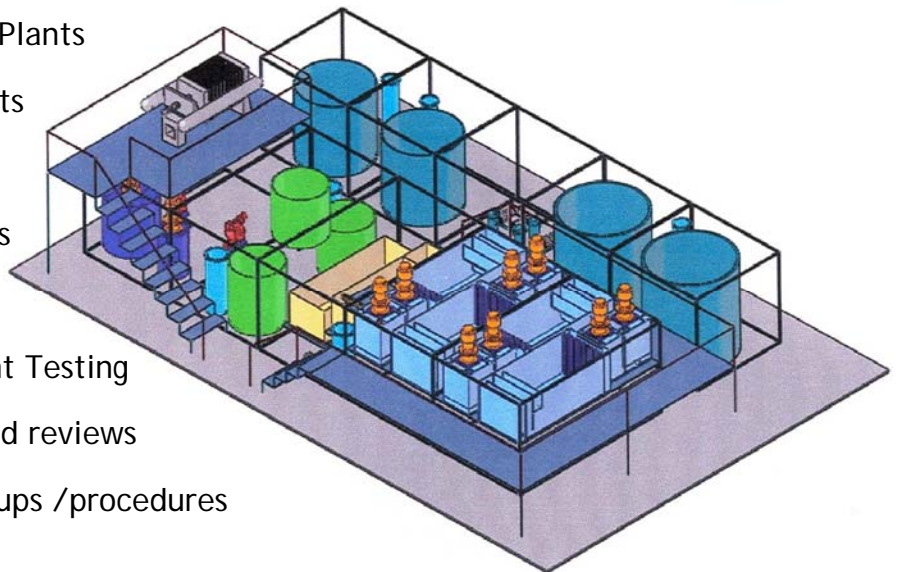


SX Kinetics: The global leader in the design and manufacture of solvent extraction and electrowinning pilot plants has completed over 110 projects in 23 countries for the separation, purification, and recovery of 26 different metals.

Founded on two decades of experience in the development of innovative hydrometallurgical processes, SX Kinetics has focused on extending and advancing the application of solvent extraction and electrowinning. Let us help you with your projects better, faster, and more cost effectively. We blend knowledge and experience into *Solutions!*

Our Products and Services include:

- Laboratory SX and EW Plants
- Solvent Extraction Pilot Plants
- Portable / Modular SX EW Plants
- Hydrometallurgical Pilot Plants
- Electrowinning Pilot Plants
- Full Scale Modular Plants
- Liquid / Liquid Coalescers
- Technical Consulting
- Laboratory and Pilot Plant Testing
- Technical plant audits and reviews
- Assistance in plant start-ups /procedures



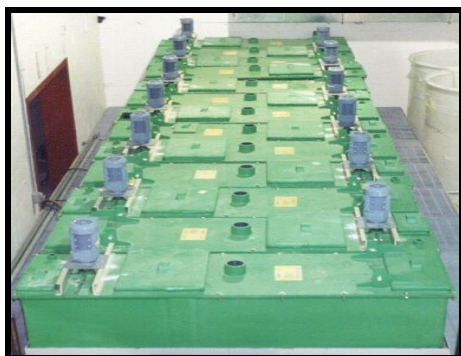
*SX Kinetics' Portable / Modular Solvent Extraction Plant*

**Full Scale SX Plant 1****Project:** sxk-08**Location:** Muskogee, OK, USA**Capacity:** 200 L/min (org + aq)

SX Kinetics designed, manufactured, and installed this commercial scale solvent extraction plant for the recovery of uranium from tantalum residues.

<http://www.sxkinetics.com/productionplants.htm>

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**Full Scale SX Plant 2****Project:** sxk-08**Location:** Muskogee, OK, USA**Capacity:** 40 L/min (org + aq)

SX Kinetics designed, manufactured, and installed this commercial scale solvent extraction plant for the recovery of uranium from scandium residues.

<http://www.sxkinetics.com/productionplants.htm>

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**Full Scale SX Plant 3****Project:** sxk-08**Location:** Muskogee, OK, USA**Capacity:** 40 L/min (org + aq)

SX Kinetics designed, manufactured, and installed this solvent extraction plant for the recovery of tantalum from tantalum residues.

