

## 2Q 2016 OPERATIONS REVIEW

TiZir Limited owns 90% of the Grande Côte Mineral Sands Project in Senegal, West Africa and 100% of the ilmenite upgrading facility TiZir Titanium & Iron, in Tyssedal, Norway.

### KEY POINTS

- Record sales of zircon, rutile and leucoxene
- GCO mining operations achieved a record average throughput in June of 7,350tph
- Sustained ramp up progress at TTI
- Improving high grade titanium feedstock markets

### GCO

Mining operations at GCO continue to demonstrate the ability to deliver nameplate targets (with the dredge, for example, averaging a throughput rate of 7,350tph for the month of June). Efforts focus on ongoing optimisation projects and achieving operational consistency.

In the mineral separation plant ('MSP'), zircon yields were back on par with the record production levels achieved in 4Q 2015 and rutile & leucoxene production also increased throughout the quarter. These improving yield results follow the completion of a number of optimisation projects successfully commissioned during the quarter including an up current classifier in the feed prep circuit and middling circuit upgrade in the primary dry mill circuit at the MSP. Quarterly MSP activity also focused on optimising the product specification of GCO ilmenite consumed by TTI, which, in turn, will enhance titanium slag quality at TTI. Implementation of these modifications is partly responsible for the decrease in ilmenite production during the quarter.

Record sales volumes for zircon and rutile & leucoxene were achieved during the quarter. The sales team continued its initiatives to take advantage of the high quality zircon produced at GCO. Sales volumes of ilmenite in 2Q 2016 were significantly higher than 1Q 2016 sales, due largely to timing of shipments.

### GCO production volumes

100% basis		2Q 2015	3Q 2015	4Q 2015	1Q 2016	2Q 2016	1H 2015	1H 2016
<b>Mining:</b>								
Ore mined	(kt)	7,522	8,165	11,033	9,583	<b>10,291</b>	15,562	<b>19,874</b>
Heavy mineral concentrate produced	(kt)	136.6	176.0	188.7	140.7	<b>138.9</b>	268.3	<b>279.6</b>
<b>Finished goods production</b>								
Ilmenite	(t)	97,789	113,679	126,433	107,181	<b>92,783</b>	187,578	<b>199,964</b>
Zircon	(t)	11,357	11,159	13,614	10,713	<b>13,608</b>	20,475	<b>24,321</b>
Rutile & Leucoxene	(t)	1,247	1,076	1,353	1,906	<b>2,524</b>	2,882	<b>4,430</b>

## GCO sales volumes

100% basis		2Q	3Q	4Q	1Q	2Q	1H	1H
		2015	2015	2015	2016	2016	2015	2016
<b>Sales volume</b>								
Ilmenite	(t)	64,051	145,551	138,958	65,001	<b>118,649</b>	135,908	<b>183,650</b>
Zircon	(t)	12,196	11,415	11,742	9,661	<b>12,758</b>	18,698	<b>22,419</b>
Rutile & Leucoxene	(t)	1,406	1,804	1,379	1,740	<b>2,300</b>	1,428	<b>4,040</b>



Grande Côte Operations, Senegal, West Africa

## TTI

The ramp up of operations at TTI continues to proceed well, with the operation of the furnace in particular exceeding expectations.

While 1H 2016 performance was impacted by the ramp up of production following the reline and capacity expansion project undertaken at the end of 2015, titanium slag production at TTI reached levels close to the same period last year. There were periods during the quarter where the furnace was operating close to its expanded nameplate capacity. Optimisation projects aimed at maintaining the performance of the operations at its expected capacity will continue throughout 2016.

TTI achieved a positive EBITDA of \$6.0 million for the first half of the year, despite the ramp up of operations on the back of a strong sales performance. The new products from TTI have been well received by the market. This result is a significant achievement given the commencement of chloride slag production in January and the prevailing market conditions throughout 1H 2016.

## TTI physical volumes

100% basis		2Q	3Q	4Q	1Q	2Q	1H	1H
		2015	2015	2015	2016	2016	2015	2016
<b>Titanium Slag</b>								
Produced	(kt)	37.1	25.9	-	34.8	<b>44.2</b>	80.9	<b>79.0</b>
Sold	(kt)	38.8	36.7	26.0	31.2	<b>50.2</b>	69.0	<b>81.4</b>
<b>High Purity Pig Iron</b>								
Produced	(kt)	20.2	15.0	-	14.1	<b>17.8</b>	44.2	<b>31.9</b>
Sold	(kt)	23.5	17.0	4.3	9.9	<b>20.5</b>	43.3	<b>30.4</b>



*Tizir Titanium & Iron ilmenite upgrading facility, Tyssedal, Norway*

## MARKETS

Strong sales in the quarter from both GCO and TTI, demonstrate improving market conditions in the mineral sands sector.

In respect of high grade titanium feedstocks, the sector has benefited from a strong supply side response among other developments in recent times. These included:

- plant closures, idled capacity and inventory destocking particularly by major producers
- a lack of available capital which has undermined the development of both greenfield and brownfield projects
- closure of mining operations due to ore body depletion
- financial pressures encouraging consolidation and rationalisation

Titanium dioxide inventories have also been reported by several producers to have reached normal levels for the first time in four years.

This supply side response is finally being recognised on the demand side with price rises being achieved by pigment producers in recent pricing negotiations. Strong margins are currently being enjoyed by downstream pigment users providing a further indication that a demand recovery is underway.

While the demand for zircon remained steady and GCO benefited from the high quality of its zircon product, the price decreases announced by some major producers for standard and lower grade zircon products negatively impacted 2Q 2016 prices. While, North American and European markets have slowed, they are showing signs of stabilising; in particular, positive signs are appearing in the European tile market.

A strong increase in high purity pig iron prices occurred in April followed by a correction in May. June prices appear to have stabilised.