

MIRKA

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**Sand better, polish less
– save time and money
in yacht surface finishing**

Flawless surface and extreme shine – these are high on the requirement list for yacht buyers and owners. Generally, surface finishing is done following a process where little time is used on sanding, and more is used on polishing. However, Mirka recommends the opposite. Sand better, polish less.

But why should yacht builders and restoration professionals make the change? The current surface finishing process is not the quickest, most cost-effective, or even the safest option. Nor does it guarantee the best quality outcome. By following Mirka's process, significant time and money savings can be achieved. As a dust-free and more ergonomic alternative, it also provides employees with a safer working environment.

Introduction

Buying a yacht entails a number of choices from the materials and design to size. Although the end customers' criteria differ, perfect surface finish is always on the list. People want their yacht's high quality to show, leading them to demand extreme shine that stays even when the yacht is exposed to a lot of sunlight. This level of quality can only be achieved with the right sanding and polishing equipment as well as techniques.

However, the current surface finishing process used in yacht manufacturing and restoration leaves a lot of room for improvement – especially when it comes to time and costs. It takes a long time to complete a project, prolonging delivery times as well as increasing both workload and costs. To keep up with the growing demand, yacht builders and restoration professionals need new solutions to finish projects faster.

The health of workers also raises concerns. Usually, sanding creates a lot of dust, causing potential health problems for employees. In addition, cleaning the dust slows the process more. The ergonomics are often not the best either – polishing machines in particular can be heavy.

To help companies offer more cost-effective surface finishing solutions to their customers as well as a safer working environment to their employees, Mirka has created its own, alternative process that is introduced in this paper. The idea is simple – increase sanding, make it dust-free with the right equipment, and reduce polishing.

What does Mirka do?

With decades of experience, Mirka is a leading surface finishing technology company and the inventor of dust-free sanding. Mirka's marine solutions are suitable for high-end yacht production, refurbishing, and restoration.

Thanks to the company's global sales and technical organisation, it can offer unique service – Mirka is constantly on the field with its customers, assisting them at their own sites when needed.

Mirka also aims to be the most sustainable choice for its customers. The company works hard to save energy and raw materials, reduce waste, increase recycling, and decrease the use of persistent chemicals. As a member of the Federation of European Producers of Abrasives (FEPA), Mirka had a central role in the founding of the Sustainable European Abrasives Manufacturer (SEAM) program, launched in 2020. The goal of the program is to set a European sustainability standard and to find the right balance between environmental efficiency, production performance, and labour safety in the abrasives industry.

Yacht surface finishing – how it is currently done

In general, the goal of yacht surface finishing has been to sand as little as possible to reduce the time and materials required for sanding. Only very coarse abrasives are used to speed up the sanding process. However, less sanding means more time needed for polishing – coarse abrasives lead to deep scratches that take longer to polish. This, in turn, leads to longer working time using heavy polishers, worsening ergonomics.

Despite reducing the sanding time, the process still creates a lot of dust, since sanding solutions are usually not dust-free in the marine sector. Inhaling harmful sanding dust can cause health problems for workers. In addition, cleaning the dust before polishing can begin is time-consuming – it takes approximately 2–3 days to clean the boat and working area from the dust.

Mirka's surface finishing process comes with multiple advantages

While in the current surface finishing process more time is spent on polishing than sanding, Mirka recommends the opposite. Thanks to the company's extensive experience in the OEM (Original Equipment Manufacturer) in-

dustry, Mirka has been able to create the optimal surface finishing process. Its core idea is to sand better and polish less to overcome the challenges of the standard method.

So, what are the benefits?

1. Time and money savings

Although the sanding phase takes a little longer compared to the current surface finishing process, a lot of time is saved when it comes to polishing. As mentioned earlier, generally only coarse abrasives are used, leading to deep scratches that take longer to polish. In Mirka's process, a wider range of abrasives is utilised, including both coarse and very fine grits. This results in significantly smaller scratches.

According to field tests carried out by Mirka, using more abrasives and thus increasing sanding time by 20 percent reduces polishing time by 30 percent. So, thanks to a finer scratch pattern, Mirka's process is quicker overall.

