

**>> TERRAFAME LTD.  
INTERIM REPORT Q2 2017**

## Terrafame's nickel production in H1 exceeded the production volume of the whole previous year – Net sales totalled EUR 88.5 million

### Key figures in January–June 2017 (H1 2016 reference period in parentheses)

- 21,108 tonnes of nickel (14,391) and 43,388 tonnes of zinc (27,543) were stacked on the primary heap.
- 10,447 tonnes of nickel (3,653) and 23,037 tonnes of zinc (8,451) were leached.
- 9,963 tonnes of nickel (3,309) and 20,995 tonnes of zinc (7,567) were produced.
- Net sales totalled EUR 88.5 million (32.2).
- EBITDA without change in value of work in process (WIP) was EUR -57.5 million (-98.2).
- EBITDA was EUR -51.3 million (-97.9).

### Key figures in April–June 2017 (Q2 2016 reference period in parentheses)

- 11,038 tonnes of nickel (7,761) and 23,149 tonnes of zinc (14,767) were stacked on the primary heap.
- 5,361 tonnes of nickel (2,158) and 12,657 tonnes of zinc (5,873) were leached.
- 5,176 tonnes of nickel (1,754) and 11,204 tonnes of zinc (4,070) were produced.
- Net sales totalled EUR 47.2 million (18.0).
- EBITDA without change in value of work in process (WIP) was EUR -24.2 million (-45.2).
- EBITDA was EUR -32.9 million (-44.8).
- 12 month rolling lost-time injury frequency, meaning the number of injuries per one million person-hours worked, was 4.4 (6.4).

### Key events in April–June 2017

- In the second quarter, the metals production plant reached the highest quarterly production volumes in the plant's history, 5,176 tonnes of nickel and 11,204 tonnes of zinc produced during a quarter. Nickel production volume in the first half of the year was 9,963 tonnes, exceeding the production volume of the whole year 2016.
- The primary bioleaching area was taken in full production use in mid-May, when the area was fully stacked with new ore. At the end of the second quarter, a total of 26.7 million tonnes of ore had been stacked to primary heaps during Terrafame's operations between 15 August 2015–30 June 2017. In the secondary leaching area, heap 3 was taken in production use in May.

- The net realisable value of work in process decreased by EUR 8.7 million to EUR 56.3 million at the end of June. The change in value resulted from the unfavorable development of the nickel market price globally and of the US dollar exchange rate.
- The amount of water stored at the site was 3.7 million cubic metres at the end of June. Despite the spring melt waters, there was no need to use the full discharge quota for purified waters set in the environmental permit.
- Terrafame announced on 21 June 2017 that it is preparing a laboratory scale trial on the extraction of rare earth elements and uranium. The company is preparing to apply for a permit to recover uranium from the Government of Finland this year at the earliest.

### Events following the reporting period

- Terrafame began the productisation of copper at its metals production plant in the beginning of July.
- The Kainuu Centre of Economic Development, Transport and the Environment provided its statement regarding Terrafame's smelter-related supplement to the EIA (Environmental Impact Assessment) programme for mining operations on 4 July 2017.

### Financial and production figures

	2017 Q2	2016 Q2	2017 H1	2016 H1	Year 2016
<b>Finances</b>					
Net sales, EUR million	47.2	18.0	88.5	32.2	101.0
EBITDA without change in WIP*, EUR million	-24.2	-45.2	-57.5	-98.2	-170.0
EBITDA, EUR million	-32.9	-44.8	-51.3	-97.9	-120.4
Operating profit/loss, EUR million	-37.3	-48.0	-59.8	-104.1	-134.4
Investments, EUR million	24.9	35.2	41.4	46.0	84.3
<b>Ore processing</b>					
Ore to primary heap, million tonnes	4.5	3.1	8.4	5.8	14.2
Nickel to heap, tonnes	11,038	7,761	21,108	14,391	37,042
Zinc to heap, tonnes	23,149	14,767	43,388	27,543	70,299
<b>Bioleaching</b>					
Nickel leached, tonnes	5,361	2,158	10,447	3,653	11,584
Zinc leached, tonnes	12,657	5,873	23,037	8,451	27,868
<b>Metals production plant</b>					
Nickel produced, tonnes	5,176	1,754	9,963	3,309	9,554
Zinc produced, tonnes	11,204	4,070	20,995	7,567	22,575

\*) WIP = work in process

## CEO Joni Lukkaroinen's review

“In the second quarter of the year, we continued the ramp-up and stabilising of our operations. Our nickel production volume in the first half of the year exceeded the nickel production of the whole previous year. The annual maintenance stoppage of our metals production plant at the turn of May and June reduced production and sales volumes in the second quarter.

