



收稿时间 / Received Date 2014-04-14  
 中图分类号 / TU986.2  
 文献标识码 / B

## 法国电力集团档案中心 EDF Archives Center, France

LAN建筑设计事务所 /  
LAN Architecture

翻译 Translated by /  
郝爽 Shuang HAO  
校对 Proofread by /  
涂先明 Xianming TU

### 摘要

新的法国电力集团档案中心承载着这家公司的工业记忆，将成为其在布赫-索德龙地区长期存在的标志。本项目为这一地区带来了积极的社会和环境影响。建筑完全融入景观之中，并且达到了当地环境质量标准，这也是法国电力集团档案中心建造策略中最基本的目标。

### 关键词

档案中心；景观；能源；自给自足

### Abstract

The new EDF Archives Center houses the company's records and is a symbol of the long-term presence of EDF in the Meuse and Haute Marne regions. The project has brought a positive social and environmental impact onto the region, and fully integrates the landscape to meet local environmental quality standards; a fundamental goal of EDF's building strategy.

### Key words

Archives Center; Landscape; Energy; Autonomy

项目地址：法国布赫-索德龙地区

项目面积：3.3hm<sup>2</sup>

建筑总面积：6 800m<sup>2</sup>

项目委托：法国电力集团

项目负责人：Christophe Leblond

项目团队：LAN建筑事务所（主创建筑师）、Franck Boutté咨询公司（高环境质量咨询）、Batiserf Ingénierie工程公司（结构）、Michel Forgue（勘察）、Base工作室（景观设计）、LBE环境生物技术实验室（设备）

设计时间：2008年

建成时间：2011年

Location: Bure-Saudron, France

Area (size): 3.3 hm<sup>2</sup>

Tatal Floor Area: 6,800 m<sup>2</sup>

Client: EDF Group

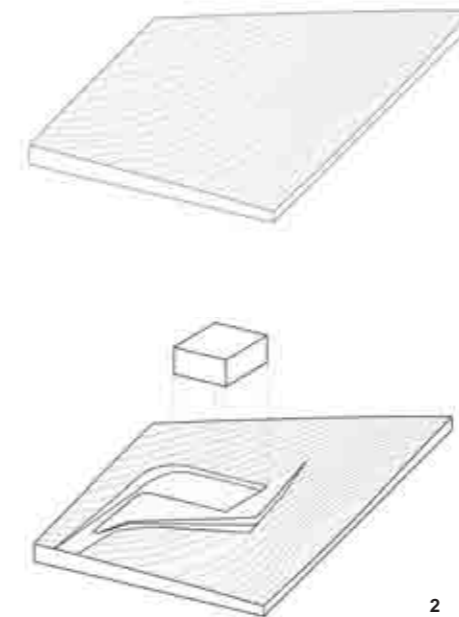
Project Leader: Christophe Leblond

Project Team: LAN Architecture (Lead architecture), Franck Boutté (HEQ consultant), Batiserf Ingénierie (Structure), Michel Forgue (Surveyor), Base (Landscape architecture), LBE (Utilities)

Design Period: 2008

Completion Time: 2011

1. 建筑完全融入景观之中。  
© Julien Lanoo
2. 建筑形态概念  
总平面图
3. The building fully integrates into the landscape. © Julien Lanoo
2. The topology concept
3. Master plan



2

### 项目背景

在默兹和尚马恩经济支持计划框架的支持下，法国电力集团（EDF）决定将其工程生产管理档案中心建于布赫-索德龙地区。

在建设新的档案中心之前，公司工程历史的纸质档案以核能、液压和热力产品档案的形式存放，也包含其他多种工程服务的形式。这些档案之前分散存放于不同地点，处理方法也不尽相同。因此将这些档案集中存储显得极为必要，从而实现归档功能的最优化，并且提升其索引、管理以及获取的方式。

该项目的目标之一是为项目所在地区带来积极的社会和环境影响。这就要求建筑师和当地代表密切合作，以实现邻近村庄的经济利益最大化。为体现建筑特色，建筑设计需要尽可能地与景观相结合，并达到环境质量标准。这成为EDF档案中心