– Evald Lassus, Mirka's Marine Business Sector Manager

Additionally, saved time means saved money, since less working hours are needed to finish a yacht project.

2. Better quality

Using both fine and coarse abrasives guarantees a better final result. If only coarse abrasives are utilised, the deep scratches can leave an uneven surface. Finer abrasives result in a smoother outcome and higher quality, since it is much easier to polish.

Furthermore, tests conducted by Mirka show that yachts that have been polished with Mirka's polishing compounds keep their shine for a long time even in sunny southern conditions.

3. Dust-free working environment

Sanding a yacht usually creates a lot of harmful dust, which poses a health risk for workers. To help manufacturers and restoration professionals provide a safer working environment, Mirka invented a pioneering dust-free sanding method by developing net abrasives and tools for dust extraction. The method not only improves safety, but also saves plenty of time since less cleaning is required after sanding.

Mirka's abrasives are designed to reduce dust from the work surface. Dust-free abrasives combined with our high-end power tools result in efficient dust removal. Without dust in the way, the abrasive can also cut better and does not get clogged.

– Leonardo Latini, Mirka's Global Technical Manager, yacht industry

4. Improved ergonomics

Polishing machines are generally heavier and harder to handle than sanders. Decreasing the time spent polishing will hence improve overall working ergonomics.

However, it is also important to consider the weight and ergonomics of the sander. Mirka's LEROS-S sander is very light and compact – it can be used for a long time without fatigue. Additionally, by connecting a Mirka tool to the MyMirka app, the user can monitor vibration exposure.

This is how much time and money Mirka’s surface finishing process saves

Savings per one square metre

In the following example, the time and money needed for a yacht’s gelcoat surface finishing is calculated. The calculations contain abrasive costs as well as sanding and polishing labour costs. Polishing compound costs are not included in the calculations. However, since less time is needed for polishing in Mirka’s process, the amount and cost of polishing compounds needed are also reduced. The calculations are based on the extensive field tests Mirka carried out with its customers in Italy during 2020–22.

1. Abrasive costs

In the current process, less abrasives and rougher grits are utilised – three in this example. This means smaller abrasive costs: sanding an area of one square metre with three coarse abrasives costs approximately 1.35 euros. If sanding is done according to Mirka’s recommendations and more grits are used – for example, five – the cost is about 2.95 euros.

Table 1. The abrasive costs of the current process.

Grits	Cost
P240	€0.45
P400	€0.45
P600	€0.45
€1.35 per m² in total	

Table 2. The abrasive costs of Mirka’s process.

Grits	Cost
P220	€0.45
P320	€0.45
P500	€0.45
P800	€0.80
P1,000	€0.80
€2.95 per m² in total	

2. Sanding time and cost

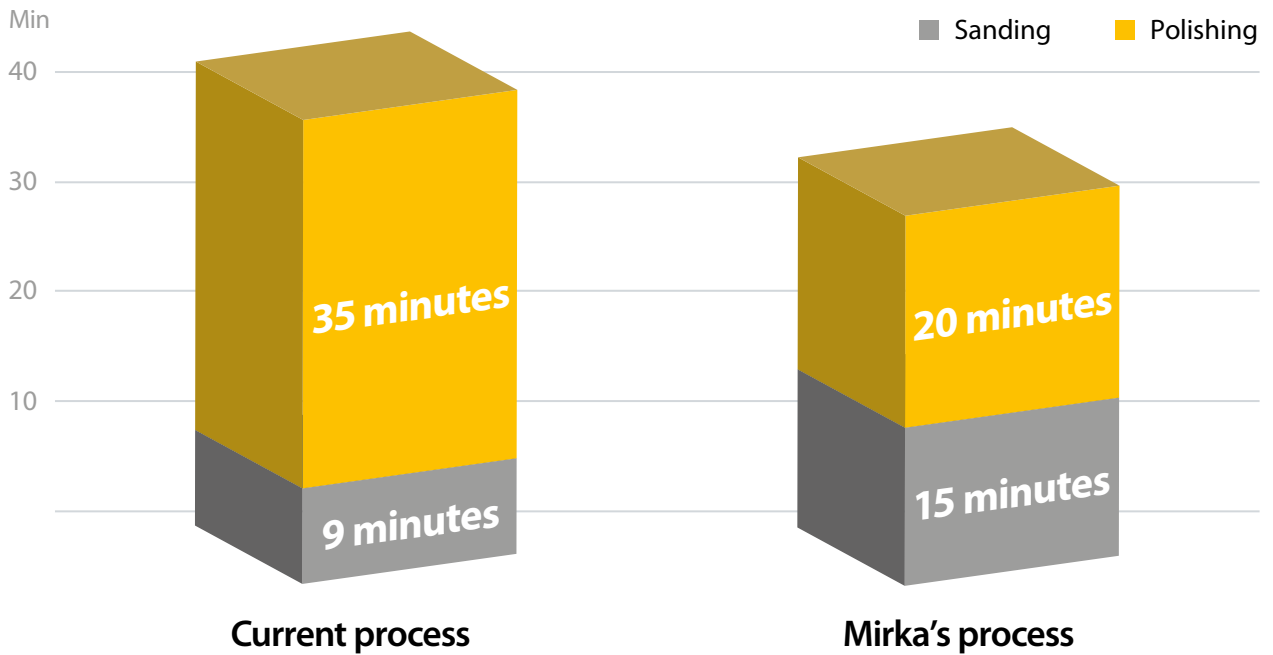
Sanding one square metre takes about three minutes per grit. However, it is important to note that the time is dependent on the hardness and brand of the gelcoat.