Our financial performance was weakened by the decrease in the global market price of nickel and the unfavourable price development of the US dollar. Compared to the first quarter of 2017, the average price of nickel in the global market decreased by 10.2% in the second quarter, and the average exchange rate of the dollar against the euro decreased by 3.5%. In addition, nickel stock levels are still high globally, and the decisions of Indonesia and the Philippines to allow increasing export volumes of nickel ore have weakened the global market price.

In mining production, our ore processing volumes reached a record level during the second quarter. The primary leaching area was taken in full production use in mid-May, when the area was fully stacked with new ore. The bioleaching performance at the primary and secondary areas was at a good level, and the metals production plant reached the highest quarterly production volume of nickel and zinc in the plant's history. We estimate to operate at full production rate by the third quarter of 2018. The unit costs of Terrafame's operations per nickel tonne decreased as estimated and, during the second quarter, were once again lower than ever before during the company's operations. Our costs also stayed well within budget.

In the second quarter, we continued to explore the possibilities to increase the value of nickel product and at the end of June, we announced to begin the productisation of copper. In addition, we also applied for a permit from the Finnish Radiation and Nuclear Safety Authority to conduct a laboratory scale trial on the extraction of uranium and rare earth elements.

Our personnel has achieved very good results in occupational safety. At the end of June, our 12 month rolling lost-time injury frequency, meaning the number of injuries per one million person-hours worked, was 4.4.”

## Market development

During the second quarter of 2017, the average price of nickel was USD 9,225 per tonne, which is 10.2% lower than in the first quarter of 2017 (Q1 2017: 10,271) but 4.6% higher than in the second quarter of 2016 (Q2 2016: 8,823). Key factors affecting nickel price fluctuation were the decision by the government of Indonesia to partially lift the export ban of nickel ore, as well as the new plans announced by the Philippines not to implement its previous decision to shut down or suspend production at several mines planned for environmental reasons.

The combined nickel stock levels of the London Metal Exchange (LME) and the Shanghai Futures Exchange (SHFE) have decreased every quarter since the first quarter of 2016. During the second quarter of 2017, the stock levels decreased by more than 13,000 tonnes, totalling approximately 440,000 tonnes.

During the second quarter of 2017, the average price of zinc was USD 2,596 per tonne, which was 6.6% lower than in the first quarter of 2017 (Q1 2017: 2,780) and 35.3% higher than during the second quarter of 2016 (Q2 2016: 1,918). The price of zinc remained at a good level, supported by the decreasing zinc stock levels.

The combined zinc stock levels of LME and SHFE decreased by approximately 199,000 tonnes during the second quarter of 2017 and totalled approximately 356,000 tonnes.

## Investments

In the second quarter of 2017, Terrafame's investments totalled EUR 24.9 million (Q1 2017: 16.5 and year 2016: 84.3).

The most significant investments of the second quarter include the construction of foundations for two secondary bioleaching heaps and a new waste rock area as well as the construction of a third hydrogen sulphide production line. In the April–June period, the company also invested in increasing the zinc filtration capacity as well as in the alteration work required by copper recovery.

## Environmental safety

The management of spring melt waters was carried out well within the permit limits. A total of approximately 1.5 million cubic metres of melt waters accumulated in the catchment area of the mining site. Despite of this, Terrafame did not need to use the full discharge quota for purified waters set in the environmental permit.

During the second quarter, purified water was led to the northern discharge route via both the discharge pipe and River Kalliojoki. However, between 15 March – 5 May 2017 the discharge pipe was used only as much as was necessary to keep the pipe free of ice. The purified water discharge quota granted for the southern discharge route has not been used in over a year. At the end of June, there was approximately 3.7 million cubic metres of water stored at the site (end of Q1 2017: 2.9 million cubic metres).

