

# GOOD GUYS' INDEX

CALCULATE YOUR PRODUCTS'  
ENVIRONMENTAL IMPACT

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A NOVACAST SYSTEMS PRODUCT



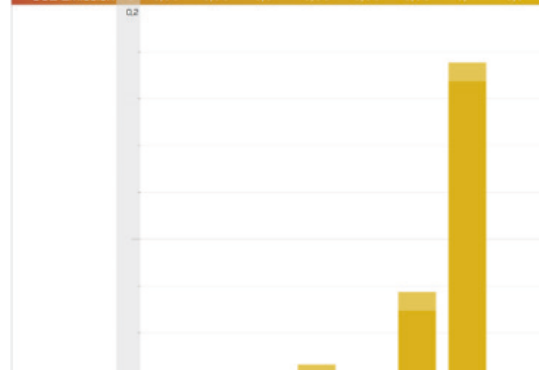
# GOOD GUYS' INDEX

The demand of minimizing CO2 emissions are getting higher. We are convinced that being able to calculate each product's CO2 impact is a competitive advantage and we have a strong belief that this will soon enough be a requirement. We have come up with a way to easily calculate the entire cost of a casted product, financially as well as environmentally - completely streamlined for the foundry industry.

NovaCast has developed a software that makes CO2 calculation easy. We present Good Guys' Index (GGI) which is a program that helps foundries and its customers to calculate the impact of a product all the way from raw material to delivery to end customer. Examples of input data that GGI takes into account, both environmentally and financially: raw material and its transport, the energy mix you have, the melting of the alloy and all production steps, transport to customer and more. Do not forget that the software also calculates the energy consumption per part which is also extremely important.

## PROCESS EDITOR

Step		Casting	Trimming	Cleaning	Shot Blast	Washing	Machining	Heat Treat	Painting
Machine Cost	€/h	25,00	100,00	50,00	15,00	50,00	200,00	10,00	100,00
Motorpower Cost	€/h	0,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00
Energy Usage	kWh	50,0	5,0	20,0	18,0	10,0	30,0	34,0	10,0
Time Per Part	h	0,10	0,05	0,10	0,30	0,05	0,50	1,00	0,25
Man-hour	h	0,00	0,00	0,10	0,05	0,00	0,05	0,05	0,00
Electrical Cost	€	0,75	0,04	0,30	1,35	0,05	2,25	5,10	0,38
Production Cost	€	2,50	5,00	10,00	10,00	2,50	102,50	12,50	25,00
Total Cost/Part	€	3,25	8,04	10,30	11,35	2,58	104,76	17,60	25,38
CO2 Emission	kg	0,03	0,00	0,01	0,05	0,00	0,08	0,17	0,01

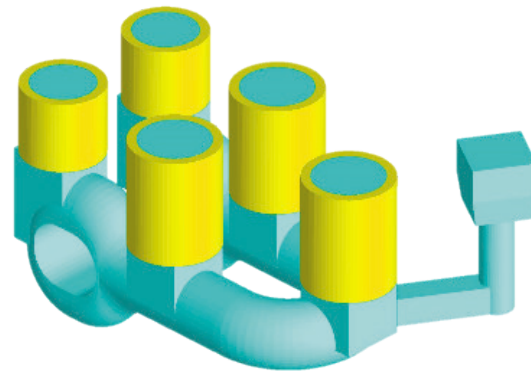


## Compare casting parts

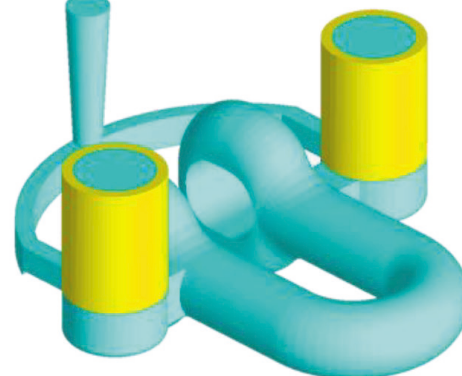
Good Guys' Index helps you compare different casting designs, production methods as well as production sites, and clearly presents the differences in environmental impact as well as making it visible to see high production cost often generated by scrap and incorrect casting and methoding design. The results of a GGI comparison can help your foundry improve the casting yield, reduce scrap, and at the same time solely use the resources necessary without compromising the quality of the finished product.

Here is a comparison example:

ORIGINAL VARIANT



OPTIMIZED FEEDING



	Original:	Optimized:
Casting weight (kg)	485	485
Gross weight (kg)	940	725
Weight savings (kg)	---	215
Sleeves	5	2
Cutting area (cm <sup>2</sup> )	2 800	450
<b>Cost reduction (EUR)</b>	---	<b>200</b>
<b>Yield (%)</b>	<b>51.6</b>	<b>67.0</b>

Comparing two different ways to cast a steel casting using Good Guys' Index in combination with casting simulation software, NovaFlow&Solid.