<http://www.sxkinetics.com/productionplants.htm>

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**Full Scale SX Plant 4****Project:** sxk-08**Location:** Cobalt, ON, Canada**Capacity:** 200 L/min (org + aq)

SX Kinetics provided the design of the mixer-settlers and supervised the installation of this solvent extraction plant for the recovery of cobalt.

<http://www.sxkinetics.com/productionplants.htm>

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### SX Pilot Plant 2

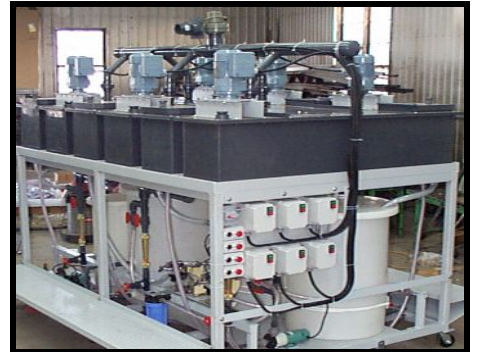
Project: sxk-17

Location: Canon City, CO, USA

Capacity: 16 L/min (org + aq)

SX Kinetics designed and manufactured this solvent extraction pilot plant for a project to recover zirconium from an ore body in Brazil.

<http://www.sxkinetics.com/pilotplants.htm>



### Hydromet Pilot Plant 4

Project: sxk-17

Location: Canon City, CO, USA

Capacity: 1,000 L each

SX Kinetics designed and manufactured these feed tanks for a zirconium solvent extraction pilot plant.

<http://www.sxkinetics.com/hydrometplants.htm>



### SX Pilot Plant 1

Project: sxk-19

Location: Canon City, CO, USA

Capacity: 26 L/min (org + aq)

SX Kinetics designed and manufactured this solvent extraction plant for the demonstration of a new process to produce high purity zirconium.

<http://www.sxkinetics.com/pilotplants.htm>



### Leach Pilot Plant 1

Project: sxk-20

Location: Canon City, CO, USA

Capacity: 10 L/min of feed slurry

SX Kinetics designed, manufactured, commissioned, and operated this agitation leach circuit during a pilot plant project for the recovery of uranium and zirconium.

<http://www.sxkinetics.com/leachplants.htm>



**Hydromet Pilot Plant 1****Project:** sxk-20**Location** Canon City, CO, USA**Capacity:** 10 L/min of feed slurry

SX Kinetics designed, manufactured, commissioned, and operated this counter-current decantation circuit (CCD) during a pilot plant project for the recovery of uranium and zirconium.

<http://www.sxkinetics.com/hydrometplants.htm>

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**Leach Pilot Plant 2****Project:** sxk-20**Location:** Canon City, CO, USA**Capacity:** 1 to 10 L/min of feed slurry

SX Kinetics designed and manufactured these agitated cascading tanks for an acid leaching pilot plant project.

<http://www.sxkinetics.com/leachplants.htm>

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**Hydromet Pilot Plant 2****Project:** sxk-20**Location** Canon City, CO, USA**Capacity:** 10 L/min of feed slurry

SX Kinetics designed and manufactured these thickeners for a counter-current decantation circuit for liquid / solid separation project.

<http://www.sxkinetics.com/hydrometplants.htm>

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**Hydromet Pilot Plant 3****Project:** sxk-20**Location** Canon City, CO, USA**Capacity:** 1 to 3 L/min of feed slurry

SX Kinetics designed, manufactured, and installed this commercial scale solvent extraction plant for the recovery of uranium from tantalum residues.

<http://www.sxkinetics.com/hydrometplants.htm>

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**Portable SX Plant 1**

Project: sxk-21

Location: Ohio, USA

Capacity: 32 L/min (org + Aq)

SX Kinetics designed, manufactured, and assembled this pilot plant inside a 40' sea container. The mobile plant was operated at various electro-plating shops to demonstrate the recovery of chromium from spent plating bath solutions.

