




Equipment overview

					
Facilities	Processing Equipment	Facilities	HPU	3D Printer	
Test facilities of 2,500 m2 with complete infrastructure	Bench scale ball mill	Industrial plant with laboratory, pilot and full scale equipment.	HPU-1, 1 MW with ringline and control system	Hybrid CNC 3d steel printer	
Transformators for > 1 MW power	Jaw crusher retsch BB300	Location: Kristiansand, Norway	HPU-2, 1 MW with ringline and control system	3d composit printer	
Cranes	KSP2 pilot scale automated crusher screening system	Beneficiation plant with laboratory, pilot and full scale equipment.	Lifting and Handling	Nano pulver maskin	
Trucks and lifts	Manual screens	Location: Glamslund, Norway	50 mT service crane	Metal Injection Molding	
Furnace/ Kilns/ Ovens	Retsch screening mod VE 200mmØ, 10 decks	Water based systems	Truck	Hot Isostatic Pressure	
Induction furnace 16 kW - (1 kg Fe, Fixed position)	Kason brass screen 800 mmØ, 4 deck	Multiple filterpresses (2 litre to 1000 litre)	High Force load table	Powder bed printer	
Induction furnace 30 kW - (6 kg Fe, Fixed position)	KSP screening 3 decks	Vacuum filter	1000mT High force test bed	AR & VR equipment	
Induction furnace 75 kW - (60 kg Fe, Lip axis tilt)	Eirich Lab scale pelletizer	Hydro cyclone 1"	Electrical Power high capacity outlet	VR-AR-computer 1	
Induction furnace 225 kW - (300 kg Fe, Lip axis tilt)	Eirich pilot scale pelletizer	Hydro cyclone 2"	1,3 MW Trafo	VR-AR-computer 2	
Induction furnace 250 kW - (340 kg Fe, Lip axis tilt)	Lab to pilot scale pelletizing discs	Hydro cyclone 4"	Climate chamber	HTC Vive - VR	
Induction furnace 600 kW - (1000 kg Fe, Lip Axis tilt)	Pilot scale roller press briquetter	Multiple classification cones based on water media (from 1 to 100 kg)	Climat chamber	Occulus Rift - VR	
Induction furnace 1000 kW - (1500 kg Fe, Lip Axis tilt)	Bunker for small scale hot and cold explosion tests	Multiple flotation cells (Bench to industrial scale)	Heat camera (Fluke)	Microsoft Hololense - AR	
Electric Arc furnace (50 kW)	Laboratory Equipment	Chemical treatment facilities (Bench to industrial scale)	Instrumentation	Daqri Smart glasses - AR	
Electric Arc furnace (100 kW)	XRF	Dry based systems	Measurement and data accusation equipment (NI + Labview)	Google Glasses - AR	
Electric Arc furnace (150 kW)	XRD	Electrostatic separator at 0-35 kV	Sensor and measurement equipment (EL, Temp)	AI & Deep Learning	
Electric Arc furnace (800 kW)	ICP-OES	Multiple magnetic separators (Bench to industrial scale)	Omron IO-Link	Deep learning - AI 1	
Electric Arc furnace (800 kW)	ICP-OES og ICP-MS combined for B and P analysis	Industrial scale classification system (> 4 fraction)	Omron Vision	Deep learning - AI 2	
Lab scale rotary kiln	LECO	Screens (Bench to industrial scale)	Omron Safety	Big Data 1	
Pilot scale rotary kiln	ELTRA C+S	Dryers	Omron IPC	Big Data 2	
Calcination furnace 100 kW	LECO ONH	Rotating drum dryer	Hydac hydraulic meassuretn equipment	Workshop	
Lab scale high temperature tube furnace	LECO ON	Vacuum dryer	3d scanner portable	Air compressor	
Lab scale scale high temperature tube furnace	AAS	Vibrating plate dryer	3d portable camera -max shot	MIG/MAG welding	
High temperature thermo weight	GC-MS	Crushers and mills	3d scanner fixed	TIG welding	
Lab 100- Solidifying unit	Spark OES	Multiple Jaw crushers (Bench to industrial scale)	Machine Learning and CBM	MIG/MAG/MMA welding	
MMC Solidifying unit	Process MS online	Industrial scale Cone crusher	CM-CBM test bench with control system	Welding crab	
Hydrometallurgical Lab	Mastersizer 3000	Multiple Ball and rRd mills (Bench to industrial scale)	Festo industry 4.0 Lab	Welding table	
Bench and lab scale hydrometallurgical lab		Jetmilling in inert atmosphere	Rope test machine	Welding suction equipment	
		Laboratory Equipment	LSMD testing	Steel saw	
		Atomic Absorption Spectroscopy	EL Winch Lab	Drill	
		Multisizer Coulter Counter	Hyd Winch Lab	Grinding machine	
		Systemex FPIA-3000 particle image analyser	20 Robots	Tool trolleys	
		Mastersizer 2000	Nachi MZD4 Robot	Air pressure tools	
		Karl Fischer Titrator	Nachi Arc-Welding Robot with 2 axis table	Electrical hand tools	
		Viscometer	Nachi MC 35 Palletizing Robot	Measurement equipmnet	
			Nachi MZD4 Collaborative Cell Robot	First aid and heart starter	
			Nachi MR20 Compact handling Robot	Testoells	
			ROSI server	Project Hotel	
			Fanuc CR35iA Collaborative Robot	Office space and social area including meetingrooms	
			Fanuc CR7iA7L Collaborative Robot		
			ABB IRB 1600-10 SafeMove Robot		
			ABB IRB 14000 (Yumi) Collaborative Robot		
			Pepper Humanoid Robot		
			Nao 1 Humanoid Robot		
			Nao 2 Humanoid Robot		
			Omron LD-60 (Lynx) 1 AIV Robot		
			Omron LD-60 (Lynx) 2 AIV Robot		
			MIR 200 AIV Robot		
			Kuka KMP 200 AIV Robot		
			Universal Robots (UR 5)		
			Universal Robots (UR 10)		
			Schunk Robot grippers		
			SFI - robotlab		

FUTURE MATERIALS
NORWEGIAN CATAPULT CENTRE