Since the average working cost is 0.83 euros a minute (based on an hourly rate of 50 euros), sanding one square metre would cost 7.47 euros with three grits and 12.45 euros with five grits.

Table 3. Sanding time and costs per m².

	Current process	Mirka’s process
Sanding time per m² using a single grit	3 minutes	3 minutes
Total sanding time per m²	9 minutes (3 grits)	15 minutes (5 grits)
Cost per minute	€0.83	€0.83
Total cost per m²	€7.47	€12.45

Total time needed for sanding and polishing one square metre



3. Polishing time and cost

Before polishing starts, the current process appears as the cheaper and less time-consuming one. However, polishing is the decisive step. Since coarse grits create deeper scratches than the finer grits, more time – approximately 35 minutes – is needed to polish a square metre in the current process. Using Mirka's method, polishing takes about 20 minutes, thanks to the wider grit range and finer scratches.

With the working cost of 0.83 euros a minute, polishing would cost 29.05 euros per square metre in the current process and 16.6 euros in Mirka's process.

Table 4. Polishing time and costs per m².

	Current process	Mirka's process
Time needed to polish 1 m²	35 minutes	20 minutes
Cost per minute	€0.83	€0.83
Total cost	€29.05	€16.6

4. Total savings per one square metre

So, what is the conclusion? If the current process is used, it would require 44 minutes of working time and 37.87 euros to sand and polish one square metre. However, Mirka's process requires 35 minutes and 32 euros, saving both money and time.

Table 5. Total time needed to sand and polish one m².

	Current process	Mirka's process
Sanding time per m²	9 minutes	15 minutes
Polishing time per m²	35 minutes	20 minutes
Total time per m²	44 minutes	35 minutes

Table 6. Total sanding and polishing costs per m².

	Current process	Mirka's process
Abrasive costs per m²	€1.35	€2.95
Sanding cost per m²	€7.47	€12.45
Polishing cost per m²	€29.05	€16.6
Total cost per m²	€37.87	€32

Savings per one yacht

But what do the previous calculations mean for the most popular sized yachts' complete hull surface finishing? Let's take a closer look.

Table 7. Savings per one 15 m long yacht with a 100 m² surface.

	Time	Costs
Current process	73 h 20 min	€3,787
Mirka's process	58 h 20 min	€3,200
Savings	15 h	€587

Table 8. Savings per one 30 m long yacht with a 500 m² surface.

