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
Products

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

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

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

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
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

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

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
Products

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

---

**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

---

**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

---

**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
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

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

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

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
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 designed 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

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

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

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
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 ft³

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 m³

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 ft³

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

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

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

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

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
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 ft³  
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