<http://www.sxkinetics.com/portableplants.htm>

**SX Pilot Plant 3**

Project: sxk-24

Location: Belgium

Capacity: 2 L/min (org + aq)

SX Kinetics designed and manufactured this pilot plant for a project to clean and stabilize diesel fuel and heating oil which was produced from waste motor oil.

<http://www.sxkinetics.com/pilotplants.htm>

**Laboratory SX Plant 1**

Project: sxk-28

Location: Cobalt, Ontario, Canada

Capacity: 150 mL/min (org + Aq)

SX Kinetics designed and manufactured this solvent extraction pilot plant for a laboratory investigation into the extraction and purification of cobalt from abandon mill tailings.

<http://www.sxkinetics.com/miniplants.htm>

**Laboratory SX Plant 2**

Project: sxk-31

Location: Newark, NJ, USA

Capacity: 150 mL/min (org + Aq)

This solvent extraction pilot plant was designed and manufactured by SX Kinetics and shipped pre-assembled to the New Jersey Institute of Technology. It was used for a research program on the continuous counter-current extraction of proteins.

<http://www.sxkinetics.com/miniplants.htm>



**Laboratory SX Plant 3****Project:** sxk-32**Location:** Santa Fe Springs, CA, USA**Capacity:** 150 mL/min (org + Aq)

This solvent extraction pilot plant was designed and manufactured by SX Kinetics for solvent extraction of precious metals including gold, palladium, and platinum.

<http://www.sxkinetics.com/miniplants.htm>

**Portable / Modular SX Plant 2****Project:** sxk-33**Location:** Layton, Utah, USA**Capacity:** 132 L/min (org + Aq)

SX Kinetics designed and manufactured this modular solvent extraction plant for the removal of chromium from electro plating wastewater.

<http://www.sxkinetics.com/portableplants.htm>

**Hydromet Pilot Plant 5****Project:** sxk-33**Location:** Lawton, UT, USA**Capacity:** 100 L/min

SX Kinetics designed and manufactured this SX feed filtration system for a chromium solvent extraction plant.

<http://www.sxkinetics.com/hydrometplants.htm>

**Hydromet Pilot Plant 8****Project:** sxk-33**Location:** Moscow, Russia**Capacity:**

SX Kinetics manufactured these conductivity indicators in order to determine the phase continuity in the mixers, the position of the interface in the settlers, and to determine the accumulation of aqueous phase in the bottom of an organic tank.

<http://www.sxkinetics.com/hydrometplants.htm>

**Laboratory SX Plant 4****Project:** sxk-36**Location:** Moscow, Russia**Capacity:** 150 mL/min (org + Aq)

SX Kinetics designed and manufactured this solvent extraction pilot plant for the evaluation of various copper SX circuit configurations including: 2 extraction + 1 strip; 2 extraction + 2 strip; 2 extraction + 1 scrub + 1 strip.

<http://www.sxkinetics.com/miniplants.htm>

**EW Pilot Plant 1****Project:** sxk-36**Location:** Moscow, Russia**Capacity:** 25 g Copper per hour

SX Kinetics designed and manufactured this electrowinning pilot plant for a copper mining project in north-eastern Russia. This pilot plant was coupled to SX Kinetics' laboratory solvent extraction pilot plant for an integrated leaching / solvent extraction / electrowinning research program.

<http://www.sxkinetics.com/ewplants.htm>

**Portable / Modular SX Plant 3****Project:** sxk-37**Location:** Moscow, Russia**Capacity:** 100 L/min (org + Aq)

SX Kinetics designed and manufactured this modular copper solvent extraction pilot plant within ten modular shipping frames. Each modular shipping frame had outside dimensions slightly smaller than the opening of a standard size shipping container.

<http://www.sxkinetics.com/portableplants.htm>

**Hydromet Pilot Plant 7****Project:** sxk-37**Location:** Moscow, Russia**Capacity:** 900 L

SX Kinetics designed and manufactured this crud treatment circuit for treatment of crud from a copper solvent extraction process.