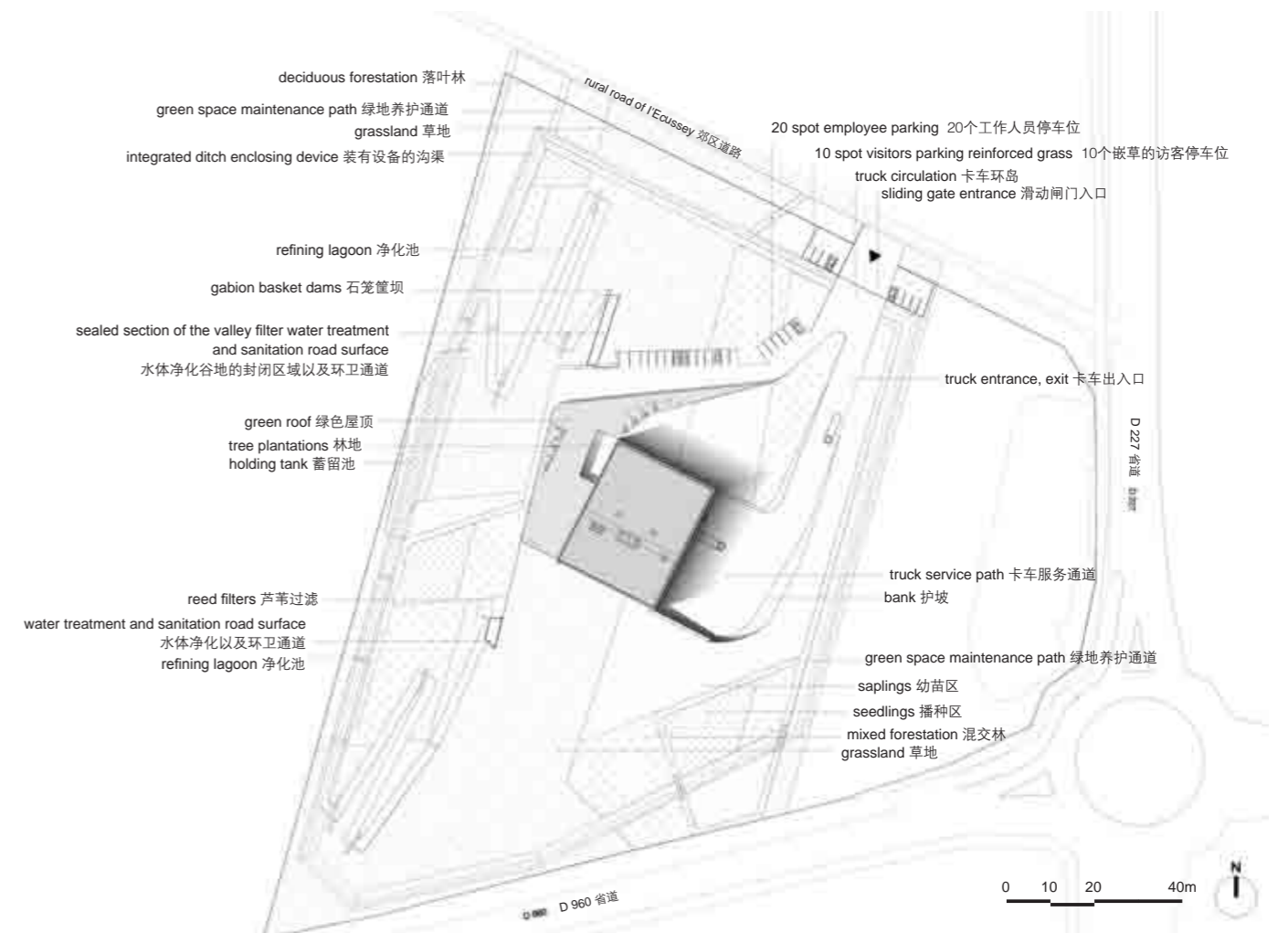
建造策略中最核心的方面。

方案将可持续性视为首要问题，力图通过采用智能形态和高性能的建筑表皮、选择适应性系统、生产再生能源来建造一座节能型建筑。包括污水管理系统在内的整合系统可以减少生态足迹，并使得建筑与其环境和谐共生。