Terrafame continued using both the centralised water treatment plant and the reverse osmosis plant for sulphate removal. In the second quarter, the sulphate concentration in the purified water discharged from the site was approximately a half of the limit value and the metal concentrations were for the most part approximately a tenth of the limits set for them. In April–June, the reverse osmosis plant was used to direct approximately 1,104 tonnes of reject containing sulphate (Q1 2017: 1,564) back to the heaps. Also the amount of PLS (pregnant leach solution) in bioleaching remained at optimum level.

Terrafame constantly monitors the condition of the lakes near its mining site, in accordance with a monitoring programme approved by the responsible authority. The condition of Lake Nuasjärvi in Kainuu has also been monitored intensively in the joint project of the Kainuu ELY Centre, Geological

Survey of Finland (GTK) and Finnish Environment Institute. Based on the measuring results from the early summer, the spring overturn of Lake Nuasjärvi was complete also in the depressions and oxygen levels in all of the deep areas were very good. Also the condition of the nearby lakes below the mining concession has improved or remained unchanged, and Lake Jormasjärvi and Lake Laakajärvi and the lakes below them suit recreational purposes very well.

The Supreme Administrative Court (SAC) issued its decision on Terrafame's key environmental permit matters on 9 May 2017, retaining the decisions issued by the Vaasa Administrative Court (VAC) in April 2016 mostly in force. On the basis of the decision, the company has continued the ramp-up and development of its operations in a responsible manner and as planned. In accordance with the environmental permit that entered into force in May, Terrafame has arranged for a EUR 107 million guarantee to ensure its waste management.

Terrafame will submit an environmental permit application encompassing its entire operations to the Regional State Administrative Agency of Northern Finland by the end of August 2017, so the permits that were enforced by the decisions of the SAC will remain in force until the new permit enters into force. Related to the permit process, the company is also carrying out two environmental impact assessment (EIA) procedures. The Kainuu Centre of Economic Development, Transport and the Environment published Terrafame's EIA report on the water management in April and a smelter-related supplement to the EIA programme for mining operations in May. In the second quarter, Terrafame also prepared the EIA report on mining operations to be submitted to the authority in the beginning of August 2017.

## Personnel and occupational safety

At the end of June, Terrafame employed 757 people including summer employees (end of Q1 2017: 662). In addition, approximately 70 partner companies employing approximately 693 people operated at the site in the second quarter (end of Q1 2017: 623).

During the first six months, two lost-time injuries occurred at Terrafame, resulting in a total of eight days of absence. Terrafame's lost-time injury frequency, meaning the number of injuries per one million person-hours worked, was 4.4 for the past 12 months at the end of June (end of Q1 2017: 6.4). The target for this year is below 5.0 (lost-time injury frequency in 2016: 8.4).

Terrafame has provided jobs for nearly 90 people in production and in office for the summer months. The company received applications from all around Finland, and also many graduates of different ages were offered a summer job. In accordance with the Responsible Summer Job campaign, Terrafame wants to guarantee that summer employees gain good experiences from their summer jobs.

## Near-term outlook

Terrafame's main target is to further increase the production and delivery volumes of nickel and zinc as well as to improve cost-efficiency, in accordance with the business plan. The company began the

productisation of copper in July and will also explore the possibilities and environmental impacts of further processing of nickel in the coming months.

At the end of June, Terrafame applied for a permit from the Finnish Radiation and Nuclear Safety Authority to conduct a laboratory scale uranium trial where no uranium oxide nor other further processed products are formed yet. In addition to the study on uranium, the objective is to explore the opportunities related to rare earth elements. The company is preparing to apply for a permit to recover uranium from the Government of Finland during 2017 at the earliest.

Terrafame will apply for an environmental permit encompassing its entire operations from the Regional State Administrative Agency of Northern Finland by the end of August 2017.

*Terrafame Ltd.'s financial information for 2017 presented in this release are unaudited FAS figures.*

### **Further information:**

Joni Lukkaroinen, CEO of Terrafame Ltd., tel. +358 50 590 0720, [joni.lukkaroinen\(at\)terrafame.fi](mailto:joni.lukkaroinen(at)terrafame.fi)

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Terrafame Ltd. is a Finnish multi-metal company producing nickel, zinc and cobalt at its mine and metals production plant located in Sotkamo. Our aim is to conduct environmentally sustainable, safe and profitable operations.