The result of this example is improved feeding design that gave a reduction of 42 kg CO2 emissions per part. By switching another country as production site, the transport and the energy type used will influence a lot and the CO2 emission could be as high as 3788 kg more per part.

### Usability

You don't need to be a foundry engineer or metallurgist to use Good Guys' Index. GGI is a comprehensive tool with a straightforward layout to perform smooth calculations of cost and material savings, as well as CO2 emissions. Furthermore, in the light of the recent price increases on energy, it can also let you highlight how much you could actually save financial-wise.

We see GGI as a tremendous tool to simulate different scenarios with a casting part or in the casting production. Using GGI you can directly see the impact that various adjustments might have in terms of CO2 emissions and energy consumption.

### Casting simulation data

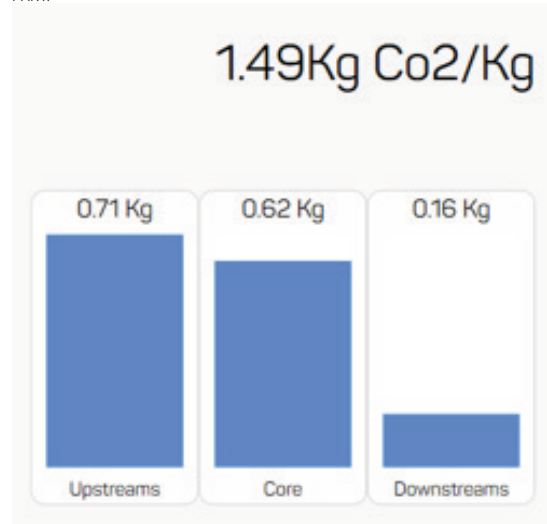
NovaCast's premium casting simulation software, NovaFlow&Solid, has a connection to GGI. This means that you can jumpstart your calculations quickly by importing for example different weights, but also some metallurgical data.

### Evaluation of results

By using Good Guys' Index, a foundry, a purchaser of castings or a casting designer can simulate the CO2 emissions generated in the process by changing the casting design, changing the methoding of the casting, changing materials, or changing type of casting process if possible. This way, you can find significant improvements, which will result in reductions of CO2 emission.

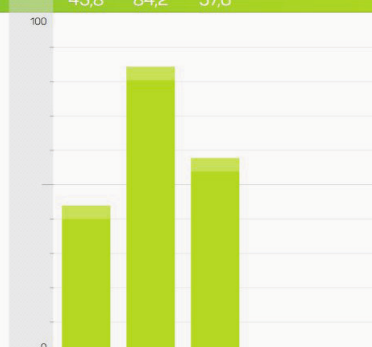
You can use the GGI value you get for each casting as a quality number that is constantly challenged for reduction.

EXAMPLE OF RESULT PAGE IN GOOD GUYS' INDEX WHERE THE CO2 EMISSION PER KG HAS BEEN CALCULATED FOR AN ALUMINUM HIGH PRESSURE DIE CASTING PART.



### PROJECT EDITOR

Project Editor - Gravity example (1)		Base	1	2	
Iteration					
Input Data					
-	Weight Savings	Kg	0.0	7.0	14.0
-	Casting Yield	%	52.9	57.7	63.4
-	Yield Improvement	%	0.0	9.0	19.7
-	Casting/Mold Ratio	%	42.5	39.0	71.0
Simulation Results					
-	Energy Savings	€	0.00	0.89	1.79
-	Production Cost Savings	€	0.00	30.80	61.60
-	Total Cost Savings	€	0.00	31.69	63.39
-	Energy CO2 Emission	Kg	197.14	25.26	26.52
-	Base Energy CO2 Emission	Kg	14.23	0.08	0.77
-	Production CO2 Emission	Kg	149.85	137.51	125.17
-	Freight CO2 Emission	Kg	16.91	9.20	22.44
-	Raw Material CO2 Emission	Kg	90.00	22.50	20.25
-	Holding Energy Consumption	KWh	1.7	1.7	1.7
-	Energy Consumption	KWh	128.0	552.1	116.1
-	Electrical Cost	€	19.20	82.81	17.41
-	Production Cost	€	494.05	577.75	432.45
-	Total Cost	€	513.25	660.56	449.86
-	Yearly CO2 Emission	Ton	87337	41273	41791
-	<b>CO2 Emission</b>	<b>Kg</b>	<b>378,13</b>	<b>172,05</b>	<b>174,89</b>
-	<b>Good Guys' Index</b>		<b>43,8</b>	<b>84,2</b>	<b>57,6</b>



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