### 设计概念

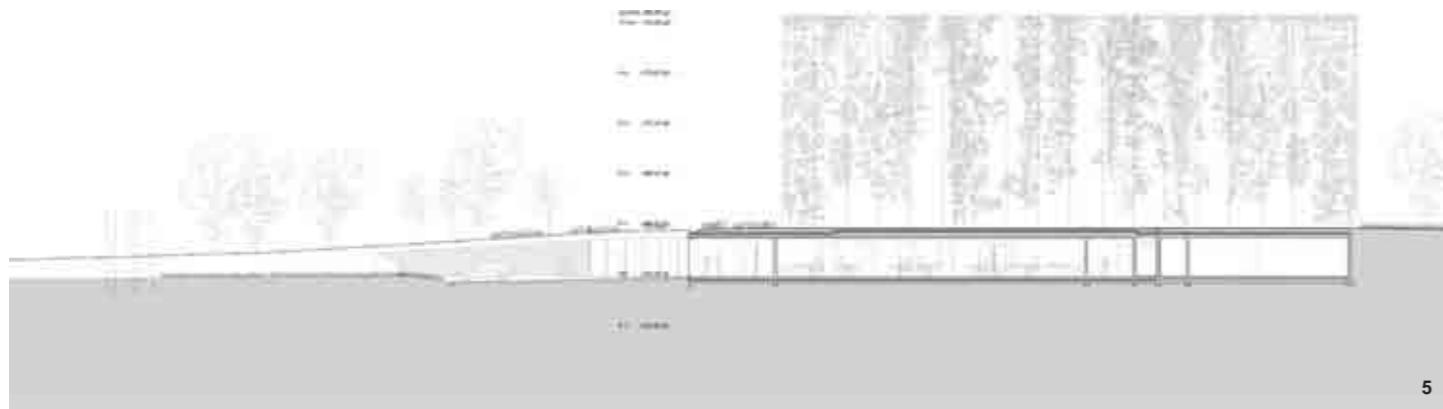
EDF档案中心是一幢建造在一块占地3.3hm<sup>2</sup>的场地上的高19m的5层建筑物，档案区占地面积约1 400m<sup>2</sup>、总建筑面积6 800m<sup>2</sup>。建筑在以下几个方面取得了成功：

- (1) 节省了建筑表皮；
- (2) （从远处望去）实现了对场地景观的视觉影响最小化；
- (3) 最大化利用了建筑基地周边开挖的土地，在场地内进行水资源处理；





4



5



6

(4) 建筑在能源节约和环境保护方面均具有较好的绩效；

(5) 达到了默兹和尚马恩经济计划的区域及经济目标。

### 建筑形态

一座档案存储建筑要求具备一定的稳定性，并达到与其外部环境之间热交换的最小化。为实现快速和简单的场地管理，以及使存储效率最优化，我们采用了一种简单而理性的布局。建筑分为两个部分：档案馆和办公室。档案馆包含20间面积各为200m<sup>2</sup>的储藏室，并采用了温度和湿度控制系统。档案馆可以抵御两小时的火灾，并配备有喷水灭火系统。西北朝向的办公区嵌在草木覆盖的斜坡之上。每间办公室都拥有可以欣赏到周围风景的理想视野。建筑东侧设有一个巨大的开口可用于



7

卸货。办公区位于档案馆和加工（处理）区外围，通过沿着露台设置的通道与档案馆相连。

### 景观

我们摒弃了传统的围合方式，运用矮墙使景观将建筑包围。通过将围栏设置在1.5m深的沟渠中，将其有效地隐藏起来，最小化了建筑所带来的视觉影响，从而使建筑与景观融为一体，营造了一种无限的和全景式的视野。

呈条带状种植的阔叶树使新种植的树木形成一种反复出现的景观模式，通过降低气候条件对建筑的影响从而减小了场地设计所带来的环境影响。此外，景观设计构想了从办公室向外眺望时的框景。在高速公路至项目的方向上这样的框景已然存在。精心构思的景观强调了建筑与周边环境的衔接性。