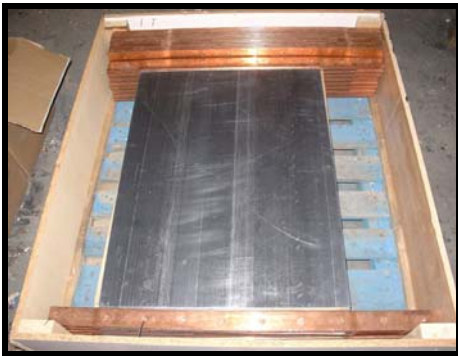
<http://www.sxkinetics.com/hydrometplants.htm>



**Coalescer 1****Project:** sxk-37**Location:** Moscow, Russia**Capacity:** 50 L/min aqueous flow

SX Kinetics designed and manufactured this coalescer for the recovery of entrained organic phase from a solvent extraction aqueous stream. The coalescer unit is shown on the upper level with the organic recovery tank on the lower level.

<http://www.sxkinetics.com/coalescer.htm>

**Hydromet Pilot Plant 6****Project:** sxk-38**Location:** Moscow, Russia**Capacity:**

SX Kinetics manufactured and assembled 60 anodes for a copper electrowinning pilot plant.

<http://www.sxkinetics.com/hydrometplants.htm>

**Coalescer 2****Project:** sxk-40**Location:** Ontario, Canada**Capacity:** 50 L/min aqueous flow

SX Kinetics provided coalescer medium for the recovery of entrained organic phase from indium solvent extraction solutions. The coalescer media is made

<http://www.sxkinetics.com/coalescer.htm>

**EW Pilot Plant 2****Project:** sxk-41**Location:** Toquepala, Peru**Capacity:** 208 g Copper per hour

SX Kinetics designed and manufactured this pilot plant for electrowinning investigations at the Toquepala copper leach / solvent extraction / electrowinning plant in Peru.

<http://www.sxkinetics.com/ewplants.htm>



**Laboratory Pilot Plant 5**

Project: sxk-44

Location: Erdenet, Mongolia

Capacity: 150 mL/min (org + Aq)

SX Kinetics designed and manufactured this solvent extraction pilot plant for a copper solvent extraction / electrowinning project in Mongolia.

<http://www.sxkinetics.com/miniplants.htm>

**EW Pilot Plant 3**

Project: sxk-44

Location: Erdenet, Mongolia

Capacity: 60 g Copper per hour

SX Kinetics designed and manufactured this electrowinning pilot plant for a copper mining project in Mongolia. This pilot plant was coupled to SX Kinetics' laboratory solvent extraction pilot plant for an integrated leaching / solvent extraction / electrowinning research program.

<http://www.sxkinetics.com/ewplants.htm>

**Leach Pilot Plant 3**

Project: sxk-45

Location: Moscow, Russia

Capacity: 50 to 200 mL/min

SX Kinetics designed and manufactured this bench scale leach pilot plant for the continuous production of SX Feed solution.

<http://www.sxkinetics.com/leachplants.htm>

**Hydromet Pilot Plant 11**

Project: sxk-45

Location: Moscow, Russia

Capacity: 130 L and 20 L

SX Kinetics provided these feed tanks and pumps for our laboratory SX pilot plant. The larger tank was for the SX Feed and the three smaller tanks were for the scrub solution, strip solution, and the organic feed.

<http://www.sxkinetics.com/hydrometplants.htm>

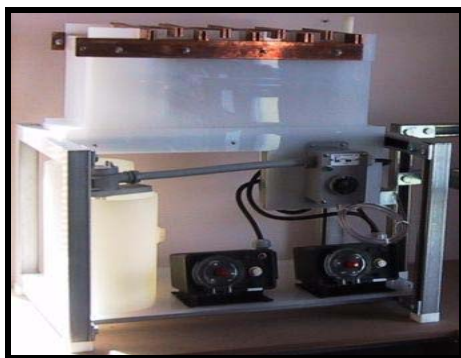


**Laboratory SX Pilot Plant 6****Project:** sxk-45**Location:** Moscow, Russia**Capacity:** 150 mL/min (org + Aq)

SX Kinetics designed and manufactured this laboratory pilot plant that included continuous leach circuit, solvent extraction circuit, and electrowinning.

<http://www.sxkinetics.com/miniplants.htm>

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**EW Pilot Plant 4****Project:** sxk-45**Location:** Moscow, Russia**Capacity:** 25 g Copper per hour

SX Kinetics designed and manufactured this electrowinning pilot plant for a technological University in Moscow, Russia.

