1. General information about the company:

NAME: **IVANAL tvornica aluminija d.o.o.**

Address: **Industrial zone Podi**

Gorička 19, 22000 Šibenik

CROATIA

Director:	Vladimir Ivanović
Phone:	+385/022/778-876
Fax:	+385/022/778-877
Personal identification number:	42070251592
E-mail:	ivanal@ivanal.hr
Web:	www.ivanal.hr

BUSSINESS OBJECTIVE:

The main production programme: *Aluminum die castings*
Application:

- automobile industry 97%
- parts for hand tools 2%
- office accessories 1%

THE BEGINNINGS:

- 1937. company was founded
- 1979. production of secondary casting alloys (ended in 2005.)
- 1984. production of aluminium die castings

PRODUCTION IN 2024.: **1838 t**

TECHNICAL CAPACITY: 3000 t

EMPLOYEES

Number of employees in 2024.: **132**
Divided in:

- Production 89
- Maintenance 8

- Tool shop 6
- Quality control 9
- Management 20

ENVIROMENTAL PROTECTION:

Responsible contact person for Environmental Protection: Sunčica Mileta

Phone: **+385/ (0)22/778-876**

Fax: **+385/ (0)22/778-877**

E-mail: suncica.mileta@ivanal.hr

Person responsible for the accuracy of technical, environmental data: Sunčica Mileta

Near National Park: NO

Quality management system: ISO 9001:2015

Environmental Protection Management System: ISO 14001:2015

Energy Management system ISO 50001:2018

The company Ivanal d.o.o. expresses its commitment to continuous improvement of the quality and environmental management system. The most important goal of quality management is to focus on customer requirements and their satisfaction with the quality of delivered products. In environmental management, special attention is paid to the company's operations in accordance with the requirements of Norms and legal provisions in order to reduce the risk of environmental pollution, especially soil, water and air.

Leading of this company policy, means behaving towards nature and the environment in such a way that they are protected from pollution, as well as monitoring the sources of pollution, rational use of natural resources and encouraging the development of technologies that do not have a negative impact on the environment.

The introduction and application of the ISO 50001 standard enables systematic energy management, reduction of costs, carbon footprint, increase of energy efficiency, which brings a competitive advantage and commitment to responsible and sustainable management.

2. Technological description of the production process from the aspect of environmental protection

Since September 2009, the company moved production from Lozovac to a new location in the Podi Industrial Zone near Šibenik, after which environmental aspects were significantly changed, especially in terms of water protection. Production complex IVANAL d.o.o. in the Podi Industrial Zone consists of the following buildings:

a) **Production hall 1:**
   - smelter: the production of Aluminum die castings begins with the preparation of the melt in the furnace for melting Al-Si-Cu aluminum alloy ingots. By the action of the burner on the levers, the furnace melts them and prepares liquid metal with a temperature of 750 °C. LPG gas is used as fuel.
   - die casting: liquid metal is transported using a casting pot to the supporting furnaces on the presses where the casting process takes place under pressure (casting machines: Buhler -250, Buhler-400, TST Tebowa 800-I, TST Tebowa 800-II, TST Tebowa 500, Italpress 550, Italpress 1000, IDRA 700, IDRA 950-I, IDRA 950-II, IDRA 320, Yizumi 800, ERAPRESS 1100).
   - surface treatment of castings (vibrofinish, sandblasting), machining (threading, milling, grinding...)
   - quality control of castings: spectrophotometer, 3D, X-ray, various manual and control measuring devices are used

b) **Production hall 2:**
   - control and packaging of finished products
   - loading of packed products

c) **Administrative building**

d) **Overground LPG tanks** (5 tanks with a storage capacity of 6t)

e) **Recirculation system for the flow of cooling water with a pool of 20.50 x 5.50 m** divided into three pools:
   - pool **40 m^3**: used for collecting waste water-soluble coating and oily water around pressure presses. The waste emulsion thus collected is chemically processed (coagulation and flocculation processes), results are purified water and waste sludge (sediment). Clean water is transported to the absorption well, and waste sludge (sediment) is collected in "big bags" and handed over to an authorized waste collector for further disposal.
   - pool **170 m^3**: collects rainwater that is used to replenish the cooling water in the system.
   - recirculation water pool **90 m^3**: the water is used to cool the tools on the presses