### 能源

建筑的供暖与制冷系统的运行主要依靠再生能源和热泵，使建筑的能源需求实现高度自给自足。建筑每平方米的总能源消耗为29kWh。建筑采用可以回收余热的双向流动的通风系统，这种做法可在

减少能源浪费的同时，保证良好的空气质量。低电压的采光设备可以有效降低内部负荷。存储区将配备现场探测系统以实现对照明的实时调控。高性能的建筑表皮也可以降低能源需求。为了进一步提升建筑的自给自足性能，项目外部配备了一个污水蓄留系统以进行水处理。

### 建筑表皮

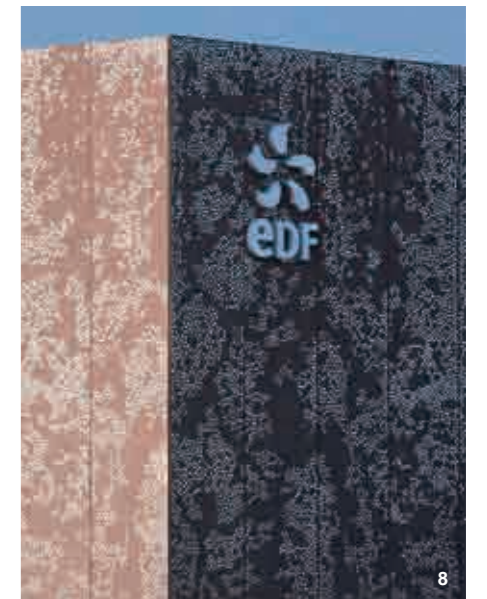
为了体现建筑在体量上的轻盈感，我们提出采用不锈钢附着于呈大地色的混凝土覆层之上的建筑表皮。这种方案可以弱化建筑边界，同时反映出周围环境及季节变化的色彩。这种采用附着混凝土面层技术的建筑表皮的应用减少了热桥效应，具有很好的性能。结构层、面层的混凝土层和30cm厚的保温层的结合运用，降低了建筑在夏季制冷和冬季供暖的需求。

### 建筑立面

建筑立面共使用了12万个的不锈钢螺栓（直径7cm，厚度1mm）。这些不锈钢螺栓被嵌合在预制混凝土面板中。面板高15.65m，宽2.26m或2.33m——宽度取决于它们是被置于建筑的长边还是短边。8cm厚的面板采用混凝土肋以增加其强度。面

板将悬挂在强化的混凝土实墙上，并使用间隔的千斤顶固定其位置。立面总厚度可达68cm。这种独特的建筑立面建造过程已成为一项专利技术。LAF

- 4, 5. 剖面图
6. 我们摒弃了传统的围合方式，运用矮墙使景观将建筑包围。© Julien Lanoo
7. 设计营造了一种无限的、全景式的视野。© Julien Lanoo
8. 立面细节 © Julien Lanoo
- 4, 5. Sections
7. The view is limitless and panoramic © Julien Lanoo
6. The landscape encloses the building using "ha-ha" instead of a conventional system. © Julien Lanoo
8. Details of the facade © Julien Lanoo



8



### The Background

With support from the Meuse and Haute Marne Economic Program, EDF decided to centralize its Engineering Production Management archives in Bure-Saudron.

Before construction of the new archives center, the paper archives of the company's engineering history had been stored within the nuclear, hydraulic, and thermal production archives, as well as various other engineering services. The archives were spread over several sites, each handled differently. As a result it became necessary to group them to

optimize archiving and increase indexing, management, and access.

A goal of the project was to have both a positive social and environmental impact on the region. This led the architects to work closely with local representatives on maximizing the economic benefit for the neighboring village. In terms of architectural characteristics, the building was required to be fully integrate into the landscape while meeting environmental quality standards. This objective became central to the building strategy.