<http://www.sxkinetics.com/ewplants.htm>

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**Leach Pilot Plant 4****Project:** sxk-49**Location:** Ottawa, Canada**Capacity:** 200 L

SX Kinetics designed and manufactured this batch leach tank.

<http://www.sxkinetics.com/leachplants.htm>

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**Laboratory SX Pilot Plant 7****Project:** sxk-53**Location:** Tehran, Iran**Capacity:** 150 mL/min (org + Aq)

This laboratory solvent extraction pilot plant was designed and manufactured by SX Kinetics for zinc, copper, and cobalt studies at a research centre in Iran.

<http://www.sxkinetics.com/miniplants.htm>

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**Portable / Modular SX Plant 5**

Project: sxk-54

Location: Tehran, Iran

Capacity: 8 L/min (org + aq)

SX Kinetics designed and manufactured this solvent extraction and electrowinning pilot plant for a copper, cobalt, and nickel project.

<http://www.sxkinetics.com/portableplants.htm>

**EW Pilot Plant 5**

Project: sxk-54

Location: Tehran, Iran

Capacity: 1,250 g Copper per hour

SX Kinetics designed and manufactured this pilot plant for a project to electrowinning of copper, cobalt, and nickel.

<http://www.sxkinetics.com/ewplants.htm>

**Hydromet Pilot Plant 9**

Project: sxk-57

Location: Ottawa, Canada

Capacity: 1,225 L and 200 L

SX Kinetics manufactured these storage tanks for a precious metal purification process.

<http://www.sxkinetics.com/hydrometplants.htm>

**Leach Pilot Plant 5**

Project: sxk-57

Location: Ottawa, Canada

Capacity: 945 L each

SX Kinetics designed and manufactured this batch leach tank.

<http://www.sxkinetics.com/leachplants.htm>





**SX Pilot Plant 4**  
Project: sxk-61  
Location: Hungary  
Capacity: 225 mL/min (org + Aq)

This pilot plant was designed by SX Kinetics for operation at 150 °C, well above the flash point of the solvent. It was manufactured from stainless steel with conductive lined teflon tubing sheathed in braided stainless steel.

<http://www.sxkinetics.com/pilotplants.htm>

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**Hydromet Pilot Plant 10**  
Project: sxk-62  
Location: Ottawa, Canada  
Capacity: 2,760 L

SX Kinetics manufactured this storage tank with a containment tank for the Canadian Government's printing shop.

<http://www.sxkinetics.com/hydrometplants.htm>

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**EW Pilot Plant 6**  
Project: sxk-63  
Location: Southern, Israel  
Capacity: 30 g Copper per hour

SX Kinetics, Inc. designed and manufactured this laboratory scale electrowinning pilot plant for a copper project in Israel.

<http://www.sxkinetics.com/ewplants.htm>

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**EW Pilot Plant 7**  
Project: sxk-65  
Location: Mississauga, ON, Canada  
Capacity: 180 g Zinc per hour

This laboratory electrowinning pilot plant was designed and manufactured by SX Kinetics for a project to recover zinc from EAF (electric arc furnace) dust.

<http://www.sxkinetics.com/ewplants.htm>

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**Laboratory SX Plant 8****Project:** sxk-65**Location:** Mississauga, ON, Canada**Capacity:** 200 mL/min (org + Aq)

This laboratory solvent extraction and electrowinning pilot plant was designed and manufactured by SX Kinetics for a project to recover zinc from EAF (electric arc furnace) dust.

<http://www.sxkinetics.com/miniplants.htm>

**Coalescers 3****Project:** sxk-69**Location:** Hartford, IL, USA**Capacity:** 4 L/min aqueous flow

SX Kinetics designed and manufactured two coalescers for a zinc solvent extraction and electrowinning project.

<http://www.sxkinetics.com/coalescer.htm>

**EW Pilot Plant 8****Project:** sxk-71**Location:** Arequipa, Peru**Capacity:** 28 kg copper per day

This electrowinning pilot plant was designed and manufactured by SX Kinetics for a copper heap leaching / solvent extraction / electrowinning project in Southern Peru.