3. Existing external permits and internal regulations (instructions)

Table 1: *State permits and internal technological rules-regulations*

Permissions	**Date**	**Document and publisher:**	**Integration into the IPPC directive**
Building permission	19.05.2009.	Confirmation of the main project Reg. no. 2182-01-08-01-08-8/City of Šibenik	According to the amount of aluminum production in aluminum castings, the company is not obliged to obtain the integral solution of the Ministry of Economy and Sustainable Development on environmental protection (according to the IPPC directive).
Location	13.11.2007.	Location permit Reg. no. 2182-04-01-07-10 City of Šibenik	
Building permission	06.11.2009.	Confirmation of the main project 2182-01-08-12-9	
Confirmation of the main project (hall 2)	23.05.2012.	License Reg. no. 2182/01-08-18-0015	
Building use permit (hall 2)	01.12.2016.	Operating license Reg. no. 2182/01-08-16-0009	
Air emission permit	Regulated by Croatian laws: Air Protection Act (Official Gazette 130/11,47/14,61/2017) and Regulation on GVE of air pollutants from stationary sources (Official Gazette 117/12,90/14,87/17) and Ordinance on monitoring of pollutant emissions into the air from stationary sources (Official Gazette 129/12,97/13).		
Permits and internal technological instructions for wastewater treatment and the discharge of treated wastewater into the public drainage system and/or the process water recirculation system	06.11.2009.	Operating permit upon fulfilment of water law conditions Reg. no. 2182701/City of Šibenik	
	18.10.2007.	**Water law conditions** Reg. no. 374-24-4-07-2/AB / Croatian waters	
	15.02.2010. (II. edition)	Technological instructions for dealing with water soluble coating for molds in the M.A.I.D/Internal IVANAL_132	

Permits and operational plan of interventions in environmental protection	06.12.2023.(VI. edition)	Waste management plan/**Internal** IVANAL	For better and easier understanding and storage of waste, the Waste Management Plan is still actual even though IVANAL d.o.o. as an organization, it is no longer obliged to draw up waste management plans, all in accordance with Article 48 of the Law on Sustainable Waste Management NN 94/13, 73/17, 14/19, 98/19, because the organization has a valid ISO 14001 certificate issued by B.V.
	22.02.2022.	**Waste management permit** Reg. number 2182-16/29-22-9 (Šibenik-Knin County: Administrative Department for Environmental Protection, Spatial Planning, Construction and Utilities)	
Permit and internal technological instructions for safe work with dangerous chemicals	07.06.2019.	**Solution for carrying out the activity of using dangerous chemicals (except acutely toxic category 1 and chemicals that act in the form of gas)** Reg. number 534-07-1-1-3/3-19-2/ Ministry of Health	
Registration of the activities of production, placing on the market and use of chemicals in the court register	15.02.2024.	**Solution for the activity of production, placing on the market and use of chemicals.** EUID: HRSR. 070062167	

4. Checklist of local factors to be taken into account to describe the state of the local environment – in general

Table 2: *Characteristics of emissions of pollutants into the environment in relation to ecological standardization*

Air quality	There is not a single Environmental Protection Standard that would be threatened due to additional contributions from the overall activities at the company location
	There is no local Air Quality Management Plan that would be applicable to the discharge of pollutants for the company's activities
	There is not a single Environmental Protection Standard that would be threatened due to additional contributions from the overall activities at the company location

Water quality and natural sources	There are no local activities that would threaten groundwater or the zone sensitive to nitrate emissions

Table 3: *Environmental impact of the company's activities on the environment (people and nature)*

Proximity to sensitive environmental areas	There is no single vulnerable group or population, for example schools or hospitals
	The public is not at risk due to problems with noise, smell or visibility of gas emissions from the Installation
	There is a sensitive zone with agricultural areas: Donje polje - Šibenik: 6 km

5. Specification of relevant impacts on the local and cross-border environment

Table 4: *Identification of aspects of the environment according to the environment - the public*

Influence	**Relevant (YES/NO)**	**A subtle point and a way to justify the applicability of a particular criterion**	**Over boundary pollution**
Air emission	YES	Dust and flue gases - see note on contamination at company location	NO
Emission to surface waters	NO	-	
Emission into sewer	NO	-	-
Emission to **groundwater**	NO	-	-
Deposition of pollution from the air to the ground	NO	-	-
Noise and vibrations	NO	-	-
Scents	NO	-	-
The risk of environmental accidents and their consequences	YES	Risk of exploding gas containers (5 LPG tanks with a total capacity of less than 50 t)	NO
A visual impact that can be added to the company's activities	NO	-	-
Global warming (energy use)	YES	CO_2 emission	NO
Ozone formation	NO	-	-
Waste treatment and disposal	YES	See the chapter on waste management at the company location	NO

Storage of hazardous chemicals	YES	See the chapter on the use and storage of hazardous chemicals at the company location	NO

6. Results of observing the state of the environment by individual aspects:

6.1. In general

Ivanal d.o.o. has:

- ✓ established and implements a policy of integrated environmental quality management
- ✓ set the goals of the environmental management system
- ✓ made an annual report for the Pollutant Emissions Register
- ✓ conducted the annual assessment of the Administration for the analysis of environmental protection
- ✓ made a report on the state of the environment available to the public within the complete content of this website

6.2. Water use and pollution prevention

At the location, **there are:**

- **Sanitary wastewater**, which is discharged into the public drainage system of the Podi Industrial Zone. The output of used city fresh water, as sanitary water, into the sewage system is: **3 m^3/day**. *Sewage (sanitary) water is discharged into a collector with a biodisc, which is common to the entire location - the business zone Podi*
- **Technological water.** There are two main types of these waters that have a common source of fresh water taken from the public water supply (hydrant water). The system of using fresh water allows it to be separated into two special systems/branches:

A. Recirculating watercooling system that does not produce waste water

B. Water-soluble coating preparation system, mold spraying/coating and collection of water-soluble coating. The used water-soluble coating is brought to the M.A.I.D purification plant, where the components of the waste emulsion are separated by chemical treatment and purified water and waste sludge (sediment) are produced. *The output quality of purified wastewater before discharge into the absorption well is in accordance with the provisions of the Ordinance on limit values of indicators of hazardous and other substances in wastewater (OG 40/99 and OG 06/01), while the generated waste sludge is handed over to collectors and recyclers for disposal. Pursuant to the law on sludge management, once a year a physico-chemical analysis of waste sludge is made, which due to its properties is intended for thermal treatment (incineration).*

- **Rainwater** from manipulative surfaces is discharged through the separator into the absorption well. Rainwater from part of the roof surface is drained into the "rainwater" pool and serves to supplement the technological water recycling system. The amount of these waters depends on the climatic conditions in the region.

Table 5: *Tabular representation of the effectiveness of the applied measures in reducing fresh water consumption*

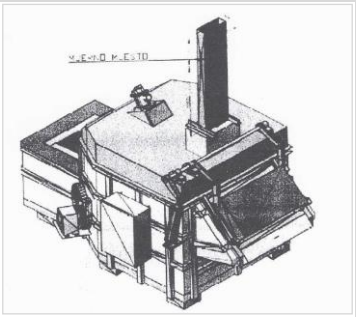
Measures	**Achieved results**
Reuse of cooling water	100% applied
The use of rainwater in exchange for the consumption of hydrant water from the public water supply	25% applied

6.3. Air emission and air protection

Impacts on the air are related to:

a) melting process in smelting furnaces
b) supporting gas furnaces to maintain the temperature of the molten metal and
c) final processing of castings by sandblasting

a) in the smelting process, the source of air pollution are the chimneys of the aluminum smelting furnace (chimney of the Botta furnace type 40/15 (furnace capacity 4000 kg of melt and melt production of 1500 kg/h) and the chimney of the FRCA 2030 MODIFIED (capacity 3000 kg and melt production 2000 kg/h). The FRCA 2030 melting furnace for the was installed in 2024. It contains three Kromschreder type burners, one with a thermal power of 349 kW which is used to maintain the melt temperature and two with a thermal power of 1279 kW which are used for melting.
Three Kromschreder burners with thermal power are installed on the Botta furnace, one of 450 kW for maintaining the temperature of the melt and two of 600 kW for melting. Approximately 50% of aluminum bars are used as raw material, and 50% is return material from production (Al scraps), while LPG gas is used as fuel. *The polluting gases produced in the process of gas melting and combustion are discharged into the atmosphere via the furnace chimney. There are no significant sulfur (IV) oxide emissions from the smelting process since LPG gas is used as fuel.*



Manufacturer: IMPIANTI ENGINEERING SRL
Nominal power: 230 W
Fuel: LPG gas
Burner: Gas, Kromschroder

b)
c) *At the drain, a sandblaster (CARLO BANFI) is connected to a dry filter that works on the principle of dry filtration of polluted air. The polluted air enters the funnel, where coarse dust particles are separated, and the purified air goes outside via the exhaust fan. The sandblasting process is characterized by the emission of powdery substances into the air.*

According to the Air Protection Act (OG 127/19) and the Regulation on GVE of Air Pollutants from Stationary Sources (OG 42/21) and the Rulebook on Monitoring Air Pollutant Emissions from Stationary Sources (OG 47/21), measurements are performed pollutant emissions from stationary sources (outlet of melting furnaces FRCA 2030 and Botta, furnace P1-11). The results of pollutant emission measurements into the air with legal requirements are given in tables 6 and 7.

