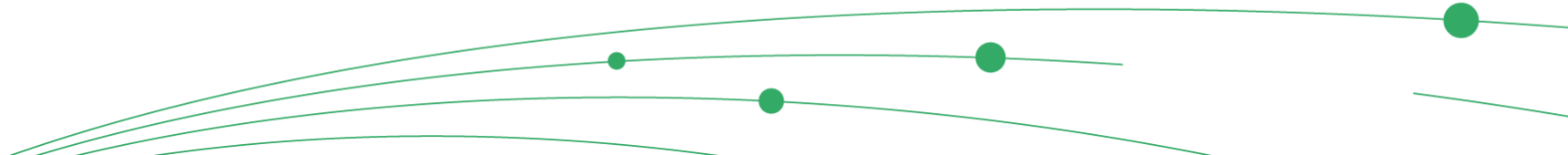




## WANO Young generation activities in NPP Kozloduy

Stilyana Mladenova  
Head of "Nuclear safety"  
department

# General information



# NPP Kozloduy

- First nuclear power station in south-eastern Europe, 45 years experience.
- Plc, 100% owned by the state, part of Bulgarian Energy Holding.
- 4 units VVER-440 under decommissioning.
- 2 units VVER-1000 in operation.



# VVER-1000

Commissioning:  
Valid license:  
Campaign:  
CLF, 2018:

## Unit 6

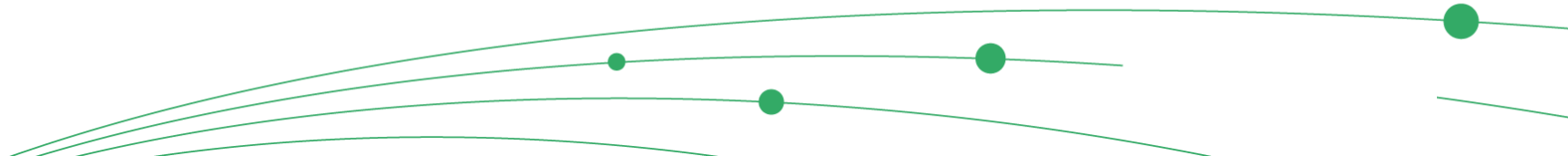
1991  
02.10.2019  
24  
90.22 %

## Unit 5

1987  
06.11.2027  
26  
90.25 %



# WANO young generation



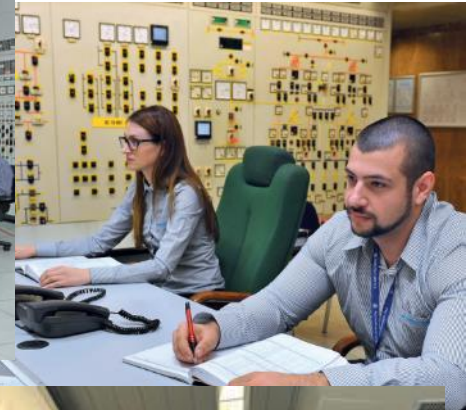


# NPP Kozloduy

- Senior reactor operators and trainees
- Shift unit supervisors
- Physicists
- Expert thermo-hydraulic calculations
- Expert air purification systems
- Expert knowledge management

All these people are young and ambitious.  
They want to not only to develop their career,  
but also popularize nuclear energy .

## Participants

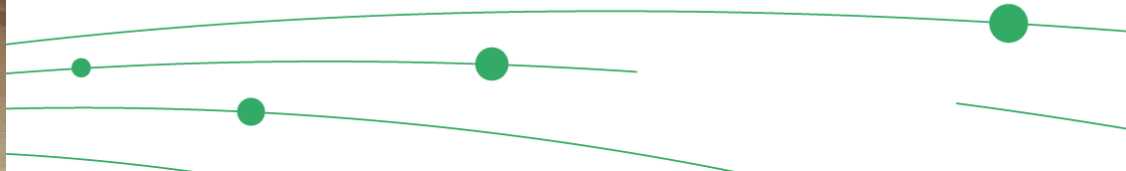


# NPP Kozloduy

- Briefings 2019
- Outage activities documentation - 2018
- Performing walkdowns - 2017
- Severe accidents and emergency preparedness - 2017