<http://www.sxkinetics.com/ewplants.htm>

**SX Portable / Modular Plant 6****Project:** sxk-72**Location:** Northern Peru**Capacity:** 40 L/min (org + Aq)

This pilot plant was design and manufactured by SX Kinetics for a copper heap leach project in Northern Peru. The plant has six separate extraction circuits and one strip circuit in order to test six different heap leaches simultaneously.

<http://www.sxkinetics.com/pilotplants.htm>



**EW Pilot Plant 9****Project:** sxk-72**Location:** Northern Peru**Capacity:** 80 kg copper per day

SX Kinetics designed and manufactured this copper electrowinning pilot plant for a heap leaching project in Northern Peru.

<http://www.sxkinetics.com/hydrometplants.htm>

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**Laboratory SX Plant 9****Project:** sxk-74**Location:** Harjavalta, Finland**Capacity:** 150 mL/min (org + Aq)

This laboratory solvent extraction pilot plant was designed and manufactured by SX Kinetics for cobalt solvent extraction studies at a research centre in Finland.

<http://www.sxkinetics.com/miniplants.htm>

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**Laboratory SX Plant 10****Project:** sxk-75**Location:** Menlo Park, California, USA**Capacity:** 150 mL/min (org + Aq)

This laboratory plant featured flanged mixer-settlers with flanged covers in order to provide an air tight seal for use with a solvent at a low flash point.

<http://www.sxkinetics.com/miniplants.htm>

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**SX Portable / Modular Plant 7****Project:** sxk-76**Location:** Balqash, Kazakhstan**Capacity:** 100 L/min of PLS (200 L/min org + Aq)

This modular SX plant was used to determine the leach efficiency of copper from a dump leach in Kazakhstan.

<http://www.sxkinetics.com/portableplants.htm>

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**EW Pilot Plant 10**

Project: sxk-76

Location: Balqash, Kazakhstan

Capacity: 240 kg copper per day

This modular electrowinning plant included four cells with an acid mist collection and scrubber system. The plant produced 240 kg per day of LME grade copper cathode.

<http://www.sxkinetics.com/ewplants.htm>

**Laboratory SX Plant 11**

Project: sxk-77

Location: Freeport, Texas, USA

Capacity: 150 mL/min (org + Aq)

This laboratory pilot plant was used for research on the extraction of uranium from phosphoric acid.

<http://www.sxkinetics.com/miniplants.htm>

**EW Pilot Plant 11**

Project: sxk-78

Location: C.V. Geodrill Indonesia

Capacity: 140 kg gold per day

SX Kinetics provided this gold electrowinning plant to a gold mining company in Indonesia.

<http://www.sxkinetics.com/ewplants.htm>

**Laboratory SX Pilot Plant 12**

Project: sxk-79

Location: Aurora, North Carolina, USA

Capacity: 150 mL/min (org + Aq)

This pilot plant featured sealed mixers-settlers with jacketed settlers and organic vessel in order to operate at elevated temperatures with a solvent having a low flash point.

<http://www.sxkinetics.com/miniplants.htm>

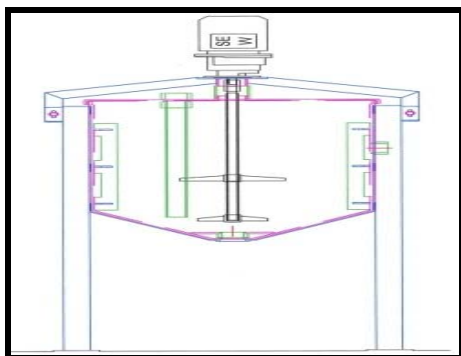




**Laboratory SX Pilot Plant 13**  
Project: sxk-81  
Location: Nicosia, Cyprus  
Capacity: 150 mL/min (org + Aq)

This laboratory solvent extraction pilot plant was used at a copper mining operation in Cyprus.