Table 6: *Compliance of pollutant emissions into the air with legal requirements for the characteristics of specific emissions measurement*

Source	Significant components-pollutants	Measurement results mg/m³		GVE	Type of measurement
		Botta	**FRCA 2030**		
Melting of aluminum bars in flame smelting furnaces, Botta and Marconi powered by LPG	Total powdery substances	10.56	11.9	[1] 50	Occasionally (at least once in 5 years)
	CO	26.93	41	[2]	
	NOx	65.03	68.49	[3] 350	
	SO_2	14.73	12.06	[3] 350	
	Total volatile organic compounds TVOC	9.05	7.04	[4] 50	

[1] Annex 2: General GVE for stationary sources, Regulation on GVE (OG 42/21)

[2] No GVE for CO

[3] Annex 2: GVE for inorganic substances in the form of steam or gas, Regulation on GVE (OG 42/21)

[4] Annex 2: GVE for organic substances, Regulation on GVE (OG 42/21)

Table 7: *Compliance of air pollutant emissions with legal requirements by characteristics of specific emissions measurement (for supporting gas furnuces)*

Source	Significant components-pollutants	Measurement results	GVE	Type of measurement
		Gas furnace 4		
Gas furnaces (1-10) TL- for maintaining the temperature of molten metal	Smoke number	0	0	Every 2 years
	CO	41.4	100 mg/m³	
	Nitrogen oxides expressed as NO_2	186.1	200 mg/m³	
Annex 10 of the Regulation on GVE (Official Gazette 42/21) for small devices that use gas fuels, with a volume fraction of oxygen of 3%				

From the measurement results, it is evident that the applied technology achieves emission concentrations in accordance with the limit values prescribed by Decree OG 42/21.

6.4. CO_2 footprint

CO_2 emission		kg/kWh	Coef.	CO_2 (tonn)
Gas, LPG	Ivanal	589,835	3.395	2,002
Electricity, kWh	Ivanal	2,879,938	0.179	516
		497,447		**2,518**

All customers:

Production	**1,838,805**	**kg**
Total emission	1.37	CO_2/kg

1.37 kg/CO_2 per 1 kg Al

7. Safe work with chemicals

Impacts on water and soil are also related to working with chemicals used in:

a) production units: Smelting, Die casting, surface treatment of castings
b) water treatment processes (preparation of feed water, treatment of cooling system water and treatment (purification) of waste emulsion of water-soluble coating.

All chemicals are stored on steel receiving tanks which are used as receptacles for receiving chemicals in case of leakage from the original containers (buckets, barrels, containers...). In incident situations and in case of leakage of significant quantities of products, highlighted work instructions and notices on procedures to reduce the extent of accidents with chemicals when they occur have been prepared.

The spilled chemical and *the absorbent inert agent* (*earth, sand, sawdust...*) *used to reduce the leakage of the chemical* are transferred to appropriate watertight containers and handed over to legal authorities for the collection of hazardous waste.

8. Waste management

Table 8: *Balance of waste generated in the installation (company)*
Waste disposed of in 2024

No. of waste	Name of the waste	Quantity /t
08 03 17*	waste printer toners containing hazardous substances	0.024
10 03 16	floating foam/slag not specified under 10 03 15*	74.74
12 01 01	scrap and sawdust containing iron	10.7
12 01 03	scrap and shavings of non-ferrous metals	1.88
13 05 02*	sludge from the separator	0
13 05 07*	oily water	0.21
15 01 10*	packaging that contains residues of dangerous substances or is contaminated with dangerous substances	1.02
15 02 02*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths and protective clothing, contaminated with hazardous substances)	8.67
19 11 05*	sludges from the treatment of effluents at the place of their origin, which contain dangerous substances	0
19 12 03	non-ferrous metals	32.36
15 01 04	Me-packaging	0.12
17 04 05	Iron and steel	56
12 01 08	Oily water from vibrofinishing	4.5
12 01 14	sludge form vibrofinishing	0.48