## Technical support missions



# NPP Kozloduy

1990 IAEA ASSET 1-4  
1991 IAEA SRM 1-4; IAEA OSART 5  
1992 IAEA ASSET 1-4 FOLLOW UP  
1993 IAEA SRM FOLLOW-UP 1-4  
IAEA ASSET 1-4 FINAL FOLLOW-UP  
1994 IAEA ASSET 5&6  
IPERS 5&6  
IAEA SRM FOLLOW-UP 1-4  
1995 WANO PEER REVIEW 5&6  
5&6 G-24 MISSION  
BENCHMARK MISSION  
IAEA SRM REVIEW 5&6 MODERN. PRG  
1996 IAEA IPPAS 1-6  
IAEA SRM – 1-4 FOLLOW-UP  
1997 IAEA ASSET 5&6 FOLLOW-UP  
IAEA MISSION EMERGENCY PROCEDURES 5&6  
1998 EC MISSION ON PHARE – RISK AUDIT 5&6  
1999 IAEA OSART 1-4  
WENRA 1-4  
IAEA MISSION EMERGENCY PROCEDURES 5&6  
2000 IAEA REVIEW 5&6 MODERNIZATION PRG  
IAEA REVIEW 3&4 RECONSTR. PRG  
2001 IAEA OSART 1-4 FOLLOW-UP  
IAEA REVIEW KNPP ORGANIZATION STRUCTURE

2002 IAEA IPPAS 1-6 FOLLOW UP  
IAEA SRM 3&4 FOLLOW UP  
2003 WANO PEER REVIEW 3&4  
EC PEER REVIEW 3&4 (AQG/WPNS)  
2007 EC MISSION UNDER THE TERMS  
OF ARTICLE 35 OF THE EURATOM TREATY  
2008 IAEA FOLLOW UP MISSION 5&6  
MODERNIZATION PRG  
2009 WANO PEER REVIEW 5&6  
2011 WANO PEER REVIEW 5&6 FOLLOW UP  
2012 EC REVIEW (stress tests performance)  
IAEA OSART 5&6  
2013 WANO PEER REVIEW 5&6  
IAEA IPSART MISSION 5&6  
2014 IAEA OSART 5&6 FOLLOW UP  
2015 WANO PEER REVIEW 5&6 FOLLOW UP  
2016 IAEA PRE-SALTO UNIT 5  
WANO CORPORATE PEER REVIEW  
2017 WANO PEER REVIEW 5&6  
2018 IAEA PRE-SALTO UNIT 6  
ARTEMIS  
EU TOPICAL PEER REVIEW

# Independent missions in NPP Kozloduy



- Up to the **end of this year:**

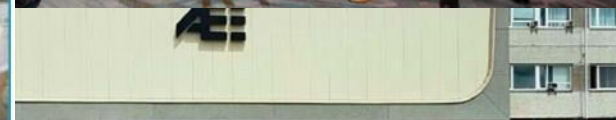
The representative of WANO will create a course for training participants in YWANO to participate in a WANO mission



# NPP Kozloduy

We participated in:

- WANO general assembly in Canada - 2015
- Lithuania – Disnay, every year 4-8 people
- WNU 2018, South Korea
- Young Bulgarian nuclear association





- ... Zwetendorf Austria
- ... Phoenix, France



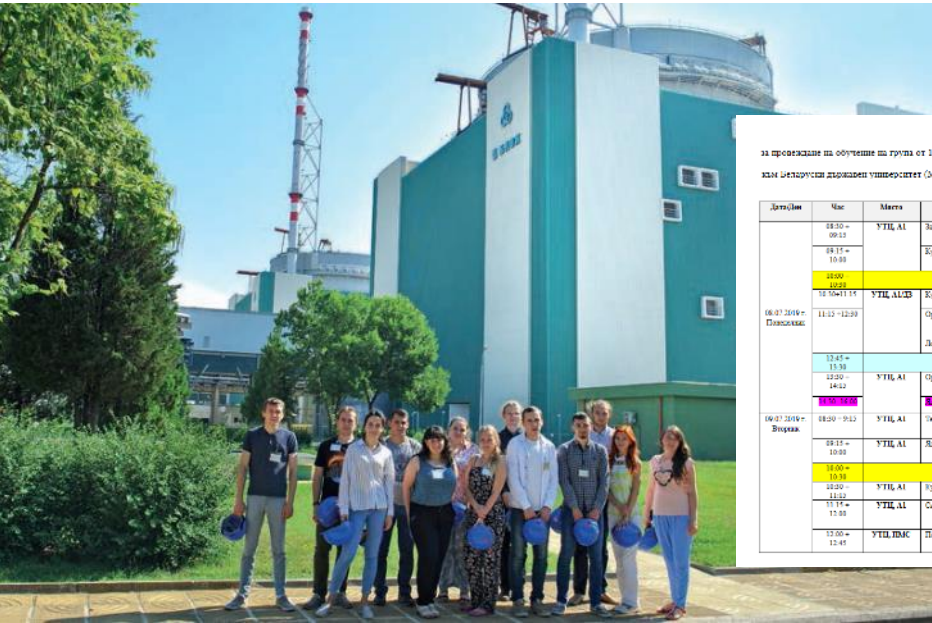


# WNU Korea



Already 6 years

- International ecology state university “A. Saharov”
- Belarusian state university informatics and electronics
- Belarusian national technical university