<http://www.sxkinetics.com/miniplants.htm>



**Hydromet Pilot Plant 12**  
Project: sxk-83  
Location: Ottawa, Canada  
Capacity: 378 L

This semi-conical bottom polypropylene agitation tank was used at a silver refinery. The tank included inline variable speed agitator coupled to a PVC coated impeller

<http://www.sxkinetics.com/hydrometplants.htm>



**Full Scale SX Plant 5**  
Project: sxk-84  
Location: Lima, Peru  
Capacity: 73 L/min (org + Aq)

This solvent extraction plant was used at a zinc refinery in Cajamarquilla, Peru for the extraction and purification of indium.

<http://www.sxkinetics.com/productionplants.htm>



**Hydromet Pilot Plant 13**  
Project: sxk-85  
Location: Ottawa, Canada  
Capacity: 1000 L

These FRP dish bottom tanks were used in a gold hydrometallurgical process.

<http://www.sxkinetics.com/hydrometplants.htm>



**Laboratory SX Pilot Plant 14**

Project: sxk-86

Location: Surra, Kuwait

Capacity: 150 mL/min (org + Aq)

This laboratory SX pilot plant included pH controllers for the control of pH during extraction or stripping tests.

<http://www.sxkinetics.com/miniplants.htm>

**Leach Pilot Plant 6**

Project: sxk-88

Location: South Africa

Capacity: 150 mL/min

This laboratory leach pilot plant included four cascading leach vessels with mixers, feed tanks, pumps, and discharge tanks. It was used at a University in South Africa.

<http://www.sxkinetics.com/leachplants.htm>

**Hydromet Pilot Plant 14**

Project: sxk-90

Location: Ottawa, Canada

Capacity: 3 ft<sup>3</sup>

SX Kinetics provided this filter press to a silvery refinery for filtering silver from chloride solutions.

<http://www.sxkinetics.com/hydrometplants.htm>

**Hydromet Pilot Plant 15**

Project: sxk-92

Location: Ottawa, Canada

Capacity: 1 m<sup>3</sup>

SX Kinetics provided four FRP tanks to a gold refinery for holding solutions containing metal nitrates.

<http://www.sxkinetics.com/hydrometplants.htm>





**Hydromet Pilot Plant 16**  
Project: sxk-96  
Location: Ottawa, Canada  
Capacity: 3 ft<sup>3</sup>

SX Kinetics provided this filter press to a gold refinery in Ottawa, Canada.

<http://www.sxkinetics.com/hydrometplants.htm>

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**Laboratory SX Pilot Plant 15**  
Project: sxk-97  
Location: McClean Lake Mine, Northern Saskatchewan, Canada  
Capacity: 150 mL/min (org + Aq)

This laboratory SX pilot plant included six stages with pH controller for a test program to evaluate various uranium stripping parameters.

<http://www.sxkinetics.com/miniplants.htm>

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**Hydromet Pilot Plant 17**  
Project: sxk-101  
Location: Ottawa, Canada  
Capacity: 20 L

SX Kinetics manufactured this fiberglass electrowinning cell tank for gold refinery in Ottawa, Canada.

<http://www.sxkinetics.com/hydrometplants.htm>

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**EW Pilot Plant 12**  
Project: sxk-102  
Location: Tanzania  
Capacity: 20 kg gold per month

SX Kinetics design and manufactured this gold electrowinning pilot plant for small scale production in Tanzania.

<http://www.sxkinetics.com/ewplants.htm>

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### Full Scale SX Plant 6

Project: sxk-105

Location: Norwood, OH, USA

Capacity: 30 L/min (org + aq)

SX Kinetics provided nine mixer-settlers for a cobalt nitrate solvent extraction plant. (actual photo pending)

<http://www.sxkinetics.com/productionplants.htm>



### Hydromet Pilot Plant 18

Project: sxk-108

Location: Ottawa, Canada

Capacity: 5 ft<sup>3</sup>

SX Kinetics provided this filter press to a gold refinery in Ottawa, Canada. (actual photo pending)

<http://www.sxkinetics.com/hydrometplants.htm>



### EW Pilot Plant 13

Project: sxk-109

Location: Sonora, Mexico

Capacity: 20 kg gold per month

SX Kinetics design and manufactured this gold electrowinning pilot plant for small scale production in Mexico.

<http://www.sxkinetics.com/ewplants.htm>