	Time	Costs
Current process	366 h 40 min	€18,935
Mirka's process	291 h 40 min	€16,000
Savings	75 h	€2,935

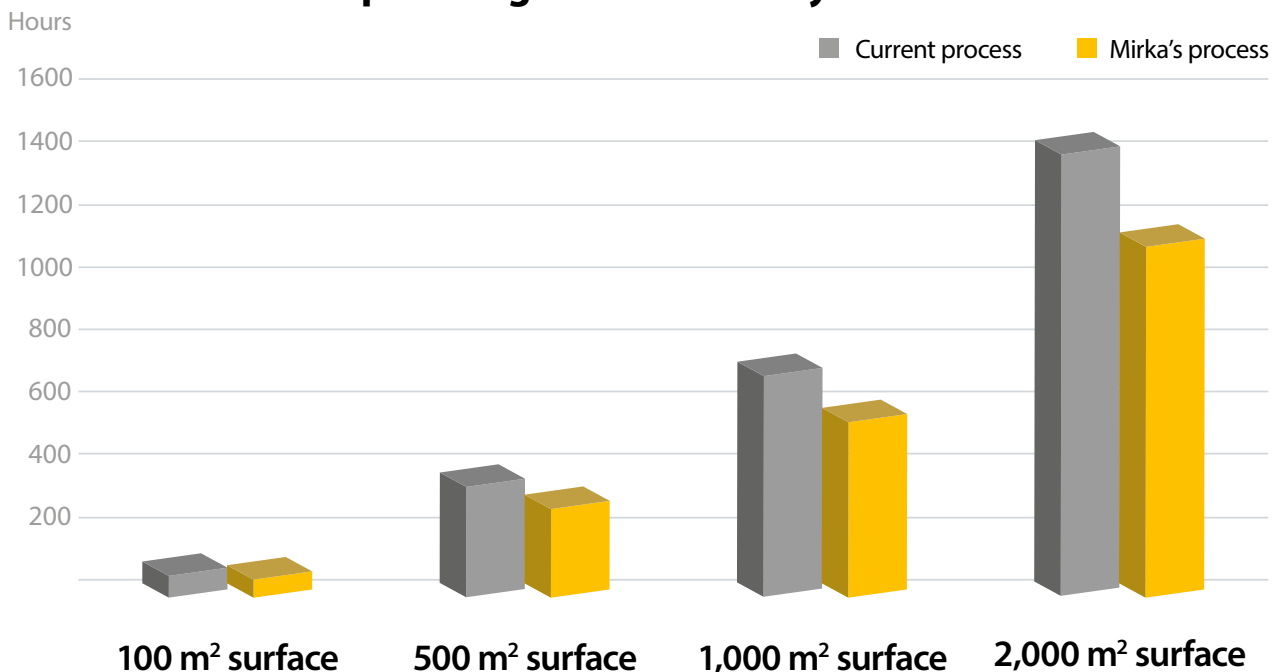
Table 9. Savings per one 60 m long yacht with a 1,000 m² surface.

	Time	Costs
Current process	733 h 20 min	€37,870
Mirka's process	583 h 20 min	€32,000
Savings	150 h	€5,870

Table 10. Savings per one 90 m long yacht with a 2,000 m² surface.

	Time	Costs
Current process	1,466 h 40 min	€75,740
Mirka's process	1,166 h 40 min	€64,000
Savings	300 h	€11,740

Total time needed for sanding and polishing different sized yachts



Annual savings

Yacht builders and restorers often work on dozens of yachts annually. Taking into account the savings achieved per one yacht, how much time and money can be saved per 20 or 50 yachts?

Table 11. Savings per multiple 15 m long yachts with 100 m² surfaces.

	Time	Costs
Savings per 20 yachts	300 h	€11,740
Savings per 50 yachts	750 h	€29,350

Table 12. Savings per multiple 30 m long yachts with 500 m² surfaces.

	Time	Costs
Savings per 20 yachts	1500 h	€58,700
Savings per 50 yachts	3,750 h	€146,750