By fore-fronting sustainability, EDF was able to achieve a building that was energy-efficient through the use of intelligent morphology, high performance skin, choice of adapted systems and the production of renewable energy. Integrated systems such as wastewater management have reduced the ecological footprint and contributed to an equal relationship between the building and its environment.

### The Concept

The EDF Archive Center is a five level, 19-meter high building located within a 3.3 hm<sup>2</sup> plot, with a 1,400 m<sup>2</sup> foot area and a total surface of approximately 6,800 m<sup>2</sup>. The building is considered successful in terms of:

- (1) Savings in terms of the building's overall envelope;
- (2) Marginally impacting the landscape (with views to the building from a considerable distances);
- (3) Maximized use of the excavated land around the building to control water treatment on site;
- (4) Energetically and environmentally high performing;
- (5) Reflects the regional and economic



goals of the Meuse and Haute Marne Economic Program.

### The Typology

An archives storage building needs to have a considerable inertia with a minimal exchange with its external setting. The need for fast and simple site management and optimum storage efficiency led to a simple and rational layout. The building is divided into two programs: archives and offices. The archives are contained in 20 storehouses, each 200 m<sup>2</sup> in area with regulated temperatures and hygrometry. They are built to resist fire for two hours and equip with sprinkling systems. The offices are oriented to the northwest and embedded in the existing slope and planted with trees and plants. Each office has an ideal view of the surrounding landscape. A large opening to the east allows space for an unloading dock. The offices are located away from the archives and treatment sections, which is connected to the archives by a passage along the patio.

### The Landscape

The landscape encloses the building using "ha-ha" instead of a conventional system. This strengthens the building's integration with the landscape by limiting its visual impact and effectively hiding the fencing, which is placed in 1.5 m deep ditches. As a result the view is limitless and panoramic.

Newly planted trees complete the building design by creating a reoccurring landscape pattern of narrow strips of land planted with hardwoods, and contributing the environmental impact of the site design by protecting the building from climate conditions. Additionally, the landscape design frames the office views. Approaching from the highway, the other visual frames already exist. The thoughtfulness of the landscape highlights the building's continuity with the

surrounding environment.

### Energy

The heating and cooling systems are a combination of renewable energies and a heat pump, resulting in a high level of production autonomy. The total energy consumed by the building is 29 kWh/m<sup>2</sup>. The building uses a double flow ventilation system with heat recuperation. The ventilation system limits energy consumption and ensures good sanitary quality of the air. Low voltage lights also help reduce the internal energy use. Storage areas are equipped with presence detectors allow timely adjustment of the lighting. The high performance envelope also reduces the energy requirements. Outside of the building, a system of lagoons is used for water treatment, further preserving the building's energy autonomy.

### The Building Envelope

The architects proposed an envelope that would give the impression of a lightweight building in motion. This was achieved by incorporating stainless steel studs into the earth-colored concrete cladding, which blurred the building and reflected the surrounding and changing seasonal colors. The envelope is very high performance resulting from the reduced thermal bridges used for attaching the concrete facing. The combination of the structural and facing concrete layers and the 30 cm thick insulation reduces the summer cooling and winter heating requirements.

### The Facade

The facade uses a total of 120,000 stainless steel studs of 7 cm diameter and 1 mm thickness were incorporated into prefabricated concrete elevation panels. The panels are 15.65 m high and either 2.26 m or 2.33 m wide depending on whether they are



on the long or short side of the building. The 8 cm thick panels are reinforced with concrete ribbing. The facade panels are suspended from reinforced concrete walls and held in position using distancing jacks, and have a total thickness of 68 cm. The unique process and assembly of the building facade resulted in a patent for future installations. **LAF**

9. 景观设计构想了从办公室向外眺望时的取景。© Julien Lanoo
10. 每间办公室都拥有可以欣赏到周围风景的理想视野。© Julien Lanoo
11. 建筑内部 © Julien Lanoo
12. 建筑立面安装过程 © Julien Lanoo
9. Landscape design frames the office views. © Julien Lanoo
10. Each office has an ideal view of the surrounding landscape. © Julien Lanoo
11. The view from the inside © Julien Lanoo
12. The installation process of the facade © Julien Lanoo