relevant section of the program and use it again, with the appropriate adaptation. The programmer can easily make use of this commonality in the program without doing anything especially sophisticated. More advanced software features help you to do more. If you repeatedly program a certain feature or process, you can write a macro, which will automatically run the desired series of commands. Plugins, often written by consultants, can take this approach to another level.

Workholding: The benefits of a family approach to workholding can be considerable. If you are using the same set of jaws, offsets are the same. For example, you could use stepped jaws. The top, wider step could hold larger parts, the lower step or steps could hold smaller parts. Any opportunity to group, streamline, consolidate, rationalise, or optimise programming, tooling, work holding or other aspects of production can benefit your whole operation. The fact you have a family of parts is not important. What you do with the family – how you use the family's characteristics to help you increase production and reduce costs – is the advantage you can gain from recognising what parts have in common.

Keep Exercising

A recent study in Japan based on careful measurement of glycogen levels in rats before and after exercise concluded that 6 hours after exercising, glycogen levels rose to peak at 29-63% times the pre-exercise levels. The boost in energy available to the brain may account for the mental alertness that many people report after a workout.



V8 IN A CUTTER?



The H400 series from Iscar features round inserts with a very clever radius application -**like dropping a V8 engine into a cutter**. Unlike regular round inserts, the HELIDO 400 inserts have a periphery that consists of bounding arcs with radii that would only be found on round inserts twice their diameter.

It permits very high feed rates while fitting more densely into any given cutter size, to create a finer pitch tool. The combination of fine pitch and large radius allows for V8 style performance, in that much higher feed-rates are obtainable. Check out the Machining Evaluation below where the H400 runs at 0.5mm/tooth compared to a regular round insert of 0.27mm/tooth. This effectively **halves the machining time** and retains surface quality.

You would think powering up the feed-rate is going to load up the spindle, but these double sided inserts have a helical cutting edge for gentle entry, plus top face geometry to create a positive rake inclination, and with the SUMOTEC post coating process so you get an insert that cuts sweetly whilst improving tool life.

Together with the dove tail clamping design in the cutter, the NO-TWIST fixed indexing allowing four positions means the inserts can withstand high cutting forces if you want to power up even further.

Cutters are available in 10,12 and 16mm sizes and cutters run from 20-125 mm in Diameter. Check out the graphs below;

Cost per part halved, Cycle time halved, parts per hour doubled, parts per insert edge tripled!

Material		Date	
Cast 316 Stainless		2/16/12	
Operation		Problem	
Rough Profile		Tool Life	
Machine Type			
Machining Centre			
Components / year		500	
		Savings/year	\$3,262.03
		EXISTING	CHANGED
		Opposition Product	ISCAR
Tool description			
Insert description	10mm button insert	H400 RNHU 1004-AX	
Carbide grade		IC830	
Tool Stability	BT40 ODP 12x	BT40 ODP 12x	
Over Hang			
Width of cut aa (mm)	6	6	
Coolant / Air Blast Etc			
Number of cutting edges (Per Insert)	4	4	
Number of insert in body	3	3	
Tool Diameter	25	25	
Speed (M/min)	180	185	
Feed Per Tooth (mm/rev)	0.27	0.50	
RPM (calculated)	2293	2357	
Table Feed (calculated)	1857	3535	
Depth of Cut (mm)	1.00	1.00	
Length of Cut (per pass)	860	860	
Number of pass cuts taken	12	12	
Cycle Time Per Component (minutes)	5.56	2.92	
Components per edge	2	6	
Insert Nett Cost	\$10.00	\$20.00	
Insert Cost Per Component	\$3.75	\$2.50	
Parts per hour	10.80	20.55	
Machine Cost per Hour	\$120.00	\$120.00	
Machining Cost per Component	\$11.11	\$5.84	
Material Removal Rate (cm ³ /min) "MMR"	1.11	2.12	

Tool Cost Saving per Part H	\$1.25
Machining Cost Saving per Part o-o	\$5.27
Total Cost Saving per Part	\$6.52
Total Cost Saving/year	\$3,262.03

