



# A CUSTOMER SUCCESS STORY

Energy saving upgrade – how we supported our customer to reduce their CO<sub>2</sub> footprint

Edwards  
semiconductor  
*Intelligent*  
service

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# Introduction

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Satisfying both output demands and environmental constraints is a growing challenge.

Add environmental reporting standards and growing emission regulations driven by climate change frameworks and it is clear that chip manufacturers need to work with equipment suppliers to look at total set up.

That's why we work with our customers at the forefront of developing equipment and systems to minimise resource use; power, water and utilities, combined with Service strategies, to maximise Fab efficiency while minimising environmental impact.



## What is semiconductor fabs environmental impact

Semiconductor fabs are utility-intensive operations and exhibit substantial environmental impacts. We have estimated Scope 1 direct emissions from global integrated device manufacturing at around 34.7 m tonnes of CO<sub>2</sub>e. Energy-related Scope 2 emissions, accounting for nearly 75 m-tonnes CO<sub>2</sub>e, reflect the extensive use of electricity as an energy source, which we have estimated to be around 160TWh annually. Moreover, annual estimated water withdrawals of nearly 1 billion cubic meters underscore the importance of water recycling and waste treatment as part of the industry's efforts to mitigate their impact en route to providing sustainable semiconductor manufacturing.

\*data come from our study and key manufacturers' CSR and CDP reports

## The challenges our customer faced

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In this case study our customer is a multinational semiconductor manufacturing and design company. It has long been the leading company in its field. Their customers include most major chip companies.

**The main challenge our customer faced is** to reduce power consumption without impacting production levels and consequently reduce CO<sub>2</sub> footprint.

As one of the leaders in the industry, it is important for them *to be a force that uplifts society and creates sustainable value.*

They enable innovation and invite partners from all walks of life to weave a web of sustainability through technology and collaboration.



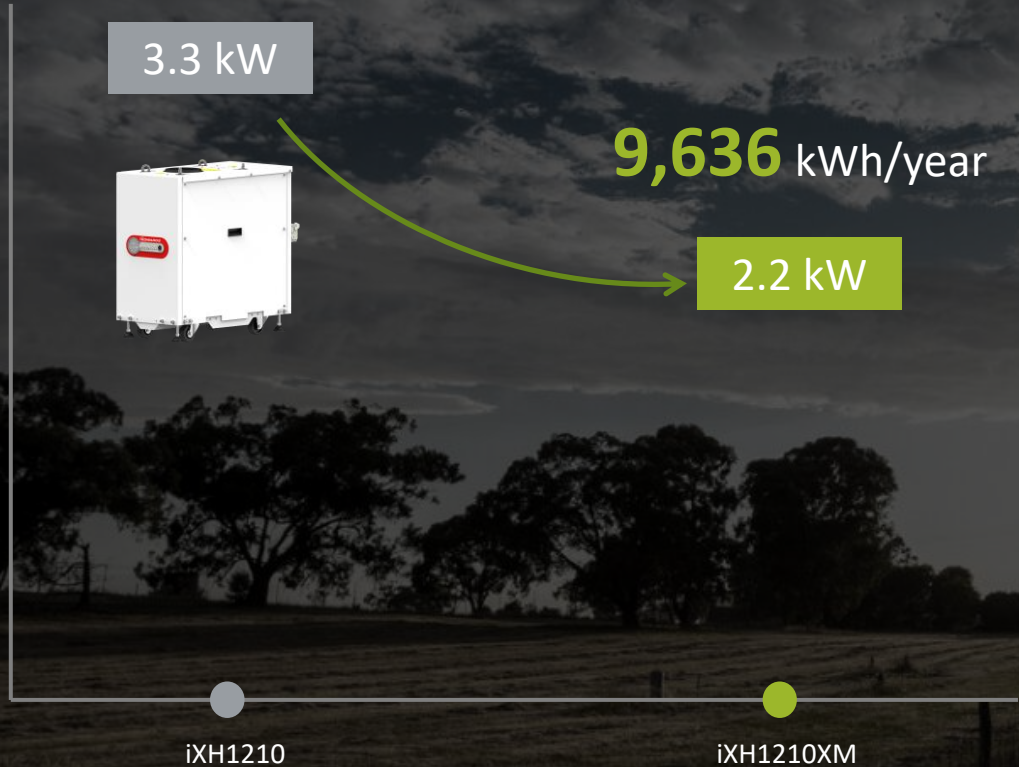
Do you know how much power a leading Fab consumes per hour?

**100**  
megawatts  
**PER HOUR**  
**(which is  
100,000 KWh)**

\*credit:  
[https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/operations/pdfs/bringing\\_fabenergyefficiency.ashx](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/operations/pdfs/bringing_fabenergyefficiency.ashx)

# The key to unlocking the problem

Power consumption



The key to unlock the problem, without creating a major capital demand was to install a new upgrade to a series of Edwards iXH1210 pumps.

We call it the Energy Saving Upgrade and for good reason.

The iXH1210XM reduces power consumption by **33%** compared with its previous model.

Another key factor is the pump in/outlet size, position and facility requirements are the same, which means there is **NO** need for any additional tool time.

# Utility consumption saving

So, now we know:

**1** pump SAVES **9,636** kWh/year

Which costs...

**\$ 0.2**  
Per kWh

Which means...

WE SAVE **\$ 1956.73**  
Per pump

Price ref:  
[https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity\\_price\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_price_statistics)  
Currency: 1 EURO = 1.08 USD



The ongoing program will see more than 2500 pumps upgraded, resulting in cost saving



Total

~2500

Saving up to

**\$ 4.85 M**



# Energy saving

On average, each upgraded pump saves 3.8 tons of CO<sub>2</sub> annually, so if we assume that each machine can work for 10 years, each machine saves 38 metric tons of CO<sub>2</sub> compared with previous model.

So, for this specific customer, around **43,434** metric tons of CO<sub>2</sub> emissions avoided because of the energy saved by the end of 2024.

This is equivalent to greenhouse gas emissions from:

10,337

Gasoline-powered passenger vehicles drive for one year

111,085,388

Miles for an ordinary car would have to drive to emit this much CO<sub>2</sub>



UPGRADE EFFICIENCY  
DOWNSIZE EMISSIONS

\*calculator: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

## Customer testimonial

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“

Edwards dry pump upgrade significantly reduced our power consumption and carbon footprint without any unplanned tool downtime. Since implementation, we've seen a notable decrease in energy consumption, positively impacting our bottom line while contributing to an environmental future.

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- Senior Operations Manager  
Leading Semiconductor Manufacturer



## Contact

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To discuss your service options  
request a consultation with our team

[consultation@edwardsvacuum.com](mailto:consultation@edwardsvacuum.com)

Or search for “Energy Saving” on our website

[www.edwardsvacuum.com](http://www.edwardsvacuum.com)