**ПРОГРАМА**

за провеждане на обучение на група от 11 студенти, четворици курс, и 2 преподаватели от Международен държавен университет по екология "А. Д. Сахаров" - Сливен

към Белоруски държавен университет (БДТУ) "А. Д. Сахаров" (БДТУ) "А. Д. Сахаров" (БДТУ) за времето от 08.07.2019 г. до 12.07.2019 г. съгласно Визовата М-АД-1607/12.06.2019 г.

Датуми	Час	Место	Тема	Обучаващи
08.07.2019 г. Плевенски	08:30 - 09:15	УТИ, А1	Знакомство с организацията от програмата. Презентация за АЕЦ "Козлодуй"	Павел Христова Димитрова - ад. Р.а.у.е. Плевен, тел. 26-69
	09:15 - 10:00		Курс "Визуализация на АЕЦ "Козлодуй" - химична визуализация	Иван Димитров Арнаудов - Гл. специалист-проектировчик П.О. у-е/Пл/ТИ, тел. 31-83
	10:00 - 10:20		Почивка	
	10:20 - 11:15	УТИ, А1, А2	Курс "Визуализация на АЕЦ "Козлодуй" - химична визуализация	Иван Димитров Арнаудов - Гл. специалист-проектировчик П.О. у-е/Пл/ТИ, тел. 31-83
	11:15 - 12:30		Организационни мероприятия за осигуряване на добър прием на участниците на АЕЦ "Козлодуй"	Иван Димитров Арнаудов - Гл. специалист-проектировчик П.О. у-е/Пл/ТИ, тел. 31-83
			Лекционна изпитна	У-е "Сливенски"
	12:15 - 13:30		Обяд - сграда НТР	
	13:30 - 14:00	УТИ, А1	Организация на професионалния изпит в АЕЦ	Евгения Петрова Тодорова Петрова - Плевен, Плевен, тел. АЕЦ
	14:00 - 14:30		Лекционна изпитна	Александра Петрова Ева Петрова - Плевен
	08.07.2019 г. Варна	08:30 - 9:15	УТИ, А1	Технология и основни оборудване на ядрените енергетични установки с реактор тип ВВЕР - 1000
09:15 - 10:00		УТИ, А1	Ядрена сигурност (бизнеса оценка)	Владимир Янаков - р-д. ор. АЕЦ, р-д. "Сливенски" тел. 23-45
10:00 - 10:30			Почивка	
10:30 - 11:30		УТИ, А1	Екологична безопасност	Евгения Петрова Тодорова Петрова - Плевен
11:30 - 12:00		УТИ, А1	Система за управление на безопасността (СУОС)	Евгения Петрова Тодорова Петрова - Плевен
12:00 - 12:45		УТИ, БМБ	Посещение в ПМС-1000. Работно място за лаборатория в реална или симулирана ситуация	Радослав Славяновски - Плевен, тел. 37-50