12 01 21	Worn grinding bodies	2.97
∑		**193.674**

9. Results of achieving environmental goals for 2024

	GOALS	STATUS
1.	Reconstruction of the MAID for the processing the waste emulsion	**Achieved 100%**
2.	Installation of LED lighting in production hall 2	**Achieved 100%**
3.	Installation of solar panels in production hall 2	**Achieved 100%**
4.	Improving the ESOTEHNA cooling system by installing EV measurement devices and replacing water loss with rainwater	**Achieved 100%**
5.*	Purchase of machines for pressing waste paper and cardboard and baling Al an Fe-scrap.	(https://www.vanestmachinery.com/V-EB500-Metal-Shredder-Machine-p.html) Ponuda
6.*	Establishing safe disposal and storage of hazardous chemicals	Planned implementation is in 2025 (Construction of a central warehouse for hazardous chemicals) https://www.kaiserkraft.hr/skladisni-kontejneri/skladisni-kontejneri-za-opasne-tvari/kontejner-za-skladistenje-opasnih-materijala-koji-ugrozavaju-vode/vanjska-vxsxd-2385-x-3075-x-2075-mm/p/M67908/
7.	Purchase and installation of a new central furnace (the goal is to reduce LPG consumption)	**Achieved 100%** (furnace FRCA 2030 started to work on 11.03.2024.)
8.	Purchase of an electric forklift for internal transport	**Achieved 100%**
9.	Introduction of standard ISO 50001 for energy management system	**Achieved 100%** (certification 30.08.2024.)
10.	Continuous employee education on environmental protection	

*Due to the state of the automotive industry market, less production in 2024. and financial reasons, goals 5 and 6 have been postponed for realization in 2025.

Company IVANAL TVORNICA ALUMINIJA d.o.o. communicates with authorities about environmental aspects, namely:

- through the register on the import and use of dangerous chemicals no later than 31.01. for the previous year, reports are submitted to the **Croatian Institute of Public Health, Department of Toxicology** (address: Borongajska 83g, 10 000 Zagreb, Fax: 01 | 46 41 368, E-mail: hzt@hzt.hr);

- with authorized companies for the disposal of hazardous waste (through the log book upon the generation of hazardous waste and accompanying sheets upon receipt of hazardous waste by the company authorized for the disposal of hazardous waste
- by means of a register upon the generation of non-hazardous waste and accompanying sheets upon receipt of non-hazardous waste by a company authorized to dispose of non-hazardous waste
- **Environmental Protection Fund** through forms RPPO (packaging waste, import/import of EE equipment and fresh lubricating oils). Address: Radnička cesta 80, 10000, Zagreb, naknade@fzoeu.hr , by the **Environmental Protection Agency** through the ROO register (Address: Environmental and Nature Protection Agency, Radnička cesta 80/7 10000 Zagreb)
- Environmental inspection, certification agencies and customers

LEGAL REGULATIONS AND DATA SOURCES:

Environment

- Law on Environmental Protection (OG 80/13, 78/15, 12/18, 118/18)

Waters

- Law on Water (OG 066/19, 084/21, 47/23)
- Rulebook on waste water emission limit values (OG 026/20)

Waste

- Law on Waste Management (OG 084/21)
- Rulebook on waste oil management (124/06, 121/08, 31/09, 156/09, 91/11, 45/12, 86/13)
- Rulebook on waste EE equipment management (OG 139/14, 011/19, 07/20)
- Rulebook on waste management (OG 106/22)

Air

- Air Protection Law (OG 127/19, 57/22)
- Regulation on limit values of pollutants from stationary sources (OG 042/21)
- Rulebook on monitoring emissions of pollutants into the air from stationary sources (OG 047/21)

Chemicals

- Law on Chemicals (OG 018/2013, 115/18, 037/20)
- Rulebook on the method of keeping a record book on chemicals and on the method and deadlines for submitting data from the record book (OG 099/13, 157/13, 147/21)
- Law on the Implementation of Regulation (EU) no. 528/2015 of the European Parliament and the Council regarding the making available on the market and use of biocidal products (OG 39/13, 47/14, 115/18, 62/20)
- Law on Biocidal Products (OG 63/07, 35/08, 56/10)

- Rulebook on the list of existing active substances allowed in biocidal preparations (OG 5/14)

Energy

- Energy Law (OG 120/12, 14/14, 102/15, 68/18)
- Electricity Market Law (OG 112/21, 83/23)
- Gas Market Law (OG 18/18, 23/20)
- Thermal Energy Marcet Law (OG 80/13, 14/14)
- Oil and Oil Derivatives Market Law (OG 19/14, 73/17, 96/19)
- Biofuels law (OG 5/09, 145/10, 26/11, 144/12, 14/14, 94/18, 52/21)
- Law on Regulation of Energy Activities (OG 120/12, 68/18=
- Law on renewable energy sources and high-efficiency cogeneration (OG 111/18, 138/21, 83/23)
- Energy Efficiency Law (OG 127/14, 116/18, 25/2020, 32/2021, 41/2021)
- LPG Rulebook (OG 117/07)
- Regulation on the criteria for the payment of reduced compensation for renewable energy sources and high-efficiency cogeneration (OG 31/2023)
- Decision on compensation for renewable energy sources and high-efficiency cogeneration (OG 31/23, 24/24)