

FACILITY	FELS LINES OPERATING IN PARALLEL	LOCATION	START USER OPERATION	ELECTRON ENERGY	PHOTON ENERGY	PULSE PROPERTIES	NUMBER OF END STATIONS
European XFEL	SASE-1	HAMBURG / SCHENEFELD, GERMANY	2017	8.5-17.5 GeV	3.0 to >20 keV	1-100 fs	2
	SASE-2		2018		3.0 to >20 keV	10x2.700 pulse/s	2
	SASE-3		2018		0.25-3.0 keV		2
SwissFEL	ARAMIS	VILLIGEN, SWITZERLAND	2018	2.1-5.8 GeV	4.0-15 keV	5-100 fs	2
	ATHOS		2020		0.25-2.0 keV	100 Hz	2
FERMI	FERMI-1	TRIESTE, ITALY	2012	1.5-1.8 GeV	15-90 eV	20-90 fs	5
	FERMI-2		2016		80-400 eV	10-50 Hz	
FLASH	FLASH	HAMBURG, GERMANY	2005	1.25 GeV	30-300 eV	20-150 fs	4
	FLASH-2		2016		30-300 eV	10x800 pulses/s	3
CLIO	CLIO	PARIS, FRANCE	1993	40 MeV	10-400 meV	0.5-5 ps 60 MHz pulsed: 25 Hz	
ELBE	FELBE	DRESDEN, GERMANY	2005	40 MeV	0.5-250 meV	0.5-30 ps	7
	TELBE		2016			13 MHz cw	1
FELIX	FELIX 1/2	NIJMEGEN, NETHERLANDS	1993	15-50 MeV	8-400 meV	0.5-200 ps	12
	FLARE		2013	10-15 MeV	0.8-12 meV	1/3 GHz	4
	FELICE		2007	15-50 MeV	12-250 meV	pulsed: 20 Hz	2
TARLA		ANKARA, TURKEY	2019	40 MeV	5-400 meV	0.5-30 ps 13 MHz cw	

TABLE 2.

Summary of European FELs, in operation or under construction