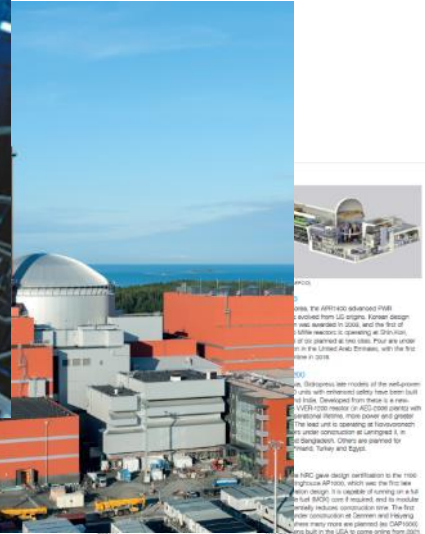
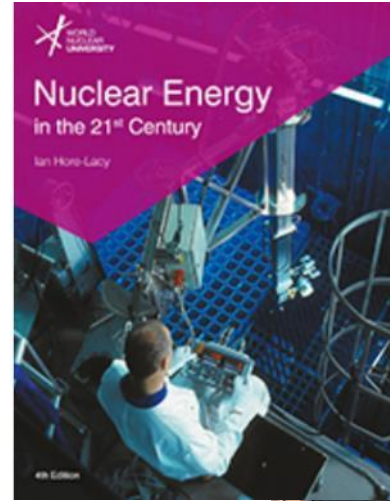
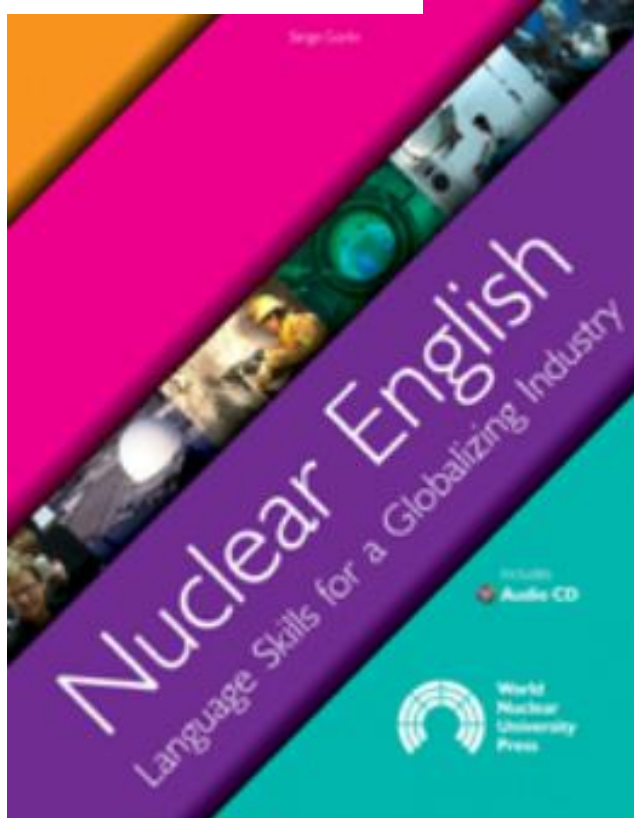




# NPP Kozloduy

WORLD NUCLEAR ASSOCIATION

# Nuclear English



**ENR**  
The first ECR advanced fuel element from UG Argonne, former design was awarded in 2004, and the first of three reactors is operating at 200 MW, or as planned at this time. Four are under way in the United Arab Emirates, with the first now in 2010.

**ENR**  
Sixteen new models of the well-known units with enhanced safety have been built and built. Developed from these is a new EBR-1200 reactor or AECI core plant with advanced thermal, more power and greater safety. The lead unit is operating at Hanuononon in under construction at 1,000 MW, in Bangladesh. Others are planned for Thailand, Turkey and Egypt.

**ENR**  
The EBR gas design certification to the 1000 MW gas design, which was the first new design. It is capable of running at a full but EBR core if required, and to include safety, include, incorporate new. The first unit is under construction at 1,000 MW, in Bangladesh. Others are planned for Thailand, Turkey and Egypt.

**ENR**  
Hydrogen (primary) Ariva EBR has developed the large 1000 and to 100 MW European Reactor (ER), which is the new standard design for Europe and beyond. Project design approval is 2004. It has the capability to operate flexibly to follow loads, and is enabled by using a full set of EBR. The first EBR unit, are being built at Oklahe in France, at Flanders in France, and will be built in China. Several are planned for the UK. A complete unit is planned for multiple replacement units in France.

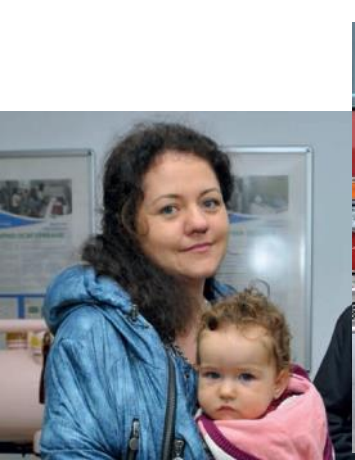
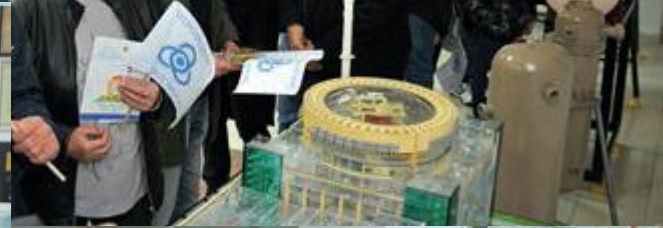


SUMMER INSTITUTE





- Open gates





# NPP Kozloduy



**Workers up to 13.06.2019**

**3724**

**Age**

**45 years**

**Average years worked**

**20 years**

**Education**

**Master and Bachelor degree – 52%**

**High Diploma specialized – 35%**

**High diploma – 12%**





# NPP Kozloduy

- Open gates
- Advertisements
- Scholarships
- Paid summer internships

## Attracting young generation



БЛАГОДАРЯ ЗА ВНИМАНИЕТО!



[www.kznpp.org](http://www.kznpp.org)