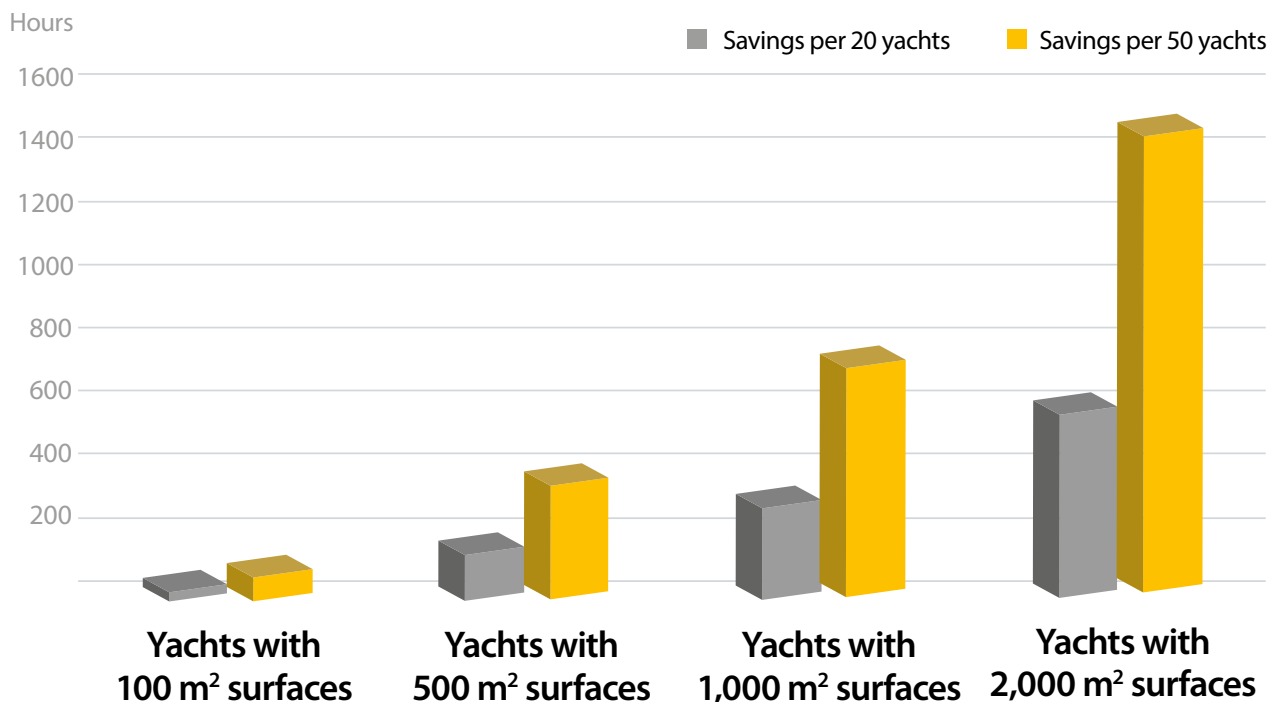
Table 13. Savings per multiple 60 m long yachts with 1,000 m² surfaces.

	Time	Costs
Savings per 20 yachts	3,000 h	€117,400
Savings per 50 yachts	7,500 h	€293,500

Table 14. Savings per multiple 90 m long yachts with 2,000 m² surfaces.

	Time	Costs
Savings per 20 yachts	6,000 h	€234,800
Savings per 50 yachts	15,000 h	€587,000

Annual time savings when Mirka's process is used



Cooperation with Mirka

For many companies in the marine sector, Mirka products play an important role in creating the perfect surface finish that end customers demand. This is how yacht builders Cranchi and Nautor Swan describe their cooperation with Mirka.

Cranchi

Since its establishment in 1870, Italian company Cranchi has manufactured top quality yachts. Excellent marine performance, reliability, and high safety standards are what Cranchi strives for.

“Our philosophy is to protect the health of our workers and the environment. Mirka’s innovative solutions for dust-free sanding are what encouraged us to collaborate. Mirka listens to our needs and suggestions carefully, and together we have solved many challenges in Cranchi’s processes.”

– Paola Cranchi, Head of Communications

Nautor Swan

Finnish yacht builder Nautor Swan, founded in 1966, is well known for its excellent quality sailboats. For Nautor Swan, high quality finish is a fundamental part of the company’s roots and heritage. It takes the best kind of power tools and abrasives to accomplish such quality.

“Our cooperation with Mirka is efficient and continuous. We use both Mirka machines and abrasive materials in yacht production as well as product development. With Mirka’s solutions, meeting and going beyond the clients’ expectations is possible.”

– Benny Brännbacka, Chief Operating Officer

Recommended products for Mirka's surface finishing process

To take full advantage of the benefits of Mirka's surface finishing process, it is important to select the right tools and compounds. In this section, recommended products for the process are presented.

Mirka® LEROS-S electric sander

Since the sanding time slightly increases in Mirka's process, it is important to use a light sander like LEROS-S. At the same time, the working environment should be free of sanding dust that can negatively affect employees' health. When LEROS-S is used together with Mirka's Abranet® abrasives and a dust extractor, there will be no harmful dust to worry about.

Mirka® LEROS-S is a compact and brushless sander with a highly flexible sanding head and two dedicated grip points that make sanding effortless and more ergonomic. Thanks to its manoeuvrability, it performs well in both confined places and on large surfaces. LEROS-S is suitable for sanding wood and composite surfaces.

Abranet® Ace abrasive

Thanks to its pioneering net structure, the Mirka Abranet® Ace guarantees dust-free sanding. This abrasive comes in multiple disc sizes and grit options from very coarse to very fine. Combining the grit range with the abrasive's dust-free design, Abranet® Ace perfectly suits Mirka's recommended surface finishing process that highlights the importance of finer grits and safer working environment.

Abranet® Ace is made of durable ceramic grains, offering superior cut and performance when sanding hardwoods, such as beech or oak. The abrasive also quickly sands various other solid surface materials.

Mirka® Dust Extractor

To complete the dust-free sanding method, a dust extractor is needed. Mirka dust extractors have high-per-

formance vacuums, a reduced sound level, and automatic filter cleaning for convenience.

Polarshine® polishing compounds

Mirka's Polarshine® products are suitable for a number of surfaces from gelcoats and high-gloss lacquers to composites. The range includes multiple compounds that remove scratches effectively and guarantee fast cutting for coarse and fine surfaces as well as a deep gloss finish. With coarser compounds, such as 45 and 35, polishing becomes faster, making them perfect for Mirka's surface finishing process.

All Polarshine® products are water-based. Solvent-based compounds can lose gloss after cleaning the surface with a degreaser and in some cases, they may only temporarily hide the scratches. Additionally, water-based compounds do not contain hazardous chemicals, making them a safer and more sustainable choice.

Mirka polishing pads

Mirka polishing pads go well with the Polarshine® compounds. With coarse compounds like 45 and 35, it is recommended to use, for example, Lambswool Pad Pro or Twisted Wool. Both are made of pure wool fibres and are suitable for all kinds of paintworks in the marine sector.

With a finer compound like 12, Foam Pad Waffle works well. Its optimised pattern improves the cutting performance and reduces surface temperature during polishing. It is suitable for all kinds of paintworks in the marine sector.

Summary

Providing the perfect surface finish for a customer's yacht is one of the most important tasks for yacht builders and restorers. Although good results can be achieved with the current surface finishing process, it has many challenges. Due to the lengthy polishing phase, projects take longer to complete and cost more money. Furthermore, sanding products are rarely dust-free, which raises health concerns and prolongs the project due to a long cleaning time.

By developing a new surface finishing process, Mirka aims to help the marine sector complete projects faster, reduce costs, and provide a healthier working environment. The core idea is to sand better and polish less – increasing sanding time by 20 percent reduces polishing time by 30 percent. In Mirka's process, more abrasives and grits are utilised to create a finer scratch pattern that is easier and therefore faster to polish. Overall, this process requires less working time, making it more cost-effective.

Calculations made based on Mirka's extensive field tests show that the time and money savings are significant when the new process is utilised. For example, if a 30 metre long and 500 square metre large yacht's hull is completely treated, it would save

- **75 hours of working time and 2,935 euros per a yacht,**
- **1,500 hours and 58,700 euros per 20 yachts, and**
- **3,750 hours and 146,750 euros per 50 yachts.**

With the right surface finishing equipment, the process also becomes dust-free and more ergonomic. Mirka offers products, such as innovative Abranet® net abrasives and the light LEROS-S sander, that make this possible.

Interested in trying out Mirka's yacht surface finishing process?

For more information, please contact

EVALD LASSUS

Mirka's Marine Business Sector Manager

evald.lassus@mirka.com

You can also visit Mirka's website and learn more about the company's products for the marine industry:
mirka.com



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